

UNIVERSITY OF WASHINGTON GENERAL CATALOG

2020-2022 Edition

Undergraduate Study

Graduate Study

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ABOUT THE UNIVERSITY OF WASHINGTON

Founded in 1861, the University of Washington is one of the oldest state-assisted institutions of higher education on the Pacific coast. From its original site on a 10-acre tract of wooded wilderness that is now located in downtown Seattle, the campus has grown to comprise 703 acres of trees, landscape, and buildings. Located between the shores of Lake Washington and Lake Union, it is in a residential section of the city that long has been considered one of the most attractive in the nation. Two additional campuses, one south of Seattle in Tacoma, and one north in Bothell, were opened in 1990. Enrollment at the University in autumn quarter 2019 was more than 59,000, across all three campuses, of which 42,500 were undergraduates and the balance were in professional and graduate programs. Nearly 75% of the undergraduates enter as freshmen from Washington high schools or as transfer students from Washington community colleges or other colleges and universities in the state. In 2019, the teaching faculty of the University numbered more than 5,000 members.

ROLE AND MISSION OF THE UNIVERSITY

Founded 4 November 1861, the University of Washington is one of the oldest state-supported institutions of higher education on the Pacific coast. The University is comprised of three campuses: the Seattle campus is made up of seventeen schools and colleges whose faculty offer educational opportunities to students ranging from first-year undergraduates through doctoral-level candidates; the Bothell and Tacoma campuses, each developing a distinctive identity and undergoing rapid growth, offer diverse programs to upper-division undergraduates and to graduate students.

The primary mission of the University of Washington is the preservation, advancement, and dissemination of knowledge. The University preserves knowledge through its libraries and collections, its courses, and the scholarship of its faculty. It advances new knowledge through many forms of research, inquiry and discussion; and disseminates it through the classroom and the laboratory, scholarly exchanges, creative practice, international education, and public service. As one of the nation's outstanding teaching and research institutions, the University is committed to maintaining an environment for objectivity and imaginative inquiry and for the original scholarship and research that ensure the production of new knowledge in the free exchange of facts, theories, and ideas.

To promote their capacity to make humane and informed decisions, the University fosters an environment in which its students can develop mature and independent judgment and an appreciation of the range and diversity of human achievement. The University cultivates in its students both critical thinking and the effective articulation of that thinking.

As an integral part of a large and diverse community, the University seeks broad representation of and encourages sustained participation in that community by its students, its faculty, and its staff. It serves both non-traditional and traditional students. Through its three-campus system and through educational outreach, evening degree, and distance learning, it extends educational opportunities to many who would not otherwise have access to them.

The academic core of the University of Washington is its College of Arts and Sciences; the teaching and research of the University's many professional schools provide essential complements to these programs in the arts, humanities, social sciences, and natural and mathematical sciences. Programs in law, medicine, forest resources, oceanography and fisheries, library science, and aeronautics are offered exclusively (in accord with state law) by the University of Washington. In addition, the University of Washington has assumed primary responsibility for the health science fields of dentistry and public health, and offers education and training in medicine for a multi-state region of the Pacific Northwest and Alaska. The schools and colleges of architecture and urban planning, business administration, education, engineering, nursing, pharmacy, public affairs, and social work have a long tradition of educating students for service to the region and the nation. These schools and colleges make indispensable contributions to the state and, with the rest of the University, share a long tradition of educating undergraduate and graduate students toward achieving an excellence that well serves the state, the region, and the nation.

BR, February 1981; revised February 1998; December 2001

NON-DISCRIMINATION POLICY

The University of Washington reaffirms its policy of equal opportunity regardless of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran. This policy applies to all programs and facilities including, but not limited to, admissions, educational programs, employment, and patient and hospital services. Any discriminatory action can be a cause for disciplinary action. Discrimination is prohibited by Presidential Executive Order 11246 as amended; Washington State Gubernatorial Executive Orders 89-01 and 93-07; Titles VI and VII of the Civil Rights Act of 1964; Washington State Law Against Discrimination RCW 49.60; Title IX of the Education Amendments of 1972; State of Washington Gender Equity in Higher Education Act of 1989; Sections 503 and 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990; Age Discrimination in Employment Act of 1967 as amended; Age Discrimination Act of 1975; Vietnam Era Veterans' Readjustment Act of 1972 as amended; other federal and state statutes, regulations; and University policy. Coordination of the compliance efforts of the University of Washington with respect to all of these laws and regulations is provided by the Equal Opportunity Office, Box 354560, 4045 Brooklyn Avenue Northeast, Seattle, WA 98195, 206-543-1830, eoaa@uw.edu.

Additional information concerning the equal opportunity and affirmative action policies and procedures, including complaint procedures, is in the UW Handbook, Vol. IV, part 1, chapter 2.

Information on reasonable accommodation for students with disabilities is available from the following offices: for classroom and academic-related accommodation, contact Disabled Resources for Students, 206-543-8924/V, 206-543-8925/TTY, uwdss@uw.edu; for other non-academic related information and accommodation, contact the Disability Services Office, 206-543-6450/V, 206-543-6452/TTY, dso@uw.edu.

ACCREDITATION

The University of Washington is accredited by the Northwest Association of Schools and Colleges and is a member of the Association of American Universities. Individual schools and colleges are members of the various accrediting association in their respective fields. Currently enrolled or prospective students should contact the Office of the University Registrar to review accreditation documents for the University and the respective departments to review programmatic accreditation documents.

The University of Washington General Catalog is produced by the Office of the University Registrar at the University of Washington:
genecat@u.washington.edu.

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KEY TO SYMBOLS AND ABBREVIATIONS

COURSE DESCRIPTIONS

Each course listing includes prefix, course number, title and credits. Each listing also may include general education designator(s), names of instructor(s), description of the course, prerequisite(s), and quarter(s) offered.

Specific information on courses offered in a particular quarter appears in the [quarterly Time Schedule](#).

COURSE NUMBERS

- **100–299** Lower-division courses primarily for freshmen and sophomores.
- **300–499** Upper-division courses primarily for juniors, seniors, and postbaccalaureate (fifth-year) students. Graduate students may enroll in 300- and 400-level courses. When acceptable to the major department and the Graduate School, approved 400-level courses may be applied as graduate credit in the major field and approved 300-level courses may be applied in the supporting field(s).
- **500+** Restricted to graduate students. (Courses numbered in the 500 and 600 series with a P before the course title denote professional courses for students in the schools of Dentistry and Medicine, and such courses may not be applied as graduate credit in the Graduate School.) Undergraduate, postbaccalaureate, and nonmatriculated students who wish to register for 500-level courses must obtain permission from the instructor of the class, departmental Chair, or other designated person.

Graduate School-Restricted Courses

Graduate courses numbered 600, 601, 700, 750, or 800 are restricted to students in the Graduate School. They appear by number and title only where applicable under the departmental course listings in this catalog. Descriptions for these courses are listed below.

- **(PREFIX) 600 Independent Study or Research (*)** Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of Supervisory Committee or graduate program advisor.
- **(PREFIX) 600 Internship (3–9, max. 9)** Internship required of students in a graduate degree program. Prerequisite: permission of Supervisory Committee chair or graduate program advisor.
- **(PREFIX) 700 Master's Theses (*)** Research for the master's thesis, including research preparatory or related thereto. Limited to premaster graduate students (i.e., those who have not yet completed the master's degree in their major field at the University of Washington). Prerequisite: permission of Supervisory Committee or graduate program advisor.
- **(PREFIX) 750 Internship (*)** Internship required of all graduate students in the Doctor of Arts degree program.
- **(PREFIX) 800 Doctoral Dissertation (*)** Research for the doctoral dissertation and research preparatory or related thereto. Limited to graduate students who have completed the master's degree or the equivalent, or Candidate-level graduate students. Premaster students initiating doctoral dissertation research should register for 600. Prerequisite: permission of Supervisory Committee or graduate program advisor.

CREDIT DESIGNATION

- **ART 100 (5)** 5 credits are received for the quarter.
- **ART 100 (5-)** Course may take longer than one quarter to complete or is the first course in a hyphenated sequence. Credit is earned, but may not be applied toward graduation until the entire sequence is completed. If not part of a hyphenated sequence, repeated registration may be necessary. An N grade is received until the final grade is submitted.
- **ART 100 (2, max. 8)** 2 credits per quarter; course may be repeated up to four times to earn a maximum of 8 credits.
- **ART 100 (1–5)** Up to 5 credits may be taken in a given quarter. Specific number is determined in consultation with instructor of adviser. When a maximum is not stated, course is not repeatable.
- **ART 100 (1–5, max. 15)** Up to 5 credits may be taken in a given quarter. Course may be repeated to a maximum of 15 credits.
- **ART 100 (*, max. 10)** Credit to be arranged per quarter; course may be repeated to a maximum of 10 credits.
- **ART 100 (3/5)** 3 or 5 credits are earned in a given quarter. Specific amount is determined by school or college offering the course. The Time Schedule may indicate 3 credits, 5 credits, or 3 or 5 credits. Credits may vary by section.
- **ART 100 (3/5, max. 15)** 3 or 5 credits are earned in a given quarter. Course may be repeated to earn a maximum of 15 credits.
- **ART 700 (*)** Credit is to be arranged with school or college offering the course. No maximum stated. Only 600-, 700-, and 800-level courses do not require a maximum.

UNDERGRADUATE GENERAL EDUCATION REQUIREMENT DESIGNATORS

- **VLPA** Visual, Literary, and Performing Arts (Areas of Knowledge requirement)
- **I&S** Individuals & Societies (Areas of Knowledge requirement)
- **NW** The Natural World (Areas of Knowledge requirement)
- **QSR** Quantitative, Symbolic, or Formal Reasoning
- **DIV** Diversity
- **C** English Composition

Courses marked C may be used for the English Composition requirement or the additional-writing (W-course) requirement, but not both; none may count for the Area of Knowledge requirements. Courses marked QSR may be used for both the QSR requirement and an Area of Knowledge requirement, if one is listed. Courses marked with more than one Areas of Knowledge designator (VLPA, I&S, and/or NW) may be used for any one of the areas indicated, but not for more than one.

BACKGROUND REQUIRED

Prerequisites Courses to be completed or conditions to be met before a student is eligible to enroll in a specific course.

QUARTERS OFFERED

A, W, Sp, S indicates the quarter(s) the course is offered.

Example

ART 100 AWSp ART 100 offered Autumn, Winter, and Spring Quarters.

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ACADEMIC CALENDAR

2020-2021

Autumn Quarter 2020

Classes begin	September 30
Last day of instruction	December 11
Final examinations	December 12-18

Winter Quarter 2021

Classes begin	January 4
Last day of instruction	March 12
Final examinations	March 13-19

Spring Quarter 2021

Classes begin	March 29
Last day of instruction	June 4
Final examinations	June 5-11
Commencement	June 11-13

Summer Quarter 2021

Full-term and term a classes begin	June 21
Term a classes end	July 21
Term b classes begin	July 22
Full-term and term b classes end	August 20

2021-2022

Autumn Quarter 2021

Classes begin	September 29
Last day of instruction	December 10
Final examinations	December 11-17

Winter Quarter 2022

Classes begin	January 3
Last day of instruction	March 11
Final examinations	March 12-18

Spring Quarter 2022

Classes begin	March 28
Last day of instruction	June 3
Final examinations	June 4-10
Commencement	June 10-12

Summer Quarter 2022

Full-term and term a classes begin	June 20
Term a classes end	July 20
Term b classes begin	July 21
Full-term and term b classes end	August 19

Dates in this calendar are subject to change without notice. A detailed calendar with the latest information on registration can be found online at www.washington.edu/students/.

For directory assistance, call the University switchboard, (206) 543-2100.

Address correspondence to:

University of Washington
(Name of office and box number)
Seattle, Washington 98195

The University and its colleges and schools reserve the right to change the fees, the rules, and the calendar regulating admission and registration; the instruction in and the graduation from the University and its various divisions; and any other regulations affecting the student. The University also reserves the right to withdraw courses and programs at any time.

It is the University's expectation that all students follow University regulations and procedures as they are stated in the General Catalog. Appeals may be filed with the student's dean or with the Vice President for Student Affairs in nonacademic matters. Students are expected to observe the standards of conduct contained in the Student Conduct Code (WAC 478-120).

UNDERGRADUATE ADMISSION

admit.washington.edu

FRESHMAN APPLICANTS

Definition of Freshman Status

Apply as a freshman if *any* of the following statements describe you.

- You plan to enter the UW right after graduating from high school.
- You are in Washington State's Running Start Program and you plan to enter the UW right after graduating (regardless of how many college credits you have earned or will earn).
- You have never attended college since leaving high school (regardless of your age or whether you ever graduated).

Admission Policy

Selecting the Freshman Class

The University of Washington seeks students who can benefit from its wealth of academic and cultural opportunities and contribute to its amazing energy and rich diversity of experience. Choosing students from a very able group of applicants requires a selection process that looks beyond grades and standardized tests. While these factors are important, they tell only part of an applicant's story. The University uses an individualized application review more typically found at smaller, private universities and colleges. In addition to grade-point average (GPA) and test scores, the University takes into account many aspects of an applicant's achievements and personal history.

Academic Preparation and Performance

While the UW looks at many factors in reviewing applications for admission, academic preparation and performance are still primary. Indicators of preparation and performance include:

- An overall strong level of academic achievement as demonstrated by GPA, rigor of curriculum, standardized test scores, and academic distinctions
- Taking advantage of college-preparatory courses during high school, such as Advanced Placement (AP), International Baccalaureate (IB), Running Start, or college in the high school; or core subjects beyond the minimum required for college entrance
- Taking full academic advantage of the senior year
- Demonstrating a positive grade trend
- Demonstrating habits associated with independent intellectual growth such as self-guided reading, engagement with other cultures, or research activities
- Demonstrating exceptional artistic talent and achievement

Personal Achievements and Characteristics

In addition to academic preparation and performance, personal achievements and characteristics can also indicate promise to benefit from and contribute to the University of Washington. These include:

- Demonstrating a commitment to community service and leadership
- Exercising significant responsibility in a family, community, employment, or through activities
- Attaining a college-preparatory education in the face of significant personal adversity, economic disadvantage, or disability
- Demonstrating cultural awareness or unique perspectives or experiences
- Demonstrating notable tenacity, insight, originality, or creativity

The entire application, including the Writing Section and Activities Log, is important in the individualized application review. Because the University receives about 23,000 freshman applications every year, this process takes time to complete. The University takes great care in assessing applications and does not rush the selection of future students. While this process

requires patience on the part of many applicants, the benefit is that each applicant is reviewed as an individual. Applications for 2011 may be submitted between October 1 and December 15, 2010. An admission decision will be mailed to all freshman applicants between March 15 and 31, 2011.

College Academic Distribution Requirements (CADR)

To be eligible for full admission consideration, applicants must present the following:

- Completion of a college-preparatory course of study to include the following high school credits*:
 - a. 4 high school credits of English
 - b. 2 high school credits of a single world language
 - c. 3 high school credits of mathematics: algebra, geometry, and preferably trigonometry (a fourth high school credit of mathematical analysis or calculus is recommended for students preparing for majors in the sciences or engineering)
 - d. 3 high school credits of social science
 - e. 2 high school credits of science including one laboratory science course in biology chemistry or physics
 - f. 1 senior-year math-based quantitative course
 - g. 0.5 high school credits of the fine, visual, or performing arts
 - h. 0.5 high school credits of electives taken from the above areas

* One high school credit represents a standard full year of high school coursework

Because these are admission requirements, all CADR must be satisfactorily completed before the first quarter of enrollment at the UW. Almost all applicants will have satisfied these requirements through high school coursework, which is generally defined as that completed in grades 9–12. There are, however, several ways to satisfy CADR at the college level. In general, five quarter credits (or three semester credits) at the college level equals one credit of high-school study. If you completed a portion of these requirements in high school, you can supplement high school courses with college course work. For example:

High School:	3 credits of English
Community college:	5-credit English composition or literature course is equivalent to one high-school year
Total:	4 credit high school requirement satisfied

Grading Restrictions

In general, you must attain at minimum a passing grade (including 'D') to satisfy a CADR. Also acceptable is a grade of 'Pass' in a course taken on a 'Pass/Not Pass' basis. However, if you are completing CADR through college course work you are strongly encouraged to choose a letter or numerical grade, because you may later want to apply CADR courses towards requirements for your major or University or college graduation requirements, for which grading restrictions pertain. Applicants using a college course to satisfy the mathematics CADR: specific restrictions on grading apply. See the Mathematics section.

English Composition/Literature

1. IF TAKEN IN HIGH SCHOOL

Four high school credits of study are required, at least three of which must be in college-preparatory composition or literature.

- One of the four credits may be satisfied by courses in drama as literature, public speaking, debate, journalistic writing, business English, or English as a Second Language (ESL).
 - Courses that are generally not acceptable include those identified as remedial or applied (e.g., acting, basic English skills, developmental reading, library, newspaper staff, remedial English, review English, vocabulary, yearbook/annual).
2. IF SATISFIED BY COLLEGE COURSE WORK
- College course work must be at the 100 level or higher. For the composition/literature component, generally any course with an English or Writing prefix is acceptable.
- One of the four credits may be satisfied by a college course in speech, drama as literature, journalistic writing, business English, ESL, or engineering/technical writing.
 - Courses such as developmental or speed reading, vocabulary, or remedial English are not acceptable.
 - English courses are considered equivalent to ESL unless taken in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.
3. APPLICANTS WHOSE FIRST LANGUAGE IS NOT ENGLISH
- Although the four-credit English high school course requirement cannot be waived, there are some alternatives for meeting the English subject requirement for U.S. citizens, permanent residents or refugees
- whose first language is not English or,
 - who attended school in a non-English speaking country. English-speaking countries are defined as Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.

ALTERNATIVE ONE (Applicants with Test Scores)

To fulfill the English core subject requirement under this alternative, both A and B must be satisfied.

A: Test Score Requirement

Submit one of the following official test scores by the application closing date:

- SAT Critical Reading 430
- ACT English 17
- Other tests (e.g., Test of English as a Foreign Language [TOEFL] or IELTS) cannot be used to meet this requirement.

B: Coursework Requirement

A total of four years of study are required.

- Composition or literature courses in the student's first language may satisfy up to three years of the requirement.
- English composition or literature courses taken in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S. may satisfy up to four years of the requirement.
- These courses may satisfy no more than one year of the requirement:
 - English, if taken outside of Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.
 - ESL taken in the U.S.
 - Courses in drama as literature, public speaking, debate, journalistic writing, or business English that were completed in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.

ALTERNATIVE TWO (Applicants with 60 or more college quarter credits)

All three of the following conditions (A, B, and C) must be satisfied:

- A. A minimum of 60 transferable quarter credits from a regionally accredited college or university in the U.S. or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom must be completed at the time of application. Transcripts showing 60 completed credits must be submitted by the application closing date.
- B. A minimum of two college-level English composition courses, for a minimum of six credits, taken at a regionally accredited college or university in the U.S., or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom. All

college-level English composition and literature courses must be completed with a minimum cumulative grade-point average (GPA) of 3.00 (B) and must be recorded on a transcript at the time of application.

- C. Additional English Course Work Requirements: The remaining two units of the requirement may be satisfied by any combination of course work from among the following options:
1. Up to two units may be satisfied by high school English composition or literature courses from high schools where the primary language of instruction is English.
 2. Up to two units may be satisfied by composition or literature courses in the student's first language (when the first language is not English) for coursework completed in educational systems other than the U.S., Australia, Canada, Ireland, New Zealand, or the United Kingdom.
 3. Only one unit (year) of the requirement may be satisfied by one of the following:
 - English courses taken in countries where English is NOT recognized as the primary language of instruction.
 - ESL courses taken in the U.S.
 - Courses in drama as literature, public speaking, debate, journalistic writing, or business English that were completed in Australia, Canada, Ireland, New Zealand, the United Kingdom, or the U.S.
 4. Up to two units may be satisfied by additional college-level English composition or English literature courses from a regionally accredited college or university in the U.S., or from an accredited college or university in Australia, Canada, Ireland, New Zealand, or the United Kingdom.

Mathematics

1. IF COMPLETED IN HIGH SCHOOL

Three high school credits are required, at least at the level of algebra, geometry, and second-year algebra.

- An algebra course completed in the last year of junior high school may partially satisfy the requirement if the second-year algebra is completed in secondary school.
- Arithmetic, pre-algebra, business math, and statistics will not count toward the requirement.

2. IF SATISFIED BY COLLEGE COURSE WORK

If your high school preparation in mathematics was insufficient, you must complete one of the courses listed below:

- A course in intermediate algebra — At UW Extension, as well as at many community colleges in Washington, MATH 098 is the necessary course. The course must be completed with a grade of 'C' (2.0) or better, even though it does not transfer to the UW as college credit and the grade earned in the course is not used in computing the transfer GPA.
- MATH 104 (Trigonometry) or its equivalent — The course must be completed with a grade of 'C' (2.0) or better.
- MATH 107 (Mathematics: A Practical Art) or its equivalent — The course must be completed with a grade of 'C' (2.0) or better.
- Mathematics courses with intermediate algebra as a prerequisite (except statistics courses) — This includes any higher-level math courses such as elementary functions, calculus, and beyond.

Social Science

1. IF COMPLETED IN HIGH SCHOOL

Three high school credits are required in history or in any of the social sciences, e.g., anthropology, contemporary world problems, economics, geography, government, political science, psychology, sociology. Credit for religion courses, consumer economics, student government, or community service will not count towards the requirement.

2. IF SATISFIED BY COLLEGE COURSE WORK

Courses in the social sciences-e.g., anthropology, economics, ethnic studies, history, philosophy, political science, psychology, sociology-will count toward the requirement.

World Languages

1. IF COMPLETED IN HIGH SCHOOL

Two high school credits are required. The two credits must be completed in the same language. Note: The world language requirement will be considered satisfied for applicants who complete their education through the 7th grade in school(s)

- where English was not the language of instruction and
- in countries other than Australia, Canada, Ireland, New Zealand, the United Kingdom, and the U.S.

International applicants who entered the U.S. education system prior to the 8th grade must satisfy the foreign language requirement. Any natural language that has been formally studied may be used to satisfy this requirement, including American Sign Language (ASL, the language of the deaf community), and languages no longer spoken, such as Latin and ancient Greek. However, neither computer 'languages' nor forms of deaf signing aside from ASL are acceptable. A world language course taken in the eighth grade may satisfy one credit of the requirement if the second-year course is completed in high school.

2. IF SATISFIED BY COLLEGE COURSE WORK

For purposes of admission, each 5-quarter-credit course of language in college is considered equivalent to one high school credit. Applicants who have never studied a world language will need to complete ten quarter credits of a single world language. However, an applicant who studied French for one credit in high school needs to complete only the second quarter (e.g., FREN 102) or the second semester of a first-year language sequence. Of course, you may prefer to begin with 101 to refresh your memory.

Lab Science

1. IF COMPLETED IN HIGH SCHOOL

A minimum of two credits of laboratory science are required. At least one of the two credits must be in biology, chemistry, or physics. Students typically take this full year course in two successive high school semesters. Additionally, at least one of the two years of laboratory science must be an algebra-based science course. The principles of technology courses taught in Washington State high schools may apply toward the laboratory science requirement. Additionally, courses identified by the school district as a laboratory science courses—e.g., astronomy, environmental science, geological science, genetics, marine science—may also apply toward the additional credit of laboratory science requirement.

2. IF SATISFIED BY COLLEGE COURSE WORK

College science courses with a lab will count toward the laboratory science portion of the requirement. Any course in astronomy, atmospheric science, biological structure, biology, botany, chemistry, environmental science (but not environmental studies), genetics, geology, oceanography, physical anthropology, physical geography, physics, or zoology will count toward the second-year requirement, as will introductory courses in biological or physical science.

Fine, Visual, or Performing Arts

1. IF COMPLETED IN HIGH SCHOOL

One-half credit is required in the fine, visual, or performing arts, to be chosen from art appreciation, band, ceramics, choir, dance, dramatic performance and production, drawing, fiber arts, graphic arts, metal design, music appreciation, music theory, orchestra, painting, photography, print making, or sculpture. Courses that do NOT satisfy this requirement include architecture, color guard, creative writing, drafting, drill team, fashion design, foreign languages, interior design, sewing, speech, web design or graphics, woodworking, and yearbook.

2. IF SATISFIED BY COLLEGE COURSE WORK

Two quarter credits (or 2 semester credits) chosen from any of the following subjects will satisfy the requirement:

- Art, art history, cinema/filmmaking, dance, music, or photography;
- Any course in drama except drama as literature courses.
- Courses in architecture are generally not accepted, except for those in architectural history.

Academic Electives

1. IF COMPLETED IN HIGH SCHOOL

Academic electives are courses in any of the six core subject areas — English, Mathematics, Social Science, World Languages, Lab Science, and the Arts — beyond the minimum number of credits specified. An additional half-credit is required.

2. IF SATISFIED BY COLLEGE COURSE WORK

Three quarter credits (2 semester credits), chosen from any of the six subject areas, satisfy this requirement.

High School Students Enrolled in Dual-Credit Programs

The Running Start Program allows academically qualified 11th- and 12th-graders the opportunity to enroll in certain Washington colleges for college credit. College in the High School, which may go under names such as dual enrollment or dual credit, allows high school students to take college courses while enrolled at their local high school and receive college credit.

ADMISSION

Dual-enrollment applicants are evaluated for admission on the same basis as other freshman applicants: academic preparation and performance; and personal achievement and characteristics. See Requirements/Freshman/Review.

- You must satisfy the College Academic Distribution Requirements (CADR).
- You must submit scores from SAT Reasoning Test or ACT with Writing. Dual-enrollment applicants are evaluated for admission on the basis of both quantitative (including high school and college grades and admission test scores) and qualitative factors.

APPLICATION PROCEDURES

- If you are applying for summer or autumn quarter after you graduate from high school, use the freshman application and apply by the freshman application deadline, December 15, regardless of the number of college credits you have taken or will have taken. All materials to complete the application file must be submitted or postmarked by the deadline.
- The Honors Program priority date for scholarship consideration is November 15.
- If you are starting college after you leave high school, apply as a transfer student.

Recommendations for Academic Planning

We encourage dual-enrollment applicants—particularly those with a significant number of college credits—to begin their academic planning as early as possible to ensure that they make the most of their college credit. The Transfer Admission & Planning booklet will be helpful in this regard, especially the academic planning section.

- Keep in mind that you have established a college record. Grades you earn now could affect admission to the University and to your intended major.
- If you anticipate entering the UW with 90 or more transferable credits, please know that you will be expected to declare a major at the end of your first quarter at the UW or request an extension from your adviser.
- Two online tools will help you look ahead toward UW requirements—for your intended major and for graduation—while still completing course work at the college you are now attending:
 - For transferable courses at Washington State community colleges and transfer credit policies, get to know the Equivalency Guide.
 - Consult the Academic Planning Worksheets, to help you prepare for your intended major and UW graduation requirements.

Transfer Credit Policy

In general, it is UW policy to accept college credits earned at institutions fully accredited by their regional accrediting association for colleges and universities, provide that such credits have been earned through university-level courses appropriate to the student's degree program at the UW. Exceptions are noted under Notable Restrictions on Transfer Credit and Courses Receiving No Credit in the Transfer Credit section of the catalog.

Scholarships

You may be considered for freshman scholarships as long as you do not enroll in another degree-seeking program after leaving high school and before enrolling at the UW. December 1 is the application deadline for freshman admission.

Homeschooled Applicants

Homeschooled students bring unique qualities to our campus, and we welcome their interest in the University of Washington. The Office of Admissions provides these guidelines to help homeschooled applicants become eligible for admission consideration.

College Academic Distribution Requirements (CADR)

All freshman and transfer applicants are required to meet minimum academic distribution requirements as set by the Washington State Higher Education Coordinating (HEC) Board and the faculty of the University of Washington. These requirements are explained in detail elsewhere.

Test Score Requirements

- CADR subjects completed at a high school or regionally accredited college do not require test score validation.
- CADR subjects completed through homeschooled coursework require validating test scores. The UW does not have an established list of predetermined minimum scores but reviews each homeschooled applicant in light of their unique educational history. All applicants are assessed holistically in the context of the UW's comprehensive review process.

CADR	Examination Options Scores from ACT with Writing or SAT Reasoning Test are required of all freshman applicants and may also serve as a validation option for some CADR subjects.
English	SAT Reasoning Test or ACT with Writing
Mathematics	SAT Reasoning Test or ACT with Writing
Lab Science: Validation is required for at least one of the following: Biology, Chemistry or Physics.	ACT with Writing or SAT Subject Test or Advanced Placement (AP)
World Languages	UW proficiency examination results for subject area (Comparable proficiency exam from another regionally accredited college or university may be an option; contact UW Admissions Office in advance.) SAT Subject Test or Advanced Placement (AP)
Social Science	No additional test required.
Fine Visual & Performing Arts	No additional test required.

Required Documents

Transcripts

An official homeschool transcript is required for all homeschooled coursework. It should include a summary of subjects completed for each year (grades 9-12) of homeschool study. For each subject, the following must be included:

- Course title,
- Course level (for example, 1st-year Spanish, Algebra II, etc.),
- Duration of study (beginning and ending dates),
- Short description of course content, and
- Grade for performance (or comparable qualitative assessment).

To be considered official, the homeschool transcript must be signed by the teacher of record; this may be a parent. Official transcripts are also required for any coursework completed at other high schools or regionally accredited

colleges. All official transcripts, including college transcripts, must be submitted by the appropriate application deadline.

Test Scores

Everything you need to know about how to submit scores from SAT Reasoning and ACT with Writing is at admit.washington.edu/Apply/Freshmen/TestScores.

Applicants with College Coursework: Freshman vs. Transfer Application

Freshman

If you are applying for admission for the summer or autumn quarter immediately following your high school graduation, apply using the freshman application, regardless of the number of college credits you have taken, are taking, or will have taken.

Transfer

If you will have completed college coursework and will be applying for a quarter beyond the autumn immediately following high school graduation, use the transfer application.

College Credit

In general, the UW awards credit for academic, college-level course work completed through regionally accredited colleges. See the section on Transfer Credit Policies below.

English Language Proficiency Requirement

Enrollment Requirement

All new freshman and transfer students must satisfy an English language proficiency requirement upon enrolling at the Seattle campus of the University of Washington. Applicants should review the English language proficiency requirement section of the catalog so they will know what to expect when they enroll at the UW.

Admission Requirement

- U.S. Applicants: Proof of English language proficiency is not an admission requirement
- International Applicants: Minimum test scores are required to be considered for admission. Applicants should read more about the admission process in the International Applicants section of the catalog.

Freshman Application Checklist

A complete application file for freshman admission must include:

- Application
- \$90 nonrefundable application fee OR approved fee waiver
- **Test Scores:** The UW no longer requires SAT or ACT scores. Students who have taken the exams are welcome to send their scores, however, there is absolutely no advantage or disadvantage in doing so.
- **Transcripts:** Do not send unless you receive a request from the Office of Admissions. The application requires that you self-report your academic course work.
- **Letters of Recommendation:** Do not send.
- **The Writing Section:** a required and important part of your application for admission: admit.washington.edu/Apply/Freshmen/WritingSection.

Application Deadlines

All required materials, including official exam and test score results, must be received by the application deadline.

Quarter of Application	Deadline
Winter	Sept. 1
Spring	Not Open for General Admission
Summer	Dec. 1
Autumn	Dec. 1

TRANSFER APPLICANTS

Definition of Transfer Status

Apply as a transfer student if all of the following statements describe you.

- You wish to enroll at the University of Washington to earn your first bachelor's degree.
- You are no longer in high school (regardless of how old you are or whether you graduated).
- You have completed, plan to complete, or will have completed any coursework at a regionally accredited college or university before you enroll at the University of Washington.

Admission Policy

Selecting the Transfer Class

The University seeks students who will enhance the intellectual and cultural vitality of the university community. Choosing students from an able group of applicants requires a selection process that looks beyond grades.

Minimum Requirements

Transfer applicants must meet the following minimum standards to be assured their application will receive a comprehensive review:

- Completion of the College Academic Distribution Requirements (see Freshman Admission section for complete details)
- Transfer GPA of 2.50 or better
- Submission of scores on the SAT or ACT unless the applicant has earned at least 40 reasonably distributed transferable quarter-credits after high school graduation

Comprehensive Review

The Comprehensive Review is a holistic assessment of an applicant's academic performance and personal qualities and achievements. The comprehensive review includes the following assessment areas:

- Level of academic achievement including cumulative transfer GPA based on all transferable college-level courses attempted; rigor of curriculum; and consistency in course completion
- Well-defined academic goals
- Preparation for intended major
- Plan for timely completion of a bachelor's degree
- Completion of foreign language through the 103-level, or equivalent, when applying to Arts and Sciences or Social Work
- Evidence of a need to enroll at the UW and the availability of the applicant's intended academic program at other Washington public educational institutions
- Academic or artistic awards and achievements, community service, work experience, or research that demonstrates success or potential contributions to the University and community
- Improved grades after an extended absence from college or evidence of a new maturity in approaching college work
- Cultural awareness
- Perseverance in attaining higher education in spite of personal adversity, disability, or economic disadvantage
- Admission test scores, if provided

Enrollment Goals and Priorities

The University is committed to the following transfer goals and priorities to benefit students from Washington's community and technical colleges.

- Among community college transfer students, the highest admission priority will be given to those with academic associate degrees and those with 90 transferable credits taken in preparation for a professional academic major. Applicants with fewer than 90 credits may also be admitted when early transfer is advisable, but the number of such transfers remains small.
- The University accepts applicants who have completed fewer than 40 quarter credits (slightly less than one year of college) at the time of application. However, admission for these applicants is competitive and, due to enrollment pressures, priority is low.

English Language Proficiency Requirement

Enrollment Requirement

All new freshman and transfer students must satisfy an English language proficiency requirement upon enrolling at the Seattle campus of the University of Washington. Applicants should review the English language proficiency requirement section of the catalog so they will know what to expect when they enroll at the UW.

Admission Requirement

- U.S. Applicants:** Proof of English language proficiency is not an admission requirement
- International Applicants:** Minimum test scores are required to be considered for admission. Applicants should read more about the admission process in the International Applicants section of the catalog.

Transfer Application Checklist

A complete application file for transfer admission must include:

- Application
- \$90 nonrefundable application fee OR approved fee waiver
- Academic Planning Worksheet for intended major
- Personal Statement
- Official high school transcript (if homeschooled, see Homeschool section)
- Official college or university transcript(s)
- Test Scores:** The UW no longer requires SAT or ACT scores (read the [June 11, 2020 announcement](#) for more information). Students who have taken the exams are welcome to send their scores, however, there is absolutely no advantage or disadvantage in doing so.

Application Deadlines

Quarter of Application	Deadline
Winter	Sept. 1
Spring	Not Open for General Admission
Summer	Feb. 15
Autumn	Feb. 15

* ATTN: Engineering Applicants and Computer Science Applicants Only. You may submit the paper application to the UW Admissions Office for spring quarter admission only if you are also applying for spring quarter direct entry to the programs listed below. To apply to the university, direct entry applicants to these programs should print the PDF version of the university application and submit the paper application and required documents prior to December 15. Direct entry applicants must also submit a departmental application to the program; check department websites for instructions.

The following departments admit new transfer students for spring quarter only:

- Bioengineering
- Chemical Engineering

The following departments admit new transfer students for spring and autumn quarters:

- Bioresource Science and Engineering
- Computer Science
- Computer Engineering
- Electrical Engineering
- Materials Science & Engineering
- Human Centered Design and Engineering
- Industrial and Systems Engineering

INTERNATIONAL APPLICANTS

An international student is anyone who needs an F-1 student visa or has any other type of temporary, non-immigrant visa. You are not considered an international student if you have US citizenship, US permanent residency, political asylum, refugee status, or an A, E, I, G, K, or V visa. The University of Washington accepts international student applications for either summer or autumn quarters. Admission to the University of Washington is competitive for international degree-seeking students. In recent years, the UW has offered admission to about 40% of international student applicants.

Admission Policy and Requirements

For admission consideration, the following requirements must be completed by the December 15 application deadline for freshman or the February 15 deadline for transfer and postbaccalaureates:

1. Complete the Application for International Undergraduates
2. Submit official English proficiency exam scores that meet the minimum admission requirement
3. Completion of the College Academic Distribution Requirements before enrolling at the University. The minimum requirements are as follows:
 - Composition/Literature 4 years
 - Mathematics 3 years
 - Social Science 3 years
 - World Languages 2 years
 - Lab Science 2 years
 - Fine, Visual, or Performing Arts 0.5 year

For additional details, go to admit.washington.edu/Admission/International/CADR

4. Submit official transcripts for all schools attended for grades 9–11 (or grades 10–12 if you have already graduated high school) and for all colleges and/or universities attended.

English Proficiency for Admission

All international students are required to submit English proficiency scores that meet the University's minimum requirement for admission consideration. Applicants must request official scores be sent directly to the UW from the testing agency for either the TOEFL or IELTS. Previous ESL or English composition courses, even when taken in the United States, will not satisfy the admission requirement. Students currently enrolled in US or Canadian schools are also required to submit official exam scores. Applicants who have not met the minimum English proficiency requirement by the application deadline or have not taken one of the English proficiency exams will not be considered for admission.

Exception. Non-U.S. citizens whose primary and secondary education took place in Australia, Canada, Great Britain, Ireland, New Zealand, or the US are exempt from this requirement. Students who were born in one of these countries but educated elsewhere are still required to satisfy the English proficiency requirement. SAT or ACT Scores.

Although the SAT and ACT are not required for international student applicants, the University may consider the English proficiency requirement satisfied if you have achieved academic success in English writing or literature courses *and* have a minimum SAT critical reading score of 550 or an ACT English/Writing score of 22. Official SAT or ACT scores must be sent directly from the testing organization.

English Language Proficiency Requirement for UW Enrollment

All new freshmen and transfer students must satisfy an English language proficiency requirement upon enrolling at the University. This requirement is separate from the admission requirement for international students. English composition, literature, or ESL courses taken at the secondary or college level will not satisfy the English language proficiency requirement for UW enrollment.

Applicants who are offered admission to the UW and have qualifying exam scores or meet one of the other alternatives will have satisfied this requirement. New students entering the UW without a qualifying test score, will be required to take an English language proficiency screening test before registering for classes. Students who do not achieve the minimum score on the screening test will be directed to participate in a mandatory advising program and/ or to complete courses through the Academic English Program (AEP). At least one AEP course will be required each quarter until all mandatory AEP classes are completed.

An extra fee is charged for each AEP course in addition to regular tuition.

Test Score Requirements

Test Title	Minimum Requirement for Admission to UW Seattle	Score Needed for English Language Proficiency Exemption upon UW Enrollment
TOEFL Internet-based	76	92
TOEFL Paper-based	540	580
IELTS	6.0	7.0

The most competitive applicants will demonstrate a higher level of English proficiency and have test scores that exempt them from enrolling in UW's Academic English Program (AEP).

Selecting International Students for Admission

All international students for a given year are reviewed to determine which applicants meet minimum requirements and have the strongest overall academic background. In selecting students for admission, the University considers the overall academic record, the rigor of a student's curriculum, the education system where the student has studied, test scores, personal achievements, educational goals, academic preparation, special talents, and a student's personal background as seen through the personal statement. Admission will be offered to as many highly qualified students as space allows and to those applicants who will most benefit from and contribute to the University's educational resources.

International Application Checklist

A complete application file for transfer admission must include:

- Application
- \$90USD nonrefundable application fee
- Official scores from English proficiency exam
- Academic Credentials (transcripts)
- Official secondary school transcripts
- Official transcripts from each college, university, or other post-secondary institution attended

Application Deadlines

Quarter of Application	Deadline
Summer	Freshmen: Dec. 1 Transfers & Postbaccalaureates: Feb. 15
Autumn	Freshmen: Dec. 1 Transfers & Postbaccalaureates: Feb. 15

POSTBACCALAUREATE APPLICANTS

Admission Policy

Postbaccalaureate is a highly competitive status, reserved for students who are working toward a second bachelor's degree or preparing for entrance to graduate or professional school. Only a small number of applicants are admitted every quarter as postbaccalaureates because the University's primary commitment is to undergraduates who are completing the first bachelor's degree. The primary factors in the admission decision are the Statement of Purpose, the applicant's academic record from the first bachelor's degree, and any relevant postbaccalaureate course work.

Postbaccalaureate Application Checklist

A complete application file consists of:

- Application, available online
- \$90 nonrefundable application fee via Visa, MasterCard or electronic check
- Statement of Purpose
- One official transcript from each college or university attended

Statement of Purpose

A Statement of Purpose, required of all postbaccalaureate applicants, is a critical part of your application for admission and is a required part of your admission file. Statements of Purpose and all other documents submitted are reviewed by the Postbaccalaureate Review Committee (PRC). Applicants will be notified in writing of the final decision after evaluation of transcripts and the Statement of Purpose.

The Statement of Purpose will be evaluated as part of the admission decision. Content as well as form (spelling, grammar, punctuation) will be considered. Applicants are expected to answer the following questions in their statements:

- Why are you pursuing further studies? How did you reach the decision to go into your particular field? What are your long term academic and professional goals? Be as specific as possible.
- If you are preparing to enter a second undergraduate, graduate, or professional program (such as medical, dental, or law school), what courses do you intend to take? If, on the other hand, you are ready to begin work in your major immediately, you do not need to list all of the courses comprising the major.
- For how many academic quarters do you plan to enroll? Why is it necessary for you to enroll at the UW? Do other four-year universities or community colleges offer what you need at this time? Can you meet your goal as a non-matriculated student, attending classes through UW Educational Outreach? (If you are planning to take specific courses in preparation for a graduate or professional program, be aware that access to courses in a particular quarter is not guaranteed.)
- If you are seeking admission to an undergraduate program with selective admission criteria: are you assured departmental admission? Your statement will be strengthened by a letter of support from the department. We recommend that applicants preparing for graduate school meet with an adviser in the department for an assessment of their chances for future admission. It is your responsibility to contact directly the program(s) you are interested in well before applying for admission to the University. Please be aware that postbaccalaureate applicants who are not accepted to their major of choice will not be admitted to the University.
- If you feel your undergraduate GPA is low: why might it be an unreliable indicator of your academic potential? Those students with postbaccalaureate course work on record, be it from a community college, four-year school, or graduate program, may use this opportunity to point out subsequent high performance if it is relevant to their academic plans at the UW.

Application Deadlines

Quarter of Application	Deadline
Winter	Sept. 1
Spring	Not Open for General Admission
Summer	Feb. 15
Autumn	Feb. 15

TRANSFER CREDIT POLICY

General Policy

To students pursuing a first bachelor's degree, the Office of Admissions awards transfer credit according to the guidelines discussed here. Admissions reserves the right to accept or reject credits earned at other institutions of higher education. In general, it is University policy to accept credits earned at institutions fully accredited by their regional accrediting association for colleges and universities, provided that such credits have been earned through university-level courses appropriate to the student's degree program at the University of Washington (UW). Exceptions are noted below.

State Policy on Inter-college Transfer and Articulation

The UW subscribes to the statewide Policy on Inter-College Transfer and Articulation Among Washington Public Colleges and Universities, endorsed by the public colleges and universities of Washington as well as by the State Board for Community and Technical College Education, and adopted by the Higher Education Coordinating Board. The policy deals with the rights and responsibilities of students, and the review and appeal process in transfer-credit disputes.

Class Standing

A student's class standing is determined by the total number of transfer credits awarded by the UW, not by the number of years of college study or by the completion of an associate degree.

Standing	Credit total
Freshman	0–44 credits
Sophomore	45–89 credits
Junior	90–134 credits
Senior	135+ credits

Satisfying UW graduation requirements depends not only on the number of credits completed—a minimum of 180 for most programs—but also on completing all College and major requirements.

Quarter vs. Semester Credits

Colleges and universities that operate on a semester system award semester credit. The UW awards quarter credit. To convert quarter credits to semester credits, multiply by two-thirds. To convert semester to quarter credits, multiply by 1.5. For example, a student who has earned 30 credits at an institution on a semester calendar would earn 45 quarter credits at the UW.

Applying Transfer Credit to Degree Requirements

Before a student first registers for classes at the University of Washington, s/he should meet with an academic adviser to plan a program of study. The adviser determines how the transfer credits shown on the transfer-credit evaluation may be used to meet UW degree requirements. For example, suppose that Admissions awards a student 120 transfer credits, but only 100 of those credits can be applied toward graduation requirements for that student's degree program. If selective credits are needed, credits that do not apply toward specific requirements may still be applied toward the minimum number of total credits required for graduation.

Alternative Credit Options

The UW does not award credit for work or life experience; however, two avenues exist for obtaining credit. Both situations require a formal approval process and a fee of \$25 per course.

- Once enrolled at the UW, students may explore the possibility of obtaining departmental approval for transfer of credit earned through coursework taken at a non-regionally accredited institution.
- Students may arrange to challenge specific UW courses via credit by examination if the same knowledge has been gained through independent study outside a formal educational setting. For course work taken at an unaccredited institution, contact Admissions. For credit by examination for independent study completed outside a formal educational setting, contact the Graduation and Academic Records Office, ugradoff@uw.edu.

Transfer Credit Limit

The University allows a maximum of 90 credits of lower-division transfer course work to be applied toward a UW degree. Of the 180 credits required for graduation from the University (some majors require more than 180), a maximum of 90 lower-division transfer credits are allowed. Upon enrolling at the UW, students with a lower-division credit total that exceeds 90 will see a difference between the “total credits earned” and the “total credits allows” on their UW record under the Summary of Transfer Credit following the course by course “Detail of Transfer Credit.”

Additionally, a maximum of 135 total transfer credits are allowed toward the 180-credit total. Therefore, a student transferring 135 or more credits must complete a minimum of 45 more credits in residence at the UW.

Despite these restrictions, all transferable credit are listed under the Detail of Transfer Credit and, with an adviser’s approval, may be used to satisfy individual requirements for graduation. It may be helpful to think of transfer credits as a “bank account” of credits from which applicable credits may be drawn. All transferable credits remain in the bank, but no more than 90 lower-division credits and no more than 135 total transfer credits may be “withdrawn” in order to be applied toward the 180 (or more) credits required for a degree.

Extension Credit from Other Schools

Extension credit, including correspondence courses, earned at other schools may not exceed 45 credits. Military credit is included in this 45-credit limit.

Foreign Language Courses

Students who complete two or more years of a foreign language in high school and then go on to complete an entry-level language course in the same language (e.g., FRENCH 101) before transferring to the UW are eligible to receive transfer credit. However, students who complete an entry-level course after their transfer to the UW will not receive college credit.

Military Credit

Credits earned for courses completed through in Armed Forces Training Schools (AFTS) and through USAFI and DANTES may not exceed 30 credits. Official transcripts (or DD-214 or DD-295 forms) will be evaluated after a student enrolls at the UW. No credit is awarded for Military Occupational Specialty (MOS) programs.

Native Language

First-year (elementary) or second-year (intermediate) foreign-language credit is not granted either by examination or by course completion in a student’s native language. “Native language” is defined as the language spoken in the student’s home during the first six years of his or her life and in which he or she received instruction through the seventh grade.

Out-of-Sequence Courses

Credit is not awarded for prerequisite courses in mathematics or foreign languages completed after a more advanced course has been completed. For example, students will not be awarded credit for Spanish 102 if taken after Spanish 103.

Overlapping Content

If a department considers two of its courses to have overlapping content, credit will be awarded for only one. For example, credit is granted for either PHYS 114 or PHYS 121.

Physical Education

No more than three quarter credits will be allowed for physical-education activity courses.

Restricted Transfer Credit

Transfer credit will not generally be awarded for vocational or technical courses. However, a maximum of 15 quarter credits will be awarded in transfer for college-level vocational-technical courses when they have been allowed as electives within the 90 credits comprising an academic associate degree from a Washington community college. Courses in this category are those that ordinarily provide specialized training for an occupation (e.g., allied health, bookkeeping, electronics, or physical therapy assistant). When allowed, these credits will apply only toward the elective credit component of a baccalaureate degree at the UW. Such courses are not included in the transfer GPA.

Senior Residency Requirement

To be recommended for a first bachelor’s degree, a student must complete 45 of the last 60 credits as a matriculated student at the UW campus where the degree is to be awarded.

Appeal Procedure

If not all courses transfer as the student had anticipated, and it is not evident to the academic adviser is unable to answer questions about an individual student’s transfer credit award, the student should first consult with an admissions specialist in the Office of Admissions. If appropriate, further appeal can be directed to the UW Transfer Officer in the Admissions Office.

The Direct Transfer Agreement (DTA)

The public community colleges and baccalaureate colleges and universities in Washington have adopted an inter-institutional transfer agreement. The agreement applies to the applicability of transfer credit from community colleges to baccalaureate institutions; the DTA is not an admission agreement. The DTA Associate Degree Guidelines developed by the Intercollege Relations Commission (ICRC) outline an acceptable transfer curriculum, which serves as the foundation of the DTA associate degrees offered at each community college. In general, transfer students who have been awarded a qualifying DTA associate will be eligible to transfer to a baccalaureate institution with junior standing and will have completed lower division general education requirements.

The University of Washington subscribes to the Direct Transfer Agreement as follows:

- Students will be assigned junior standing upon admission.
- The UW transfers credit on a course-by-course basis. However, approved DTA degree-holders may use transfer courses toward the UW Areas of Knowledge requirements comparable to those the community college used toward DTA associate degree distribution requirements—even if those courses would not otherwise be allowed toward specific Areas of Knowledge requirements at the UW—if doing so is to the student’s advantage.
- The UW’s College of Arts and Sciences agrees that transfer students from Washington community colleges who complete approved associate degree programs will be considered to have satisfied the College’s general education and proficiency requirements with the following provisos:
 1. Students who have completed the minimum of 45 credits of distribution (15-15-15) as part of their DTA degree will be required to take an additional 5 credits in each area plus an additional 15 credits drawn from their choice of one or more of the three areas in order to satisfy the Arts and Sciences Areas of Knowledge requirement.
 2. Up to 15 credits in the student’s major may be applied towards the 75-credit Areas of Knowledge requirement.
 3. Students who complete first-year language courses as a part of the transfer degree distribution requirement, and later use that

foreign language to satisfy the Arts and Science language proficiency requirement (see item 4), may NOT use those foreign language credits towards the Arts and Science Areas of Knowledge requirement.

4. Students will be required to complete foreign language study through the 103-level or to demonstrate language proficiency at the 103-level through an examination.
5. Ten credits in courses emphasizing writing (W-courses or English composition) are required in addition to the 5-credit English composition requirement. W courses must have attributes as defined by Arts and Sciences. If not completed as part of the transfer degree, this requirement must be completed at the University.

Note: Additional courses taken at the UW to fulfill general education or proficiency requirements may be upper division courses; students will not be required to complete additional lower division courses at the UW.

ADVANCED PLACEMENT PROGRAM (COLLEGE BOARD)

AP Credit Policies

Although AP scores range from 1 to 5, all UW departments that award credit require a minimum score of 3 or 4. In some cases, students must consult a UW departmental adviser for evaluation after entering the University.

NOTE: AP test results may be submitted only for courses taken in high school and for tests taken during or within 6 months of leaving high school. AP test results may not be used to waive admission requirements.

AP Subject	Score	Credit/Placement Awarded and Additional Information
Art: History of Art	4,5	ART H 100 (5 or 10 cr., respectively). Art history elective credit. See Art adviser for placement. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
Art: Studio Art	-	Placement only. See Art adviser.
Biology	4,5	BIOL 161–162 (10 cr.) First two quarters of general biology. Counts toward Natural World general education requirement
Calculus AB	5	MATH 124,125 (10 cr.) First two quarters of calculus. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Calculus AB	3,4	MATH 124 (5 cr.) First quarter of calculus. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Calculus AB	2	Placement only into MATH 124. Placement into first quarter of calculus.

Calculus BC	4,5	MATH 124,125 (10 cr.) First two quarters of calculus. Counts toward Natural World general education requirement for graduation. Also satisfies
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		Quantitative and Symbolic Reasoning graduation requirement.
Calculus BC	3	MATH 124 (5 cr.) First quarter of calculus. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Calculus BC	2	(Subgrade 3,4,5) MATH 124 (5 cr.) First quarter of calculus. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Chemistry	5	CHEM 142, 152, 162 (5, 5, 5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Chemistry	4	CHEM 142, 152 (5, 5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning graduation requirement. Note: Students with AP scores of 4 or 5 who plan to major in chemistry or biochemistry are strongly encouraged to discuss the option of enrolling in the honors introductory chemistry sequence, Chem 145–165, with the undergraduate advisers in the Chemistry department.
Chinese Language	3,4,5	CHIN 133, 231, 232 (5,10,15 cr., respectively) Courses are parallel to CHIN 103, 201, 202; cannot earn credit for both sequences. Credit for 133, 231, 232 does not imply placement into specific CHIN courses.
Computer Science A	4,5	CSE 142 (4 cr.) Computer programming for science/engineering students. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Computer Science AB	5	CSE 142, 143 (4, 5 cr.) Computer programming for engineering and science students. Counts toward Natural World general education requirements for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.

Computer Science AB	3,4	CSE 142 (4 cr.) Computer programming for engineering and science students. Counts toward Natural World general education requirements for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Economics: Micro	4,5	ECON 200 (5 cr.) Introduction to Microeconomics. Counts toward Individuals & Societies general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Economics: Macro	4,5	ECON 201 (5 cr.) Introduction to Macroeconomics. Counts toward Individuals & Societies general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
English: Language & Composition	4,5	ENGL 190 (5 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
English: Literature & Composition	4,5 on both	ENGLISH 191 (5 cr.) AP English. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
Environmental Science	3,4,5	ESRM 100 (5 cr.) Introduction to environmental science. Counts toward Natural World general education requirement for graduation.
European History	4,5	HIST 113 (5 cr.) Western Civilization history survey (modern). Counts toward Individuals & Societies general education requirement for graduation.
French Language	3,4,5	FRENCH 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate French. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
French Literature	3,4,5	FRENCH 298 (5, 10, 15 cr., respectively) Does not imply a particular placement. French credit at the second-year college level. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
German Language	3,4,5	GERMAN 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate German. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Government and Politics: American	4,5	POL S 202 (5 cr.) American politics. Counts toward Individuals & Societies

		general education requirement for graduation.
Government and Politics: Comparative	4,5	POL S 204 (5 cr.) Comparative politics. Counts toward Individuals & Societies general education requirement for graduation.
Human Geography	3,4,5	GEOG 100 (5 cr.) Introduction to geography. Counts toward Individuals and Societies general education requirement for graduation.
Italian Language & Culture	3,4,5	ITAL 201, 202, 203 (5, 10, 15 cr., respectively) Intermediate Italian. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences. .
Japanese Language	3,4,5	JAPAN 133, 231, 232 (5, 10, 15 cr., respectively) Courses are parallel to JAPAN 113, 211, 212; cannot earn credit for both sequences. Credit for 133, 231, 232 does not imply placement into specific JAPAN courses.
Latin Literature	4,5	LATIN 305, 306 (10 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin Literature	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin: Vergil	4,5	LATIN 305, 307 (10 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin: Vergil	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin Literature and Latin: Vergil	4,5	LATIN 305, 306, 307 (15 cr.) Latin literature courses. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Latin Literature and Latin: Vergil	3	LATIN 103 (5 cr.) Third quarter of elementary Latin. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Music Theory	-	None Awarded. See Music adviser for placement.
Physics B	4,5	PHYS 114/117, 115/118, 116/ 119 (15 cr.) First-year general physics sequence.

		Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Physics C: Mechanics	4,5	PHYS 121 (5 cr.) First quarter of engineering physics sequence. Also satisfies Quantitative and Symbolic Reasoning graduation
Physics C: Electricity & Magnetism	4,5	PHYS 122 (5 cr.) Second quarter of engineering physics sequence. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
Psychology	4,5	PSYCH 101 (5 cr.) Introductory psychology. Counts toward Individuals & Societies general education
Spanish Language	3,4,5	SPAN 201, 202, 203 (5, 10, 15 cr., respectively). Intermediate Spanish. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Spanish Literature	3,4,5	SPAN 298 (5, 10, 15 cr., respectively). Spanish credit at the second-year college level. Counts toward Visual, Literary, and Performing Arts general education requirement for graduation. Also satisfies foreign language graduation requirement of the College of Arts and Sciences.
Statistics	3,4,5	STAT 311 (5 cr.) Statistical Methods. Counts toward Natural World general education requirement for graduation. Also satisfies Quantitative and Symbolic Reasoning graduation requirement.
U.S. History	4,5	HSTAA 101 (5 cr.) American history survey. Counts toward Individuals & Societies general education requirement for graduation.
World History	4,5	HIST 100 (5 cr.) AP World History. Counts toward Individuals & Societies general education requirement for graduation.

African History	7,6,5	HIST 108 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
American History	7,6,5	HSTAA 101 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Anthropology	7,6,5	ANTH 202 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Arabic A	No credit.	
Arabic B	7	ARAB 108 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation. See department for placement.
Arabic B	6	ARAB 108 (10 cr.)
Arabic B	5	ARAB 108 (5 cr.)
Art/Design	7,6,5	Policy to be determined.
Biology	7,6,5	BIOL 161–162 (10 cr.) Counts toward Natural World general education requirement for graduation.
Business and Organization	7,6,5	No credit
Chemistry	7	CHEM 142, 152, 162 (5, 5, 5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning general education requirement for graduation. Note: Students with IB scores of 5, 6, or 7 who plan to major in chemistry or biochemistry are strongly encouraged to discuss with the undergraduate advisers in the Chemistry department the option of enrolling in the honors introductory chemistry sequence, CHEM 145–165

INTERNATIONAL BACCALAUREATE PROGRAM

Policy Overview

In most cases, five quarter credits (or more) are granted for Higher Level subjects in which a grade of 5 or higher is earned. Students who earn an IB diploma may be awarded up to 45 quarter credits for a combination of subject grades and 15 general education credits distributed equally among the three Areas of Knowledge (general education) areas: Visual, Literary, and Performing Arts (VLPA), Individuals and Societies (I&S), and The Natural World (NW). No credit is awarded for Standard Level subject grades. Consult the Higher Level Subjects table for detailed information about credit awards in particular disciplines.

IB Credit Policies

IB Subject	Score	Courses and Credits Counts Toward/Comments
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Chemistry	6	CHEM 142, 152 (5, 5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning general education requirement for graduation. Note: Students with IB scores of 5, 6, or 7 who plan to major in chemistry or biochemistry are strongly encouraged to discuss with the undergraduate advisers in the Chemistry department the option of enrolling in the honors introductory chemistry sequence, CHEM 145–165..
Chemistry	5	CHEM 142 (5) General chemistry for science and engineering majors. Counts toward Natural World general education requirement for graduation. CHEM 142 also satisfies Quantitative and Symbolic Reasoning general education requirement for graduation. Note: Students with IB scores of 5, 6, or 7 who plan to major in chemistry or biochemistry are strongly encouraged to discuss with the undergraduate advisers in the Chemistry department the option of enrolling in the honors introductory chemistry sequence, CHEM 145–165.
Chinese A	No credit.	
Chinese B	7	CHIN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation. For further study, instructor evaluation required for placement.
Chinese B	6	CHIN 201, 202 (10 cr.)
Chinese B	5	CHIN 201 (5 cr.)
Computer Science and Engineering	7,6,5	CSE 100 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement.
Design Technology	7,6,5	ENGR 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
East/ Southeast Asia and Oceania History	7,6,5	HISTAS 108 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.

Economics	7,6	ECON 200, 201 (10 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement and/or counts toward Individuals & Societies general education requirement for graduation.
Economics	5	ECON 200 (5 cr.) Satisfies Quantitative and Symbolic Reasoning graduation requirement or counts toward Individuals & Societies general education requirement for graduation.
English A	7,6,5	ENGL 193 (5 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
English B	No credit.	
European History	7,6,5	HIST 113 (5 cr.) Counts toward Individuals & Societies general education
French A	No credit.	
French B	7	FRENCH 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
French B	6	FRENCH 201, 202 (10 cr.)
French B	5	FRENCH 201 (5 cr.)
Geography	7,6,5	GEOG 100 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Germanics A	No credit.	
Germanics B	7	GERMAN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
Germanics B	6	GERMAN 201, 202 (10 cr.)
Germanics B	5	GERMAN 201 (5 cr.)
History		See African History; American History; East/Southeast Asia and Oceania History; European History
Italian A	No credit.	
Italian B	7	ITAL 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.

Italian B	6	ITAL 201, 202 (10 cr.)
Italian B	5	ITAL 201 (5 cr.)
Japanese A	No credit.	
Japanese B	7	JAPAN 321, 322, 323 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Japanese B	6	JAPAN 321, 322 (10 cr.)
Japanese B	5	JAPAN 321 (5 cr.)
Latin	7,6,5	LATIN 305, 306, 307 (15 cr.) Satisfies foreign language requirement, and credits count toward Visual, Literary, and Performing Arts general education requirement for graduation.
Mathematics	7	MATH 124 (5 cr.) Satisfies Quantitative and Symbolic Reasoning basic skills requirement and/or Natural World general education requirement for graduation
Mathematics	6,5	MATH 120 (5 cr.) Satisfies Natural World general education requirement for graduation
Music	7,6,5	MUSIC 120 (5 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.
Near East	7,6,5	NEAR E 210 (5 cr.) Counts toward Visual, Literary, and Performing Arts or Individuals & Societies general education requirement for graduation.
Philosophy	7,6,5	No credit
Physics	7,6,5	PHYS 114/117, 115/118, 116/119 (15 cr.) Satisfies Natural World general education requirement for graduation. PHYS 114 also satisfies Quantitative and Symbolic Reasoning basic skills requirement for graduation.
Psychology	7,6,5	PSYCH 101 (5 cr.) Counts toward Individuals & Societies general education requirement for graduation.
Russian A	No credit. Consult the departmental adviser for case-by-case review.	
Russian B	7	RUSS 301, 302, 303 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.

Russian B	6	RUSS 301, 302 (10 cr.)
Russian B	6	RUSS 301, 302 (10 cr.)
Spanish A	No credit.	
Spanish B	7	SPAN 201, 202, 203 (15 cr.) Satisfies foreign language requirement, and credits count toward general education requirement for graduation.
Spanish B	6	SPAN 201, 202 (10 cr.)
Spanish B	5	SPAN 201 (5 cr.)
Swahili A	To be determined.	
Swahili B	7	AFRAM 306, 307, 308 (15 cr.) Satisfies foreign language requirement.
Swahili B	6	AFRAM 306, 307 (10 cr.) Counts toward foreign language requirement.
Swahili B	5	AFRAM 306 (5 cr.) Counts toward foreign language requirement.
Theater Arts	7,6,5	DRAMA 101, 201 (10 cr.) Counts toward Visual, Literary, and Performing Arts general education requirement for graduation.

REGISTRATION POLICIES

Full-Time Requirements

You should register for 12 or more credits to be considered full-time if you are an undergraduate or professional student. If you are a graduate student, you should register for 10 or more credits. It is important to note that differing criteria and standards for full-time enrollment exist for eligibility in certain programs. Consult the Financial Aid Office for its requirements on satisfactory student progress. The tuition schedule does not reflect full-time credit requirements for loan deferments, teaching assistantships or other programs.

Class Attendance

If you do not attend regularly scheduled class meetings during the first week of the quarter, you are subject to being dropped at the discretion of the teaching department to allow enrollment space for other students. Affected courses should be identified in the Time Schedule and/or posted in departmental offices. Do not assume that departments will automatically drop you from the course if you do not attend. If you are not going to go to class, you should drop the course through the registration system. Students who are registered for a course section but do not attend will be assigned a failing grade by the instructor. You may not attend a University course in which you have not been officially registered after the first two weeks of the quarter. An instructor may allow you to attend his or her class only if your name appears on the official class list from Office of the University Registrar. A faculty member may attend informally with the approval of the instructor.

Satisfactory Progress

If you are pursuing a baccalaureate degree, you are expected to make satisfactory progress toward the attainment of that degree and are expected to enter a major and graduate after completion of a reasonable number of credits. NOTE: Individual departments may have additional satisfactory progress requirements.

The 105-Credit Rule

Undergraduates must declare a major by the time they have earned 105 credits or a hold will be placed on their registration until they either declare a major, or meet with an adviser and receive a pre-major extension. The hold is placed on the student record when 105 or more credits have been completed. Transfer students who are admitted to the University with 105 or more credits are expected to declare a major before their second quarter at the UW, or obtain an extension from an adviser.

You will be granted a pre-major extension if your adviser decides that you are pursuing a reasonable goal, and have a good chance of gaining admission to your intended major. The extension will be granted for the number of quarters it should take you to complete the admission requirements of your major.

If your adviser feels that your choice of major is unrealistic, he or she will deny your request for an extension. You will not be allowed to register for subsequent quarters until you can present a reasonable degree plan. Since the intent of the rule is not to drop you from the University but to encourage you to meet with an adviser and plan for an attainable goal, if you need time to consider your options you will usually be given one or two quarters to do so, and then may be allowed additional time if necessary to meet the admission requirements of your new major.

You will receive a warning letter from the University as you approach 105 credits, if you have not yet declared a major. If you complete 105 credits and are still a pre-major, the registration system will not let you register for the next quarter. To avoid registration delays, meet with the appropriate adviser at least one quarter before you complete 105 credits.

The 210-Credit Rule

The University's satisfactory progress policy requires students to complete their undergraduate degree programs within 30 credits beyond the minimum required for the degree. Because most degrees require 180 credits, students generally must complete their programs by the time they earn 210 credits. Undergraduates who have completed over 210 credits will be notified by e-mail the third week of the quarter that a hold is being placed on their

registration due to lack of satisfactory progress. Students ineligible to graduate will be permitted to register for succeeding quarters only if they receive approval from their department and college after filing a graduation plan. Approval to enroll beyond 210 credits may not extend beyond two additional quarters.

Students receiving satisfactory progress registration holds should immediately contact their departmental academic adviser to file a graduation application or to initiate a satisfactory progress appeal.

Postbaccalaureate Students

Postbaccalaureate students are expected to be either preparing for admission into a degree program, seeking an additional baccalaureate degree, or working toward a certificate. If you are admitted as "postbaccalaureate undeclared," you must declare a major by the time you have earned 30 credits beyond your last degree. Once a degree objective has been declared, you must make progress toward that degree as evidenced by courses satisfactorily completed. College advisers may grant extensions beyond the 30-credit limit.

Excessive Course Repeats and/or Drops

The Committee on Admissions and Academic Standards may terminate your enrollment if you have demonstrated lack of academic progress as evidenced by excessive course repeats, course drops, or University withdrawals and cancellations. You may be reinstated with the approval of your college and the Committee. EOP students may be reinstated in consultation with the Office of Minority Affairs.

Registration Tampering

A student who tampers or attempts to tamper with the registration records of another student, including but not limited to dropping courses and adding courses, may be subject to disciplinary sanctions as defined in the Student Conduct Code (WAC 478-120).

Registration Abuse

The registration system is provided for the sole express purpose for students to register themselves into sections. Any use of the registration system other than for this purpose is considered abuse of the system. Such abuse includes, but is not limited to, selling one's seat in a class or otherwise registering for a section that one has no intention of taking.

To help conserve University resources and ensure the registration system is available to all, students are locked out of Web Registration after a specific number of excessive transactions are made per day. This threshold is sufficient for students' regular use and should not interfere with typical use. The use of robots and other automated tools to submit registration requests is expressly forbidden.

If your account is locked out for excessive use, you must wait until the registration system removes the lockout (within 24 hours). The Office of the University Registrar is unable to override a locked account.

GRADING SYSTEM

Standard Grading System

The UW uses a numerical grading system, with certain exceptions in the schools of Dentistry, Law, and Medicine. Instructors may report grades from 4.0 to 0.7 in 0.1 increments and the grade 0.0. The number 0.0 is assigned for failing work or if a student does not officially withdraw. Grades in the range 0.6 to 0.1 may not be assigned. Grades reported in this range are converted by the Office of the University Registrar to 0.0. Numerical grades may be considered equivalent to letter grades as follows:

Letter	Number	Note
A	4.0–3.9	
A-	3.8–3.5	
B+	3.4–3.2	

B	3.1–2.9	
B-	2.8–2.5	
C+	2.4–2.2	
C	2.1–1.9	
C-	1.8–1.5	
D+	1.4–1.2	
D	1.1–0.9	
D-	0.8–0.7	Lowest passing grade.
E	0.0	Academic failure. No credit earned.

Additional information on grades and scholarship rules may be obtained from the Graduation and Academic Records Office, 264 Schmitz.

The following letter grades also may be used:

- **N In Progress** — Indicates that the student is making satisfactory progress and a final grade will be given at the end of the quarter the work is completed. Used only for thesis, research, and hyphenated courses (courses not completed in one quarter) and courses numbered 600, 601, 700, 750, and 800. An “N” grade carries with it no credit or grade until a regular grade is assigned.
- **I Incomplete** — An Incomplete is given only when the student has been in attendance and has done satisfactory work until within two weeks of the end of the quarter and has furnished proof satisfactory to the instructor that the work cannot be completed because of illness or other circumstances beyond the student’s control. A written statement of the reason for the giving of the Incomplete, listing the work which the student will need to do to remove it, must be filed by the instructor with the head of the department or the dean of the college in which the course is given.

To obtain credit for the course, an undergraduate student must convert an Incomplete into a passing grade no later than the last day of the next quarter. For Spring Quarter, the following quarter is considered to be Fall Quarter. The student should never reregister for the course as a means of removing the Incomplete. An Incomplete grade not made up by the end of the next quarter is converted to the grade of 0.0 by the Office of the University Registrar unless the instructor has indicated, when assigning the Incomplete grade, that a grade other than 0.0 should be recorded if the incomplete work is not completed. The original Incomplete grade is not removed from the permanent record.

An instructor may approve an extension of the Incomplete removal deadline by writing to the Graduation and Academic Records Office no later than the last day of the quarter following the quarter in which the Incomplete grade was assigned. Extensions, which may be granted for up to three additional quarters, must be received by the Office of the University Registrar before the Incomplete has been converted into a failing grade. In no case can an Incomplete received by an undergraduate be converted to a passing grade after a lapse of one year.

In no case shall an Incomplete on the record at the time a degree is granted be subsequently changed to any other grade.

An Incomplete grade does not count for registered hours nor in computation of grade-point averages.

For DL-suffix courses that do not follow the quarter schedule, an Incomplete shall be given only when the student has done satisfactory work to within two weeks of the maximum term for completion of the course, as specified at the time of registration. In order to obtain credit for the course, a student must convert an Incomplete into a passing grade by the end of the quarter following the one in which the Incomplete was given. All other provisions and deadlines of subsections a. through d. shall also apply.

- **S Satisfactory grade** for courses taken on a satisfactory/not-satisfactory basis — An S grade is automatically converted from a numerical grade of 2.0 or above for undergraduates. The grade S may not be assigned directly by the instructor, but is a grade conversion by the Office of the University Registrar. Courses so graded can only be used as free electives and cannot be used to satisfy a University, college, or department course requirement. S is not computed in GPA calculations.
- **NS Not-satisfactory grade** for courses taken on a satisfactory/not-satisfactory basis — A grade less than 2.0 for undergraduates is converted to NS. NS is not included in GPA calculations. No credit is awarded for courses in which an NS grade is received.
- **CR Credit awarded** in a course offered on a credit/ no-credit basis only or in courses numbered 600, 601, 700, 750, and 800 — The minimum performance level required for a CR grade is determined, and the grade is awarded directly, by the instructor. CR is not computed in GPA calculations.
- **NC Credit not awarded** in a course offered on a credit/ no-credit basis only or in courses numbered 600, 601, 700, 750, and 800 — The grade is awarded directly by the instructor and is not included in GPA calculations.
- **RD Registrar Drop** for a drop made after the second week of the quarter, whether made during the quarter (current quarter drop) or after the quarter (former quarter drop), as well as complete withdrawal from the University. An official withdrawal is not computed in GPA calculations. Students who do not officially drop a course(s) will receive a grade of 0.0. For DL-suffix courses that do not follow the quarter schedule, the grade RD shall be assigned to any course dropped after the fourteenth calendar day after the start of the course and more than two weeks before the end of the maximum term for completion of the course, as specified at the time of registration. The date of withdrawal shall be noted on the transcript.

Nontraditional Grading Options

Credit/No Credit—Only as a Course Option

With appropriate departmental review and approval, a course may be offered on a credit/no credit-only basis. The standard for granting credit in credit/no credit-only courses under this option is the demonstration of competence in the material of the course to the instructor’s satisfaction.

Satisfactory/Not-Satisfactory Grading Option

You may elect to take certain courses on a satisfactory/not satisfactory (S/NS) basis.

When registering through Personal Services on MyUW, select the Grade Option box to select S/NS grading option. The S/NS grade option can be elected through the day shown on the academic calendar for the current quarter. NO EXCEPTIONS. A \$20 fee is charged beginning the eighth calendar day of the quarter.

As an undergraduate, a course in which an S is earned may not be used to satisfy any department, college, or University requirement, except that the credits may be applied to the minimum of 180 credits required for graduation. Each instructor will report numerical grades to the Registrar, who will convert satisfactory grades (2.0 or greater) to S, and unsatisfactory grades (less than 2.0) to NS for the student’s transcript. No more than 25 S/NS credits may apply toward an undergraduate degree.

If you are a graduate student and earn grades of 2.7 or above, you will receive a grade of S while 2.6 or below are recorded as NS. With the approval of your graduate program adviser or the Supervisory Committee Chairperson, you may elect to take any course for which you are eligible outside of your major academic unit on an S/NS basis. In cases of withdrawal, the W is recorded. Neither S nor NS is included in the grade-point average.

Grade-Point Average (GPA)

The University’s cumulative GPA is based solely on courses taken in residence at the UW; this includes some, but not all, courses taken through UW Extension. The UW transcript also reflects grades for UW Extension course

work that is not residence credit, and the grades for credit by examination. These latter grades do not affect the University cumulative GPA.

Computation of GPA

The GPA for graduation is computed by dividing the total cumulative grade points by the total graded credits attempted for courses taken in residence at the University. Grade points are calculated by multiplying the number of credits by the numeric value of the grade for each course. The sum of the grade points is then divided by the total graded credits attempted. Courses elected on an S/NS basis are counted as follows: Satisfactory grades are printed on the permanent record as an S and do not count in the quarterly or cumulative GPA, but they do count as credits earned toward graduation. Not-satisfactory grades, NS, do not count in the quarterly and cumulative GPA and do not count as credits earned toward graduation.

EXAMPLE 1

Course	Credits	Grade	Grade Points
CLAS 205	3	CR	
OCEAN 101	5	2.7	= 13.5
HIST 111	5	4.0	= 20.0
SCAND 100	2	3.3	= 6.6
Total credits earned toward graduation	15		
Total graded credits attempted	12		40.1

$$\text{GPA} = 40.1 \div 12 = 3.34$$

The total graded credits attempted, not the credits earned toward graduation, are used in computing the GPA.

EXAMPLE 2

Course	Credits	Grade	Grade Points
ENGL 121	5	2.3	= 11.5
OCEAN 101	5	0.0	= 0.0
SPHSC 100	3	2.7	= 8.1
ART 121	5	I	= 0.0
Total credits earned toward graduation	8		
Total graded credits attempted	13		19.6

$$\text{GPA} = 19.6 \div 13 = 1.51$$

The student attempted 18 credits, but only 13 are graded, because the Incomplete (I) is not computed in the GPA. The 0.0 for OCEAN 101 is computed in the GPA, but no credit is awarded toward graduation.

If the work in ART 121 is not made up by the end of the next quarter, the I is converted to a numeric grade and the GPA is recomputed.

Repeating Courses

Undergraduates

With the approval of the academic department offering the course, an undergraduate may repeat a course once. Both the original grade and the second grade are computed in the GPA but credit is allowed only once.

Veterans receiving benefits must receive approval from the Veterans Center before a course is repeated.

Graduates

Graduate students may repeat any course. Both the original grade and the second grade are computed in the GPA. Subsequent grades will not be included, but will appear on the permanent record. The number of credits earned in the course will apply toward degree requirements only once. Veterans receiving benefits must receive approval from the Veterans Center before a course is repeated.

Grading Procedures

Change of Grade

Except in case of error, no instructor may change a grade that he or she has turned in to the Registrar. Grades cannot be changed after a degree has been granted.

Grade Appeal Procedure

A student who believes he or she has been improperly graded must first discuss the matter with the instructor. If the student is not satisfied with the instructor's explanation, the student, no later than ten days after his or her discussion with the instructor, may submit a written appeal to the chair of the department, or in a non-departmental college, to the dean, with a copy of the appeal also sent to the instructor. Within ten calendar days, the chair or dean consults with the instructor to ensure that the evaluation of the student's performance has not been arbitrary or capricious. Should the chair believe the instructor's conduct to be arbitrary or capricious and the instructor declines to revise the grade, the chair (or the dean in a non-departmental school or college), with the approval of the voting members of his or her faculty, shall appoint an appropriate member, or members, of the faculty of that department to evaluate the performance of the student and assign a grade. The dean and Provost should be informed of this action.

Once a student submits a written appeal, this document and all subsequent actions on this appeal are recorded in written form for deposit in a department or college file.

Grade Reports

Grades are not mailed. You may display and print a grade report through MyUW.

PROCEDURES AND FEES

The University and its colleges and schools reserve the right to change the fees, the rules, and the calendar regulating admission and registration; the instruction in and the graduation from the University and its various divisions; and any other regulations affecting the student. The University also reserves the right to withdraw courses and programs at any time.

It is the University's expectation that all students follow University regulations and procedures as they are stated in the General Catalog. Appeals may be filed with the student's dean or with the Vice Provost for Student Life in nonacademic matters. Students are expected to observe the standards of conduct contained in the Student Conduct Code (WAC 478-120).

Registration

www.washington.edu/students/reg/regelig.html

Instructions for registration are available on MyUW (myuw.washington.edu). Notification is e-mailed to each student quarterly with information about registration for the next quarter.

Registration Period I

www.washington.edu/students/reg/addpolicy.html

Designed to accommodate currently registered matriculated students and students eligible to register under the Quarter Off Eligibility Policy, Registration Period I occurs during the latter half of the quarter preceding the quarter for which the student is registering. However, currently enrolled students registering for autumn quarter do so in spring quarter.

Registration Period II

Registration occurs after Registration Period I closes and is intended primarily to accommodate new and returning students. Continuing students who fail to register during Registration Period I may register during this period. Students who have not completed their initial registration by the end of this period (update and selection of address information, insurance/optional charges, and ASUW membership) are charged a Late Registration Fee.

Registration Period III

All students may register or make course changes during this period. Dropped courses do not appear on the transcript. Students are charged a Change of Registration service fee for registration changes made after Period III. One fee is charged for all changes occurring during the same day. A tuition forfeiture is charged for total credit reductions after Period III if applicable. See Fee Forfeiture section.

Late Add Period

All students may register or make registration changes during this period. All added courses require an entry code or faculty number. A Change of Registration service fee is charged.

Unrestricted Drop Period

www.washington.edu/students/reg/wdpolicy.html

Courses dropped during this period will not appear on the transcript. A Change of Registration fee is charged.

Late Course Drop Period (Current Quarter Drop)

Students may drop one course each academic quarter after the fourteenth calendar day of the quarter through the online registration system. Students are allowed to drop more than one course through the adviser-assisted course-drop process. All course drops made during the Late Course Drop Period are recorded on the transcript with an RD. A Change of Registration service fee is charged.

Credits Required for Full- or Half-Time Status Requirements

www.washington.edu/students/reg/regpol.html

Some agencies require that a student have full-time status to receive maximum benefits. To be classified as a full-time student by the University, a professional or undergraduate student must register for and complete at least 12 credits per quarter and a graduate student must register for and complete at least 10 credits per quarter. To be classified as a half-time student by the University, a professional student must register for at least 6 credits per quarter and a graduate student must enroll for at least 5 credits per quarter.

Restrictions on Attending Classes

www.washington.edu/students/reg/regpol.html

No person, other than a faculty member attending informally with the approval of the instructor, may attend a University course in which that person has not been registered. An instructor may allow a student to attend his or her class only if the student's name is on the official class list from the Office of the University Registrar. An unregistered student may attend through the fourteenth calendar day of the quarter if the student is on an official wait list for the course.

Adding Courses/Permission Guidelines

www.washington.edu/students/reg/regopt.html

For reasons of public safety and instructional quality, it is important to limit course enrollment to the approved classroom capacity. The Office of the University Registrar monitors course enrollment and accepts student registration in fully enrolled courses according to the following guidelines:

1. Through the second week of the quarter, departments may choose to overload courses up to 115% of the room capacity to offset anticipated student course drops and withdrawals as demonstrated by past registration activity. Students must secure entry codes from instructors or departments to add closed courses. However, if enrollment is at 115% of room capacity, registration requests are denied. Students

should be informed when receiving entry codes to overload courses that registration is not guaranteed if enrollment exceeds 115% of room capacity. If centralized room-capacity records do not correctly reflect the actual seating capacity, notification should be made to the Room Assignments/Time Schedule Office in the Office of the University Registrar.

2. Students may add courses during the Late Add Period or through the twenty-first calendar day of the quarter. Adds after the seventh calendar day of the quarter require an entry code or faculty number. Departments may also add students to departmental courses during this period through departmental registration screens. To add courses after this period, students must submit a faculty-approved Late Add Petition form to the Registration Office.
3. A course may not be changed to or from an audit registration after the first two weeks of the quarter. See below for transcript entry.

Dropping a Course

www.washington.edu/students/reg/wdpolicy.html

Students dropping a course during the first two weeks of a quarter shall have no entry on their permanent academic transcript. If all courses are dropped, then a complete withdrawal date is recorded on the transcript.

A course drop made during the third through the seventh weeks of the quarter is recorded on a student's transcript with a W grade and a number designating the week of the quarter in which the course drop was transacted. Only one drop after the fourteenth day of a quarter is permitted each academic year (autumn through summer quarter). A student who does not officially drop a course through the registration system or the offering department is given a grade of 0.0.

Students receiving or applying for financial aid should check with the Office of Student Financial Aid, 105 Schmitz, 206-543-6101, before dropping a class because it may affect their eligibility.

Students receiving veterans' benefits should contact the UW Veterans Center, 520 Schmitz, when dropping courses.

Complete Withdrawal from the University for a Registered Quarter

www.washington.edu/students/reg/wdoffleave.html

Once registered, a student must officially withdraw if he or she later chooses not to attend the University for the registered quarter. Official withdrawal must be made by the fifth day of the quarter for the student to avoid further financial obligation (see Tuition, Fees, and Special Charges for refund information on withdrawals).

1. To withdraw from a quarter, students may drop all their courses via the online registration system prior to the Late Course Drop Period.
2. To withdraw from a quarter during the Late Course Drop Period, students should use the adviser-assisted drop process listed above under 'Dropping a Course.'
3. Students who drop the last course on their schedules will be considered withdrawn for the quarter. Students who drop courses beginning the eighth calendar day of the quarter are charged a Change of Registration service fee per day for any course drops.
4. Submission of a graduate On-Leave application does not constitute official withdrawal from the University. Refer to the grading section in the Graduate School: Graduate Study section.
5. Students receiving veterans' benefits should immediately notify the Veterans Center of withdrawal.
6. Students with a scholarship or loan awarded through the University should notify Student Fiscal Services.
7. Students who withdraw due to conscription into the armed forces or who are called to active duty military service may be entitled to either a full refund of tuition and fees or academic credit, depending on when in the quarter official withdrawal occurs. Students should contact the Registration Office for complete information.

ADDITIONAL INFORMATION

Address Change

www.washington.edu/students/reg/address.html

Students are responsible for notifying the Office of the University Registrar when their address changes. Individual addresses may be viewed and updated through MyUW. A confirmation message will be sent to the student's e-mail address. The mailing of notices to the last address on record constitutes official notification.

Residence Classification Requirements

www.washington.edu/students/reg/residency.html

Residence classification information is available from the Graduation and Academic Records Office, 264 Schmitz.

Student Identification Cards

www.washington.edu/students/reg/id.html

All new students should go to the Husky Account and ID Card Center, Ground Floor, Odegaard Library, to be issued a permanent student identification card. Photo identification (such as a driver's license, state ID card, or passport) is required to obtain a student ID card. Returning students who have not retained a previous ID card should obtain a new one. The student ID card is used for a variety of campus services. It is the student's means of identifying his or her status as a student at the University.

Registered students whose ID cards have been lost or stolen can have them replaced at the Student ID Card Center. Students who request such replacement are charged a nonrefundable fee. Replacement of cards made invalid by changes in a student's name or rendered unusable by normal wear and tear is provided without charge upon return of the original card to the Husky Account and ID Card Center. Two pieces of identification (one with a photo) are required to obtain a replacement card.

Cards that have been tampered with or misused may be confiscated by the University agency or department involved, and the incident may be referred to the Office of the Vice Provost for Student Life for appropriate University action.

Transcripts

www.washington.edu/students/reg/transcripts.html

Official copies of student academic records at the UW must bear the official seal of the University, the signature of the Registrar, and the date of issue.

Transcript Fee

A charge of \$11 is required for each transcript.

Transcripts from Other Schools

A transcript covering a student's previous secondary and college education that has been submitted to the University as a requirement for admission becomes part of the official file and is not returned to the student. Any student who desires transcripts of his or her course work undertaken elsewhere must order official transcripts from the institution. The University does not issue or certify copies of transcripts from other institutions.

Veterans and Children of Totally Disabled Veterans and Personnel in the Armed Forces

Information on educational benefits and tuition reduction programs for veterans and their dependents is available from the Veterans' Center, 520 Schmitz. Veterans and members of the armed forces who apply for admission to the University are subject to the same minimum requirements as regular students and are expected to enroll in accordance with University requirements.

The University's academic programs of study are approved by the Washington State Higher Education Coordinating Board's State Approving Agency (HECB/SAA) for enrollment of persons eligible to receive educational benefits under Title 38 and Title 10 USC.

TUITION, FEES, AND SPECIAL CHARGES

Estimated Expenses

The University's official estimated expenses calculator is at <https://www.washington.edu/opb/tuition-fees/estimated-annual-cost-of-attendance-for-first-year-undergraduates/>.

New Undergraduates — New Student Enrollment and Orientation Fee

As a new undergraduate, you must return the Enrollment Confirmation Form and the \$347 nonrefundable New Student Enrollment and Orientation Fee (NSEOF) to confirm your intention to enroll at the University of Washington. If you have applied for financial aid and you and your family cannot afford the \$272 NSEOF, you may apply for a fee deferral. Write to the Office of Admissions; include your name, student number, phone number, and reason for the deferral. Send your letter, along with the Enrollment Confirmation Form. Any deferral will be conditional on the verification of your financial aid status.

Returning Undergraduates, Graduates and Professional Students — \$100 Enrollment Confirmation Deposit

Returning undergraduates, new graduate students, and new students in a professional program are required to confirm his or her intention to enroll by paying a nonrefundable \$100 Enrollment Confirmation Deposit (not required of students admitted summer quarter). The \$100 is applied toward tuition and fees assessed for the quarter for which the student is determined to be admissible and subsequently enrolls. A student who pays the fee for a given quarter but does not register in that quarter is not entitled to a refund except by petition in the situation listed below.

1. A new or returning matriculated student who is unable to obtain courses required for the completion of the degree or certificate program, or courses which are determined by an appropriate academic adviser to be acceptable alternate courses. A written verification from the appropriate academic adviser must be attached to this petition. Such requests for refund must be submitted by Friday of the second week of the quarter. A new or returning matriculated student who, after meeting with an appropriate academic adviser, determines that the program for which admission was granted differs substantially from what the student was led to expect based upon earlier available information. This petition for refund must be submitted before the student registers for courses and in no case later than the first day of the quarter for which admission has been granted. A written verification from the appropriate academic adviser must be included.
2. A new or returning student who applies by the prescribed deadline for financial aid administered by the University's Office of Student Financial Aid, and who cannot be awarded financial aid adequate to his or her needs as determined by that office, and who is therefore unable to attend the University. This petition and a copy of the Notice of Award and Acceptance must be submitted no later than two weeks after receipt of notice of the financial aid award.
3. A new or returning student who is unable to attend the University because of pregnancy, disability, or death, or because of being called involuntarily into the military service of the United States or into civil duty. Documentation is required.

Fee Payment

f2.washington.edu/fm/sfs/

An obligation to pay tuition and fees in U.S. dollars is incurred when a student registers. A fee statement is mailed to the student's address on file with the Office of the University Registrar.

Payment of this obligation is due by Friday of the third week of the quarter. Nonpayment of tuition and fees by the due date results in a late payment charge. One-half of tuition is assessed when registration is canceled for nonpayment of tuition and fees. The Student Guide should be consulted for fees and fee payment schedule applicable to summer quarter only.

When the payment is not in conformance with the tuition and fee billing, specific instructions on how the payment is to be applied must accompany

the payment. In the absence of instructions, the University makes a reasoned interpretation of the student's intent and accounts for the funds accordingly. The student number must be specified on all payments.

Fees listed above do not apply to students registered through UW Professional and Continuing Education.

Special Course and Laboratory Fees

The amounts listed above cover normal University charges for course registration. Some courses, however, have extraordinary expenses associated with them, and in such cases the University may charge additional fees in amounts that approximate the added instructional or laboratory costs.

Other Fees

- **Auditors:** There is no reduction in fees for auditors.
- **Admission Application Fees:** Graduate, \$85 (online); Medicine, Dentistry, \$35; Law, \$60. Former students returning in the same classification, \$80.
- **On-Leave Registration Fee:** This fee of \$25, charged to graduate students only, provides for a maximum on-leave period of four successive academic quarters or any part thereof and is not refundable.
- **Late Registration/Reregistration Fees:** A late registration service charge of \$25 is assessed when a student registers after the last scheduled day of Period II registration and through the fourteenth day of the quarter. Students registering after the fourteenth day pay a \$75 Late Registration Fee. Waiver or refund of the Late Registration Fee may be petitioned in the Registration Office. Waiver or refund of the \$75 reregistration fee may be petitioned in the Student Fiscal Services Office.
- **Change of Registration Service Fee:** A charge of \$20 is made for any number of add, drop, or change transactions processed during a given day beginning the eighth calendar day of the quarter.
- **Transcript Fees:** A charge of \$11 is required for each transcript. Additional costs may apply, depending on the type of transcript requested.
- **Replacement Fees:** Duplicate diploma, \$20; student identification card, \$10.
- **U-PASS Fee:** The U-PASS is valid on all Metro and Community Transit routes at all times and provides parking privileges to carpoolers, riding privileges to vanpool and Night Ride passengers, and merchant discounts. The quarterly fee of \$80 (subject to change) is included on the tuition bill.

All fees are subject to change without notice.

Cancellation of Tuition

Registered students must pay full tuition and fees. Tuition may be canceled or reduced if a student makes an official withdrawal or drops a course during the period specified by state statute. Refunds are given when a cancellation or reduction results in an overpayment.

Continuing Students

1. A student who withdraws on or before the seventh calendar day of the quarter does not pay tuition.
2. A student who withdraws after the seventh calendar day through the thirtieth calendar day of the quarter must pay one-half tuition.
3. A student who withdraws after the thirtieth calendar day must pay full tuition.

New and Returning Students

1. A student who withdraws on or before the seventh calendar day forfeits the \$347 New Student Enrollment and Orientation fee or the \$100 Enrollment Confirmation Deposit but does not pay the regular tuition.
2. A student who withdraws after the seventh calendar day through the thirtieth calendar day of the quarter must pay one-half tuition. The \$100 Enrollment Confirmation Deposit is applied toward payment of tuition.
3. A student who withdraws after the thirtieth calendar day of the quarter must pay full tuition. The \$100 Enrollment Confirmation Deposit is applied toward payment of tuition.

Fee Forfeiture

A student who does not completely withdraw but drops one or more courses may be eligible for lower tuition, depending on the total number of credits remaining after the course drop and on the time period when the drop was made. Tuition for students making a course drop on or before the seventh calendar day of the quarter is determined by the total credits remaining. Tuition for students making a course drop after the seventh calendar day through the thirtieth calendar day of the quarter is computed on the total credits remaining plus one-half the difference between the old tuition and the new tuition. There is no cancellation or reduction in tuition for courses dropped after the thirtieth calendar day of the quarter.

Fee Refund

When a fee payment is made by check, a waiting period is required before a refund can be authorized. An application for refund may be refused, unless it is made during the quarter in which the fees apply. A student who withdraws for disciplinary reasons forfeits all rights to refund or cancellation of any portion of his or her fees.

Financial Obligations

The Comptroller is authorized under certain circumstances to place a hold (administrative) on the records of any student who fails to pay amounts due the University.

Until this hold is cleared, the University (1) does not release the student's record or any information based upon the record, (2) does not prepare transcripts or certified statements, and (3) denies registration.

In cases of serious financial delinquency, the Comptroller, with the consent of the University Registrar, may order that a student's registration be canceled and that privileges of attendance be withdrawn.

An administrative hold or cancellation also may occur when a student has not complied with other University rules, procedures, or obligations. The hold may be placed on the student's record by the authorized University office responsible for enforcement of the rule, procedure, or obligation involved. The student is not permitted to register for any subsequent quarter or to obtain a transcript of his or her record or a certified statement except on the written release of the office that placed the hold.

Tuition Exemptions and Reductions

www.washington.edu/students/reg/tuition_exempt.html

Faculty, Staff, and Washington State Employee Tuition Exemption Programs

Eligible faculty, staff, and state employees admitted to the University may request an exemption for a maximum of 6 credits each quarter under these tuition exemption programs. Applicable tuition will be charged for credits that exceed the 6-credit limit. Because such students are registered on a space-available basis, they must register after other students. The quarterly Time Schedule lists registration dates when students enrolling under these exemption programs may register. Eligibility information may be obtained from either the Professional & Organizational Development Office, or the Registration Office.

"Access" Program for Older Adults

www.washington.edu/students/reg/access.html

The UW allows Washington residents who are 60 years of age or older to audit certain courses on a space-available basis. Students who attend the University under the Access Program are limited to two courses per quarter. There is a nominal registration fee. As auditors, students do not receive credit, participate in discussions, complete laboratory work, or take examinations.

Tuition Reductions

The following categories of students may be eligible for reduced tuition and fees. Students in these categories may contact the offices shown for information or to obtain an application. The reductions are established by legislative mandate and may be revoked by the legislature at any time.

Tuition Exemptions

Category	Contact Office
Faculty/Staff, Washington State Employee Tuition Exemption Program	Professional and Organizational Development (206)543-1957 pod@u.washington.edu - or - Registration Office (206) 543-4000, regoff@u.washington.edu
Senior citizens under the Access Program	Registration Office (206) 543-4000, regoff@u.washington.edu

Tuition Reductions

Category	Contact Office
Active duty military assigned to Washington and their children and spouses	Office of Residency Classification 264 Schmitz Hall (206) 543-5932 request@u.washington.edu
Award recipient under the Washington State Scholars and Washington Award for Vocational Excellence (WAVE) programs	Registration Office (206) 543-4000 regoff@u.washington.edu
Children of POWs or MIAs	Veterans Center 520 Schmitz Hall (206) 543-6122 specserv@u.washington.edu
Children of Washington law enforcement officers or firefighters who died or became totally disabled in the line of work	Veterans Center 520 Schmitz Hall, (206) 543-6122 specserv@u.washington.edu
Financial Aid Waivers	Office of Financial Aid 172 Schmitz Hall (206) 685-3504
Graduate Merit Waivers	The Graduate School G-1 Communications (206) 543-7152
Immigrants holding a refugee classification who have been in the United States less than one year	Office of Residency Classification 264 Schmitz Hall (206) 543-5932 request@u.washington.edu
Intercollegiate Athletics Gender Equity	Department of Intercollegiate Athletics Student Athlete Academic Services (206) 543-0611
Medical students in the WWAMI Program	School of Medicine Office of Academic Affairs A300 Health Sciences (206) 543-5560
Students of foreign nations in exchange programs	International Programs and Exchanges 453 Schmitz Hall (206) 543-9272

Students participating in the WICHE Program	Student Fiscal Services 129 Schmitz Hall (206) 543-4694
Students registered in excess of 18 hours if registered in 1st professional programs of medicine, dentistry, doctor of pharmacy or law	Budget Office 128A Gerberding Hall (206) 685-9962
TAs/RAs with half-time appointments	Graduate School 201 Gerberding Hall (206) 543-7152
UW faculty members and their children and spouses who are not Washington state residents	Academic Human Resources 85 Gerberding Hall (206) 543-5630
UW staff members and their children and spouses who are not Washington state residents	Office of Residence Classification 264 Schmitz Hall (206) 543-5932
Veterans who served in the Persian Gulf combat zone in 1991 <i>Repealed July 2005</i>	Veterans Center 520 Schmitz Hall (206) 543-6122 specserv@u.washington.edu
Veterans who served in Southeast Asia during the period of August 5, 1964-May 7, 1975 <i>Repealed July 2005</i>	Veterans Center 520 Schmitz Hall (206) 543-6122 specserv@u.washington.edu
Veterans, Reservists, or Washington State National Guard members who served under Title 10 or Title 32	Veterans Center 520 Schmitz Hall (206) 543-6122 specserv@u.washington.edu

STUDENT LIFE AND STUDENT SERVICES

Freshman Convocation

Freshman Convocation is an academic ceremony involving the President of the University, other administrators, student leaders, and members of the Board of Regents and the faculty, to welcome and honor new freshmen and their families. It is held annually on the Sunday preceding the first day of autumn quarter. The President presides over the ceremony, which features remarks by a distinguished member of the faculty. Neither tickets nor reservations are required for the Convocation. Formal invitations are mailed in mid-August. A no-host brunch, which requires tickets, is held in the Student Union Building (HUB) and precedes the Convocation.

Student Health Insurance Program

An accident and sickness insurance plan is available to matriculated University students (Seattle campus) and dependents on a voluntary basis. A student may enroll in the plan at the time of registration through the seventh calendar day of each quarter. The appropriate premium is paid by the quarterly tuition due date. Brochures describing the insurance eligibility, coverage, and costs are available at the Office of Business Services and Student Insurance, Hall Health Primary Care Center, and the HUB.

The University also sponsors a field-trip accident insurance plan. Application forms may be requested from the Risk Management Office, 22 Gerberding, Box 351276, (206) 543-3419.

Insurance for Foreign Students

All students from foreign countries are required to have a health-and-accident insurance policy in force while registered at the University. This may be achieved by purchasing either the student accident and sickness insurance offered through the University or other coverage, proof of which must be furnished to the International Services Office and for which an insurance waiver must be obtained. To avoid cancellation of registration, international

students must pay tuition and either pay for the University-sponsored insurance or have a waiver on file by the tuition due date.

International Services Office

The International Services Office provides assistance to international students, scholars, and faculty in meeting United States Immigration and Naturalization Service regulations dealing with such matters as maintaining lawful status, extensions of stay, transfers of schools/programs, and working authorizations. The office also provides a formal orientation to the campus and community for new international students and visiting faculty; advice and counsel for educational, financial, and personal problems; and dissemination of important and timely information through newsletters and workshops. The office is located in 459 Schmitz, (206) 543-0841.

UW Veterans' Center

The Veterans' Center, 520 Schmitz, assists students eligible for veterans' educational benefits.

Office of Student Financial Aid

The Office of Student Financial Aid, 105 Schmitz, administers federal, state, and private financial aid programs designed to help form of grant aid, scholarships, long-term loans that must be repaid after leaving school, and work opportunities. Information describing the different programs, eligibility criteria, and application procedures may be viewed at www.washington.edu/students/osfa or may be obtained by calling (206) 685-9535. To be eligible for financial aid, an individual must be a citizen or permanent resident of the United States and be admitted to the University as a matriculated, degree-seeking student. Priority consideration is given to students who apply before the University's financial aid application deadline of February 28 (e.g., February 28, 2014, for the academic year beginning in September 2014).

The Office of Student Financial Aid also administers a short-term loan program for full-time students who find themselves in temporary financial difficulty. University students may take advantage of the short-term loan program without applying for financial aid.

Student Legal Services

Student Legal Services (SLS) provides legal advice, counseling, negotiating, and court representation in many civil and criminal matters. All currently enrolled undergraduate and graduate students at UW Seattle are eligible for a free initial consultation. If additional services are needed, there is an hourly charge, plus an office supply fee. Students are responsible for court costs, if any. The office is staffed by third-year law students supervised by licensed attorneys.

Student Publications

The Daily is published Monday-Friday throughout the academic year and is distributed in the mornings on campus without charge. During summer quarter, The Daily is published once a week. Any student with an interest in journalism may serve on The Daily staff.

Student Union Facilities

The Husky Union Building (Student Union Building) and the South Campus Center are the principal centers of student activities and programs on the campus.

Husky Union Building

The Husky Union Building (HUB), located in the center of campus, is currently undergoing renovation, to reopen in autumn quarter 2012. Most of the offices that resided in the HUB have relocated to Condon Hall during construction.

South Campus Center

The South Campus Center, located on the shore of Portage Bay, serves as the central meeting place for students and faculty on the southern end of campus. Facilities and services similar to those in the HUB are available and include meeting and conference rooms, display cases, a hair-styling shop, amusement games, a cash machine, a branch of the University Book Store, a newsstand, and lounges with beautiful views of Portage Bay.

Student Activities and Organizations

Student Activities Office

The services provided by the Student Activities Office (SAO) include assisting student organizations in understanding University policies and procedures, providing technical help in the planning and conduct of student events, and furnishing information and assistance in order that they may represent themselves and their interests in an effective manner. Advisers are available to assist students involved in group activities with budget and program planning, advertising, orientation to campus resources, and leadership and organizational skill development. Underlying the SAO service functions is a desire to provide an environment in which students can learn from their experiences in extracurricular activities as a supplement to their classroom experiences. Additional information about the services is available from the Student Activities Office, 232 HUB, (206) 543-2380.

Student Organizations

Students at the University are encouraged to become active in at least one of the campus's approximately 450 voluntary student organizations, which include honorary, professional, and social organizations; service clubs; activity groups; and religious and fraternal organizations. Voluntary student organizations that register with the University receive various benefits and services to assist their respective activities. Additional information is available from the Student Activities Office, 232 HUB, (206) 543-2380.

Associated Students of the University of Washington

The Associated Students of the University of Washington (ASUW) is a voluntary, nonprofit association of students designated by the University Board of Regents to carry out a variety of student activities and to represent student interests. In order to vote in ASUW elections, hold ASUW office, or be employed by the ASUW, a student must be a member of the ASUW. Membership is open to all students by providing an affirmative answer on the University registration form each quarter.

The ASUW's annual budget is supported by the services and activities fees paid as part of tuition and from program revenue. The government of the ASUW is headed by an eleven-member board of directors elected by the student body each year, and one representative from the Graduate and Professional Student Senate. The ASUW maintains agencies and service groups to provide students with a varied program of activities during the school year and nominates students for service on a number of University committees. ASUW services include the Experimental College, a bicycle repair shop, and an ongoing film and entertainment series. Questions regarding the ASUW and its services should be directed to either the ASUW Office, 121/131 HUB, (206) 543-1780, or the Student Activities Office, 232 HUB, (206) 543-2380.

Recreational Sports

The Department of Recreational Sports Programs provides a comprehensive program of more than seventy sports and fitness activities designed to meet the diverse needs and interests of students. To provide this service, the department manages recreation facilities that include the Intramural Activities Building (IMA), Golf Driving Range, Waterfront Activities Center (canoe rentals), outdoor facilities (Denny Field and tennis courts), Hutchinson Hall swimming pool and locker rooms, and the practice Climbing Rock. Programs and facilities are open to students with a valid student identification card (Husky card). For additional information visit the Recreational Sports website at depts.washington.edu/ima/.

Student Rights and Responsibilities

Student Conduct Code

The University Board of Regents has adopted a Student Conduct Code, which applies to both the academic and nonacademic conduct of students while they are attending the University. The Code specifies standards of conduct, jurisdiction for hearing disciplinary matters, and due-process procedures. Students may obtain copies of the code through either their advisers or the Office of the Vice Provost for Student Life, 101 Gerberding Hall.

Computer Use Policy

All faculty, staff, and students who use any computer at the University are responsible for using computer resources in an ethical and legal manner. For example, it is not appropriate to share computer accounts or use them for

commercial purposes, to send unwanted e-mail, or to distribute copyrighted software, music, or images. Those who do not follow the rules could lose their UW computing privileges. For detailed information see www.washington.edu/itconnect/policy/.

University Policy on Student Education Records

A copy of the University's policy on a student's right to inspect his or her education records and the University's responsibility to maintain the confidentiality of such records is located at each departmental reference station. The policy is filed under the Washington Administrative Code 478-140-010. Copies of the policy are available at the Registration Office, 225 Schmitz.

Sexual Harassment Complaint Procedure

Students, staff, faculty, and other users of University services who have a concern or complaint regarding sexual harassment may contact either the University Ombudsman, (206) 543-6028, or the University Complaint Investigation and Resolution Office, (206) 616-2028. Personnel in these offices provide assistance in resolving concerns and complaints. Also, University staff may contact their human resources representative about sexual harassment concerns.

Office of Minority Affairs and Diversity

Fostering diversity is the ongoing work of the entire University, but it is a special responsibility of the Office of Minority Affairs and Diversity (OMAD). To this end, OMAD provides a variety of services to undergraduates from

underrepresented and economically and educationally disadvantaged backgrounds. These services include a statewide Recruitment and Outreach Office whose staff provides assistance with the admissions and financial aid process in high schools and community colleges throughout Washington state. Through its Counseling Center, OMAD offers academic advising, financial aid advocacy, housing assistance, and other services related to life on campus. OMA's services are available mainly to students who, following admission, are invited to become members of the Educational Opportunity Program (EOP). Participation in EOP is limited to students who are U.S. citizens or permanent residents, with priority given to Washington state residents. OMAD's other services are open to EOP participants and other students as resources permit.

The Office of the Vice President for Minority Affairs and many of OMAD's services are located on the third floor of Schmitz Hall. For information about OMAD's program locations and services, call (206) 685-0774.

Residence Halls

Students like the convenience of living in the residence halls (being close to classes and having access to a variety of dining options), but that's just the beginning. Those who live on campus are part of a community that offers opportunities for fun, friendships, personal development and academic success.

Undergraduate Study

Office of Undergraduate Academic Affairs

www.washington.edu/uaa/

The University of Washington established the Office of Undergraduate Academic Affairs (UAA) in 1992 (as the Office of Undergraduate Education) in order to make undergraduate education a more visible and central part of the University's work and purpose. UAA offers opportunities and resources for students and their families, faculty members, and academic departments and programs. UAA's unique mission of ensuring excellence in undergraduate teaching and learning is critical to the University's commitment to providing students a rich academic experience.

Individualized Studies

www.washington.edu/students/genecat/academic/indivstudies.html

Individualized Studies provides students an opportunity to obtain an individually designed interdisciplinary degree through the College of Arts and Sciences. Students may also pursue a major in one of several existing interdisciplinary programs. Requirements for the Bachelor of Arts or Bachelor of Science degree are shown in the Arts and Sciences section of this catalog.

Undergraduate Majors

www.washington.edu/students/ugrad/advising/maimenu.html

To graduate from the UW, students must complete one of the majors listed below. In many cases, the student need not make a final choice until the beginning of the junior year, although programs with considerable mathematics and science (e.g., engineering and premedicine) include lock-step requirements that must be started early on if the student expects to finish in four years.

Students can enter some majors directly (e.g., those in Ocean and Fishery Sciences, most in Forest Resources, and some in Arts and Sciences), but most students start out as premajors. As premajors, they take courses to fulfill general requirements and admission requirements for the major. Many majors require one or two years of pre-admission course work, although a few require more. Admission to many majors is competitive, which means students may not be accepted even if they complete all the prerequisite course work, depending on their grades and other factors.

The General Catalog shows requirements for all majors, but students should see an adviser to ask about changes, course sequences, or new options.

Satisfactory Progress

www.washington.edu/students/reg/satprog.html

Students admitted to the University to pursue baccalaureate degrees are expected to make satisfactory progress toward the attainment of the degree and are expected to enter a major and to graduate after completion of a reasonable number of credits. By the time undergraduate students have completed 105 credits, they must either be accepted in their major or have their premajor status extended temporarily by an adviser. Extensions are normally granted only to students who are in the final phases of completing admission requirements for a major to which they have a reasonable chance of acceptance.

Students who do not either declare a major or have their premajor status extended by the time they have earned 105 credits will have a "hold" placed against registration for the following quarter. Students must normally graduate with their first baccalaureate degree by the time they have completed 30 credits beyond the credits required for the first degree or concurrent degrees. Departmental advisers may grant extensions beyond the 30-credit limit.

Postbaccalaureate students are expected to be either preparing for admission into a degree program, seeking an additional baccalaureate degree. Students admitted as "postbaccalaureate undeclared" must declare a major by the time they have earned 30 credits beyond their last degree,

and once a degree objective has been declared, must make progress toward that degree as evidenced by the courses they have completed satisfactorily. Advisers may grant extensions beyond the 30-credit limit.

The Faculty Council on Academic Standards may terminate a student's enrollment if the student demonstrates lack of academic progress as evidenced by excessive course repeats, course drops, or University withdrawals and cancellations. The student may be reinstated with the approval of the student's college and the council. EOP students may be reinstated in consultation with the Office of Minority Affairs and Diversity.

Undergraduate Minors

Undergraduate students have the option of completing a minor. Minors require the completion of at least 25 credits, 15 of which must be taken in residence at the UW. There are no departmental admission requirements for minors. Students may declare an approved minor when they have earned 90 credits or more. A cumulative GPA of 2.00 is required for courses within the minor. Some departments do not offer minors. Requirements for minors established as of spring 2002 are shown in the academic programs section of this catalog. A list of currently offered minors is available at the Undergraduate Gateway Center, 171 Mary Gates Hall.

Undergraduate Degrees

The UW grants the following degrees upon satisfactory completion of appropriate programs of study in the departments, schools, and colleges:

• Bachelor of Arts	BA
• Bachelor of Arts in Business Administration	BABA
• Bachelor of Clinical Health Services	BCHS
• Bachelor of Fine Arts	BFA
• Bachelor of Landscape Architecture	BLArch
• Bachelor of Music	BMus
• Bachelor of Science	BS
• Bachelor of Science in Aeronautical and Astronautical Engineering	BSA&A
• Bachelor of Science in Bioengineering	BSBioE
• Bachelor of Science in Chemical Engineering	BSChE
• Bachelor of Science in Civil Engineering	BSCE
• Bachelor of Science in Computer Engineering	BSCompE
• Bachelor of Science in Construction Management	BSCM
• Bachelor of Science in Electrical Engineering	BSEE
• Bachelor of Science in Engineering	BSE
• Bachelor of Science in Health Information Administration	BSHIA
• Bachelor of Science in Human Centered Design	BSHSCDE
• Bachelor of Science in Industrial Engineering	BSIE
• Bachelor of Science in Informatics	BSInfo
• Bachelor of Science in Materials Science and Engineering	BSMSE
• Bachelor of Science in Mechanical Engineering	BSME
• Bachelor of Science in Medical Technology	BSMedTech
• Bachelor of Science in Nursing	BSNurs

Freshmen Interest Groups

A FIG consists of 20–25 freshmen who have similar academic interests and share the same cluster of three or four courses for their first quarter at the UW. The FIG provides both a social support network and a learning community. More than 100 FIGs are offered in the autumn, spanning a range of topics and interests.

Freshman Seminars

Taught by faculty members, many nationally and internationally recognized leaders in their fields, these seminars meet once a week, are limited to 15 students, and are graded credit/no credit. Students can establish a rapport with a professor while learning about different fields of study, all in a low-pressure academic setting.

The University Honors Program offers the best of both worlds: the combined riches of a small learning community and the inexhaustible resources of a large research university.

Phi Eta Sigma

A national freshman honor society with more than 300 chapters and 500,000 lifetime members. The UW chapter focuses on community service, campus service, and membership services.

University Honors Program

The University Honors Program provides a special learning context for high-achieving students looking for a rigorous and enhanced educational experience.

Most Honors students enter the Full College Honors Program as incoming freshmen. This Honors option is a four-year track through our program consisting of an Honors Core followed by Departmental Honors and results in a degree earned "With College Honors." The rest of our students participate only in Departmental Honors (which students enter once they enter their department). Completion of Departmental Honors alone results in a degree earned "With Distinction."

The University Honors Program assists and encourages students to find ways to enrich their education and to create an experience that facilitates their long-term goals. Honors seeks to enhance the already rich experience available at the University of Washington by bringing students and the best opportunities of a large research university into close contact. Honors students benefit from unique opportunities such as:

- Personalized and Comprehensive Honors Advising
- Small, Intensive, Interdisciplinary Honors Classes
- Continuous Contact with Honors Faculty
- Assistance in Finding Appropriate Research and Internship Opportunities
- Bonderman Honors Travel Fellowship
- Mary Gates Research Grants
- Mary Gates Leadership Grants
- Honors Peer Advisers
- Honors Computer Lab

CLUE

The Center for Learning and Undergraduate Enrichment (CLUE) is a free late-night study center. It is designed to provide supplementary educational opportunities for and enhance the academic achievement of all UW undergraduates. The program places a strong emphasis on creating a rich

learning community while supporting freshmen, sophomore, and transfer students who are enrolled in many of the UW's crucial lower-division courses. CLUE services include drop-in help sessions for subjects like chemistry, math, biology, writing, economics, and foreign languages; evening discussion and review sessions with TAs and fellow students; and exam reviews for a variety of courses.

Computing Resources

UW students have access to computers, e-mail, the Internet (in campus labs or from home), MyUW, and other online resources, training, and Web services for publishing. You don't need to buy your own computer, although it's recommended. Regardless of your major or future career plans, learning how to navigate campus computing resources— and to make the most of them— will be a significant part of your UW education.

Educational Opportunity Program

EOP provides educational opportunity and creates greater cultural diversity within the University. The program is open to underrepresented minority students from American Indian, Native American, African-American, Hispanic, and Asian/Pacific Islander backgrounds, and to economically disadvantaged students of all ethnicities whose parents do not have 4-year college degrees. EOP services include academic and personal counseling, advocacy and support with financial aid and housing, placement testing, academic tutoring, and special instruction.

Libraries

The University of Washington Libraries received the 2004 Excellence in Academic Libraries Award, which recognizes the top university research library in the country. UW Libraries rank 12th among North American research libraries. Here are some more numbers: 5.9 million volumes, 6.9 million items in microform, and more than 50,000 periodical titles. Impressive, but what does all of this mean to you? Simple: the chance to explore to the fullest extent of your interest and imagination. And in the process, you'll be acquiring valuable skills for navigating and analyzing information. There's no more important skill in the 21st century.

Women's Center

Located in historic Imogen Cunningham Hall, the Women's Center offers classes, workshops, and events. The Re-Entry Program offers free services to women and men who are considering returning to the University after a significant time away or who, for whatever reason, feel they need additional support and advice in making the transition into higher education.

The Graduate School: Graduate Study

www.grad.uw.edu

The University of Washington offers more than 110 graduate degrees through 370 graduate programs across all three UW campuses and online, from master's degrees for people launching or continuing their careers to doctoral degree programs for those pursuing academic, research or professional careers. The Graduate School manages graduate education from application through graduation for all UW degree programs, with the exception of the M.D., D.D.S., J.D. and Pharm.D. A list of graduate degrees offered is below.

Guided by the dean and vice provost, the Graduate School serves approximately 14,000 graduate students a year. The Graduate School processes nearly 30,000 applications and grants about 4,300 degrees each year, in addition to ensuring compliance with the University's policies concerning graduate education.

Interdisciplinary Programs

The Graduate School is home to several interdisciplinary degree programs, including a master's degree in Museology and PhD.s in Urban Design and Planning, Neuroscience and Molecular and Cellular Biology. Interdisciplinary programs draw together faculty from various disciplines to create new fields of study and provide research and education.

Student Success and Diversity

The Graduate School creates endowments and oversees fellowships and awards totaling approximately \$11 million a year. To help programs attract students, the Graduate School provides about \$1.3 million a year in recruitment funding. In addition, GO-MAP (the school's Graduate Opportunities & Minority Achievement Program) awards about \$600,000 a year to approximately 25 departments so they can recruit graduate students from diverse backgrounds. The Seattle chapter of Achievement Rewards for College Scientists Foundation (ARCS) is a steadfast supporter of graduate education at the UW as its members fund approximately 90 fellowships worth more than \$500,000 yearly, which aids graduate programs in offering multi-year financial commitments to top recruits.

In support of the University's outreach, recruitment and retention of ethnic minority and other underrepresented graduate students, GO-MAP presents networking and professional development opportunities for graduate students throughout the academic year, in collaboration with graduate programs and campus units. GO-MAP's recruitment efforts include sponsoring a series of Prospective Student Days, in which admitted graduate students visit the Seattle campus as they weigh the UW's offer of admission. The National Name Exchange is a UW Graduate School-coordinated database involving more than 50 institutions nationwide that share names of 7,000 exceptional minority undergraduates who are interested in graduate study.

The Graduate School's Core Programs offers professional development and support for graduate students in the form of workshops, events and online content, such as guides covering how to find a mentor, select a lab and look for a job in academia. Grad School Prep is a for-credit course offered most quarters for undergraduates and returning students who are considering graduate school. The course addresses how to identify graduate programs that fit students' goals and how to craft strong applications.

Quality and Assessment

Academic program reviews ensure that the UW continues to offer innovative, high quality education by reviewing each program – undergraduate and graduate – every 10 years through a streamlined process that encourages strategic planning and can be linked to national accreditation reviews.

The Center for Teaching and Learning is a collaboration of the Graduate School, UW Libraries and Undergraduate Academic Affairs that brings together individuals, departments and communities to share best practices and evidence-based research on teaching, learning and mentoring. The center offers training to graduate students who are teaching assistants and

research assistants, as well as supports and promotes innovation in teaching among the faculty.

Public Scholarship and Outreach

The Graduate School's public lecture series, funded by the Jessie and John Danz, Walker-Ames and Mary Ann and John D. Mangels endowments, shares the UW's academic expertise with general audiences through lectures that are promoted in collaboration with the UW Alumni Association. Lecturers have included educator Geoffrey Canada, author Amy Tan, astrophysicist Neil deGrasse Tyson and statistician Nate Silver.

The UW Press produces award-winning books — for general and academic audiences — that highlight UW research in fields such as the environment, Asian American studies and the built environment. The Press publishes many books on the history, culture and geography of the Pacific Northwest and Seattle.

The Graduate School advocates for graduate education and graduate students on campus and throughout the state through raising money for fellowships and student support, producing online reports on issues and trends in graduate education and highlighting the impact our graduate students and alumni are making in their communities and our state, region and world.

Graduate Degree Programs

College of Arts and Sciences

- Anthropology PhD
- Applied Mathematics MCFRM, MS, MSc, PhD
- Art MDes, MFA
- Art History MA, PhD
- Asian Languages & Literature MA, PhD
- Astronomy PhD
- Biology PhD
- Chemistry PhD
- Classics MA, PhD
- Communication MA, MC, PhD
- Comparative Literature MA, PhD
- Creative Writing MFA
- Dance MFA
- Digital Arts and Experimental Media PhD
- Drama MFA, PhD
- Economics PhD
- English MA, MAT, PhD
- French Studies MA, PhD
- Gender, Women, and Sexuality Studies PhD
- Geography MA, MGIS, PhD
- Germanics MA, PhD
- Hispanic Studies MA, PhD
- History MA, PhD
- International Studies MAIS, PhD
 - China Studies
 - Comparative Religion
 - International Studies
 - Japan Studies
 - Korea Studies
 - Middle East Studies
 - Russian, East European, and Central Asian Studies
 - South Asian Studies
 - Southeast Asian Studies
- Linguistics MA, MS, PhD
- Mathematics MA, MS, PhD
- Music MA, MMus, DMA, PhD
- Near Eastern Languages & Civilization MA
- Philosophy PhD

• Physics	PhD
• Political Science	PhD
• Psychology	PhD
• Scandinavian Studies	MA, PhD
• Slavic Languages & Literatures	MA, PhD
• Sociology	PhD
• Spanish and Portuguese	MA, PhD
• Speech and Hearing Sciences	MS, PhD, AudD
• Statistics	MS, PhD

College of Built Environments

• Architecture	MS, MSArch
• Built Environments	PhD
• Construction Management	MSCM
• Landscape Architecture	MLA
• Urban Design and Planning	MSRE, MIPM, MUP

Foster School of Business

• Accounting	MPAcc.
• Business Administration	MSIS, MBA, PhD

School of Dentistry

• School of Dentistry	MSD
• Oral Biology	MS, PhD

College of Education

• College of Education	MEd, MIT, EdD, EdS, PhD
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College of Engineering

• Aeronautics and Astronautics	MSSA, MAE, PhD
• Chemical Engineering	MSE, MSChE, PhD
• Civil and Environmental Engineering	MS, MSE, MSCE, MST, PhD
• Computer Science and Engineering	MS, PhD
• Electrical Engineering	MSE, MSEE, PhD
• Human Centered Design and Engineering	MSHCDE, PhD
• Industrial and Systems Engineering	MISE, MSIE, PhD
• Materials Science and Engineering	MSMSE, MSE, PhD
• Mechanical Engineering	MSME, MSE, PhD

College of Engineering and School of Medicine

• Bioengineering	MS, PhD
• Medical Engineering	MME
• Pharmaceutical Engineering	MPB

College of the Environment

• Aquatic and Fishery Sciences	MS, PhD
• Atmospheric Sciences	PhD
• Bioresource Science and Engineering	MS, PhD
• Earth and Space Sciences	MS, PhD
• Environmental Horticulture	MEH
• Environmental and Forest Sciences	MS, MFR, PhD
• Marine and Environmental Affairs	MMA
• Oceanography	MS, PhD
• Quantitative Ecology and Resource Management	MS, PhD

The Information School

• The Information School	MSIM, MLIS, PhD
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Interdisciplinary Degree Programs

• Biology Teaching	MS
• Biological Physics, Structure, and Design	PhD
• Biological Structure	PhD
• Health Services Administration	MHA
• Individual PhD	PhD
• Molecular and Cellular Biology	PhD
• Museology	MA
• Near and Middle Eastern Studies	PhD

• Neuroscience	PhD
• Pathobiology	PhD
• Quantitative Ecology and Resource Management	MS, PhD
• Urban Design and Planning	PhD

School of Law

• School of Law	LLM, PhD
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School of Medicine

• Biochemistry	PhD
• Bioethics and Humanities	MA
• Biological Structure	MS, PhD
• Biomedical Informatics and Medical Education	MS, PhD
• Comparative Medicine	MS
• Genome Sciences	PhD
• Immunology	PhD
• Laboratory Medicine	MS
• MEDEX Northwest	MCHS
• Microbiology	PhD
• Pathology	MS, PhD
• Pharmacology	MS, PhD
• Physiology and Biophysics	PhD
• Rehabilitation Medicine	MOT, MPO, MS, DPT, PhD

School of Medicine and School of Public Health

• Global Health	MPH, PhD
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School of Nursing

• School of Nursing	MN, MS, DNP, PhD
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School of Pharmacy

• Biomedical Regulatory Affairs	MSBRA
• Medicinal Chemistry	MS, PhD
• Pharmaceutics	PhD
• Pharmacology	PhD
• Pharmacy	MS, PhD

Evans School of Public Affairs

• Evans School of Public Affairs	EMPA, MPA, PhD
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School of Public Health

• School of Public Health	MS, MPH, PhD
• Biostatistics	MS, MPH, PhD
• Environmental and Occupational Health Science	MS, MPH, PhD
• Epidemiology	MS, MPH, PhD
• Health Services	MHIHIM, MS, MPH, PhD
• Health Services Administration	MHA
• Nutrition	MS, MPH, PhD
• Public Health Genetics	MS, MPH, PhD

School of Social Work

• School of Social Work	MSW, PhD
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University of Washington Bothell

• Business Administration	MBA
• Computing and Software Systems	MSCSSE
• Creative Writing and Poetics	MFA
• Education	MEd
• Interdisciplinary Arts and Sciences	MACS, MAPS, MFA
• Nursing and Health Studies	MN
• Policy Studies	MAPS

University of Washington Tacoma

• Accounting	MAcc
• Business Administration	MBA
• Computer Science and Systems	MSCSS
• Cybersecurity and Leadership	MCL

• Education	MEd, EdD
• Interdisciplinary Studies	MAIS
• Nursing	MN
• Social Work	MSW

Because the following professional doctoral degrees offered by the University are not considered to be graduate degrees, they are not administered through the Graduate School: Doctor of Medicine (MD), Doctor of Dental Surgery (DDS), Juris Doctor (JD), and Doctor of Pharmacy (PharmD).

GRADUATE ADMISSIONS

Additional program information is available on the World Wide Web at www.grad.washington.edu.

The University of Washington reaffirms its policy of equal opportunity regardless of race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam-era veteran in accordance with University policy and applicable federal and state statutes and regulations.

Application to the UW through the Graduate School is available for three types of students:

A **graduate student** is someone who has been admitted to a specific program and is working toward a master's or doctoral degree, or earning a school administrator's credential.

A **visiting graduate student** plans to transfer a limited number of graduate credits earned at the UW to another institution where he or she is actively pursuing a graduate degree. A certificate of status signed by the home institution is required. The application and certificate are available at www.grad.washington.edu/admissions/visiting.shtml. Individual departments may require additional materials, such as transcripts, GRE/GMAT scores, a statement of purpose or a list of desired course work.

Graduate non-matriculated students are taking courses without seeking a graduate degree. They may apply a maximum of 12 credits to degree requirements at a later time.

Admission to the UW is necessarily a selective process. The prospective student must hold a baccalaureate degree from an accredited college or university in this country or an equivalent degree from a foreign institution. The student's record should be a strong one with an average grade of "B" or a 3.00 grade-point, or better.

The primary criterion and the priority for admission of new applicants into a graduate program is the applicant's ability, as decided by the appropriate faculty, to complete the graduate program expeditiously with a high level of achievement. One aspect of meeting this criterion is the matching of interests between applicants and faculty. Additional factors may be used in developing a pool of qualified applicants for admission to the Graduate School. Weights given these and other factors vary among graduate degree programs. No factor will confer admission on an academically unqualified applicant. These factors include, but are not limited to, the following:

1. Priority for admission of applicants into a graduate degree program based upon the applicant's apparent ability, as determined by the University, to complete the program with a high level of achievement.
2. No practice may discriminate against an individual because of race, color, creed, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam era veteran.
3. Sustained efforts shall be made to recruit qualified applicants who are members of groups that are underrepresented in certain disciplines.
4. All applicants to a degree-offering unit shall be processed through the same set of procedures to assure that all applicants are evaluated on their individual merits.
5. Tests and criteria for admission should relate to the actual requirements of the graduate program. Reasonable accommodation for testing conditions may be made to compensate for relevant disabilities.
6. Additional factors may be used in developing a pool of qualified applicants for admission to the Graduate School. Weights given these and other factors may vary among graduate degree programs. No

factor will confer admission on an academically unqualified applicant. These factors include, but are not limited to, the following:

- a. Grades earned, especially for subjects in or closely related to the field of the applicant's proposed graduate work.
- b. Scores on the Graduate Record Examination (GRE) verbal, quantitative and analytical tests, on the GRE advanced test, on other tests related to the applicant's field, and on other aptitude tests which may be required.
- c. Personal interviews of the applicant by the department admissions committee.
- d. The career objectives of the applicant and the extent to which the graduate degree program may be expected to prepare the applicant for those objectives.
- e. Written and oral recommendations from persons who are qualified to evaluate the applicant's academic record and promise.
- f. The applicant's degree objective (i.e., master's degree, doctoral degree, or a master's followed by a doctoral degree).
- g. Activities or accomplishments; educational goals; prior employment experience; living experiences, such as growing up in a disadvantaged or unusual environment; special talents.
- h. Academic accomplishments in light of the applicant's life experiences and special circumstances. These experiences and circumstances may include, but are not limited to disabilities, low family income, first generation to attend college, need to work during college, disadvantaged social or educational environment, difficult personal and family situation or circumstances, and refugee status or veteran status.

Importance given to these factors will vary among degree programs.

Each academic program at the UW has a graduate program coordinator who is responsible for providing advice, guidance, and assistance to applicants, as well as to students working toward graduate degrees. Prospective graduate students are urged to contact the graduate program coordinator in their program of interest for information about any aspect of graduate study, including research, curriculum, faculty, and financial support in the form of teaching and research assistantships, grants, and scholarships. Information about graduate programs is available at www.grad.washington.edu.

Admission Process

Information about the application process for both graduate and graduate non-matriculated status must be obtained directly from the department. Visiting graduate applicants should go to www.grad.washington.edu/admissions/visiting.shtml for application information. It is very important to submit all application documents in time to meet departmental deadlines as these will supersede graduate admissions deadlines.

Registration

After successful applicants have been offered admission, the registration office sends a request for an enrollment confirmation deposit to indicate the intent to register. This nonrefundable deposit will apply toward the first quarter's tuition.

Once admitted, graduate students are expected to maintain registered or on-leave status until the degree is conferred. (See section on continuous enrollment.)

Financial Aid for Graduate Students

Students applying for fellowships, traineeships, and assistantships or associateships must make certain that complete transcripts and other credentials are on file by Feb. 15 (earlier submission of applications and supporting documents is urged by all departments and required by some). Awards and appointments are usually made about April 1. Application forms may be obtained by writing to the graduate program advisor of the appropriate department.

Fellowships, Traineeships, and Scholarships

A limited number of fellowships, traineeships, and scholarships is available through individual departments to outstanding students in fields of study

leading to advanced degrees. Application forms may be obtained from the graduate program advisors in the departments.

The Graduate School and the UW Libraries have collaborated to provide the Graduate Funding Information Service (GFIS) for UW graduate students (and faculty) who are seeking any type of general research funding for use at the UW. Located in the Research Commons, Allen Library, South Wing, the service works to provide resources for outside funding opportunities to graduate students at the master's and doctoral levels who have been admitted to or who are attending the UW.

The service offers workshops and individual consultations to help students explore resources for potential funding. The service does not provide search services or money directly to students, but does guide students to resources (print, database, or web-based) and helps students better understand how to use these resources.

To set up a consultation, email gfis@u.washington.edu. For drop-in office hours and funding seminar schedules, check www.lib.washington.edu/gfis/events.html.

Work Study Graduate Assistantships

Graduate students who are eligible for the need-based college work-study program may qualify for work study graduate assistantships in teaching or research. Students must submit financial aid applications to the Office of Student Financial Aid by the Feb. 28 to be considered for these positions. Information is available from the Office of Student Financial Aid.

Employment Opportunities

The campus offers other job opportunities for graduate students. Students may apply directly to the department in which they hope to work or check the Career Center's Husky Jobs website careers.washington.edu/HuskyJobs/Students. Students seeking part-time employment must be enrolled and on campus before they may obtain jobs. Advisory positions in University residence halls paying room and board are available for graduate students. Additional information may be obtained from the Housing and Food Services Human Resources Office, 305 Schmitz Hall, hfsjobs@uw.edu.

Spouses of students also may apply for regular full- and part-time University employment. Job listings are posted at www.washington.edu/admin/hr/jobs/

Loans

Long-term educational loans are available to graduate students through the Federal Perkins Student Loan, the Federal Direct PLUS, and the Federal Direct Unsubsidized Stafford Loan programs. For more detailed information on these loan programs, visit the Office of Student Financial Aid www.washington.edu/students/osfa/. An application form for these programs (the Free Application for Federal Student Aid, or FAFSA) is available at www.fafsa.gov. The priority filing date is Feb. 28 for the following autumn quarter. The Office of Student Financial Aid may be reached at osfa@uw.edu or www.washington.edu/students/osfa/.

Students should meet the priority filing date even if they have not yet been admitted to the Graduate School.

Short-term emergency loan funds also are available through the Office of Student Financial Aid. For information, see their website at www.washington.edu/students/osfa/gradaid/short.term.loans.html

GRADUATE DEGREE POLICIES

Usually focused on a specific field of knowledge, graduate study is conducted through a variety of means, including lectures, seminars, independent advanced study, special reading courses, internships and participation in research. Graduate programs leading to the master of arts, master of science or doctor of philosophy degrees emphasize the development of the student's ability for independent scholarly work and the creation of new knowledge through research. Practice-oriented programs, which ordinarily lead to the degree of master or doctor in a particular professional field, emphasize preparation of the student for professional practice at the frontiers of existing knowledge.

Many masters and all doctoral programs (excluding practice doctorates) culminate in the presentation of a thesis or dissertation conveying the results of the independent study and research carried out by the student. A master's thesis contributes to knowledge, reviews or critiques the state of knowledge in a field, creates a new design or composition, or represents some other appropriate kind of independent contribution. A doctoral dissertation must set forth a significant contribution to knowledge or understanding in the student's field, be presented in scholarly form and demonstrate that the student is competent to engage independently in the pursuit of solutions to important problems.

The student must defend the doctoral dissertation in a final examination conducted by a faculty committee and open to all other graduate faculty members. A member of the graduate faculty from some other discipline participates as an official representative of the Graduate School, including various major evaluations such as the general examination and final examination.

Graduate Program Coordinator

The graduate student's initial work at the University is guided by the graduate program coordinator in his or her field. The coordinator must be a senior tenured member of the graduate faculty and is the official representative of the academic unit that offers the graduate degree program. The graduate program coordinator maintains familiarity with policies and procedures of the Graduate School and provides overall coordination of graduate activities within the unit.

Graduate Courses

Graduate courses are intended for, and ordinarily restricted to, either students enrolled in the Graduate School or graduate non-matriculated students, and are given numbers from 500 through 801. Some courses at the 300 and 400 levels are open both to graduates and to upper-division undergraduates. Such courses, when acceptable to the supervisory committee and the Graduate School, may be part of the graduate program. The Graduate School accepts credit in approved 300-level courses for the minor or supporting fields only. Courses at the 300 level are not included in the calculation of grade-point average (GPA) and will not apply toward the minimum Graduate School requirement of 18 graded credits for the master's or doctoral degree. Approved 400-level courses are accepted as part of the major, as well as minor or supporting fields. Undergraduate research (499) is not accepted as part of the graduate program. Graduate School Memorandum 36 offers additional information on graduate courses. With the exception of summer, students are limited to a maximum of 10 credits per quarter of any combination of courses numbered 600, 700 or 800.

Repeating Courses

Graduate students may repeat any course. Both the first and second grades will be included in the cumulative GPA. Subsequent grades will not be included, but will appear on the permanent record. The number of credits earned in the course will apply toward degree requirements only once.

Grading System for Graduate Students

In reporting grades for graduate students, graduate degree-offering units shall use the system described herein. Grades shall be entered as numbers, the possible values being 4.0, 3.9, . . . and decreasing by one-tenth until 1.7 is reached. Grades below 1.7 will be recorded as 0.0 by the Registrar and no credit is earned. A minimum of 2.7 is required in each course that is counted toward a graduate degree. A minimum cumulative grade-point average of 3.0 is required for graduation.

Correspondence between number grades and letter grades is as follows:

Numeric Grade Point Equivalent	Letter Grade
4.0	A
3.9	
3.8	A-
3.7	
3.6	
3.5	
3.4	B+
3.3	
3.2	
3.1	
3.0	B
2.9	
2.8	B-
2.7	
2.6	
2.5	
2.4	C+
2.3	
2.2	
2.1	
2.0	C
1.9	
1.8	
1.7	
1.6–0.0	E

The following letter grades also may be used:

- **I Incomplete.** An Incomplete may be given only when the student has been in attendance and has done satisfactory work to within two weeks of the end of the quarter and has furnished proof satisfactory to the instructor that the work cannot be completed because of illness or other circumstances beyond the student's control. To obtain credit for the course, a student must successfully complete the work and the instructor must submit a grade. In no case may an Incomplete be converted into a passing grade after a lapse of two years or more. An incomplete received by the graduate student does not automatically convert to a grade of 0.0 but the "I" will remain as a permanent part of the student's record.
- **N No grade.** Used only for hyphenated courses and courses numbered 600 (Independent Study and Research), 601 (Internship), 700 (Thesis), 750 (Internship), and 800 (Dissertation). An N grade indicates that satisfactory progress is being made, but evaluation depends on completion of the research, thesis, internship, or dissertation, at which time the instructor or Supervisory Committee Chairperson should change the N grade(s) to one reflecting the final evaluation.

- **S/NS Satisfactory/Not-Satisfactory.** A graduate student, with the approval of the Graduate Program Coordinator or Supervisory Committee Chairperson, may elect to be graded S/NS in any numerically-graded course for which he or she is eligible. If a student does not so elect, then he/she will be graded on a numerical basis. If approval is granted the student must elect the S/NS option either when registering or no later than the end of the seventh week of the quarter. The instructor shall submit a numeric grade to the Registrar, who shall convert grades of 2.7 and above to S and grades lower than 2.7 to NS.
- **CR/NC Credit/No Credit.** With the approval of the faculty in the academic unit, any course may be designated for grading on the CR/NC basis by notice in the appropriate Time Schedule. For such courses, the instructor will submit a grade of CR or NC to be recorded by the Registrar's Office for each student in the course at the end of the quarter. All courses numbered 600, 601, 700, 750 and 800 may be graded with a decimal grade, a CR/NC or N at the instructors' option.
- **RD Registrar Drop** for a drop made after the second week of the quarter, whether made during the quarter (current quarter drop) or after the quarter (former quarter drop), as well as complete withdrawal from the University. An official withdrawal is not computed in GPA calculations. Students who do not officially drop a course(s) will receive a grade of 0.0. The date of withdrawal shall be noted on the transcript.

Graduate students who withdraw from the University (dropping all courses for the quarter) during the first week of two consecutive quarters (Summer Quarter excepted) will not be eligible to register as a continuing graduate student for the third quarter. Such graduate students must reapply as former graduate students returning to the University. For example, if a graduate student withdraws during the first week of Spring Quarter and Autumn Quarter, he or she must reapply as a returning former graduate student for Winter Quarter.

Of the minimum credits required for a graduate degree, a graduate student must show numerical grades in at least 18 quarter credits of course work taken at the University of Washington. These numerical grades may be earned in approved 400-level courses and 500-level courses.

A graduate student's grade-point average will be calculated entirely on the basis of number grades in 400- and 500-level courses. The grades of S, NS, CR, NC, and N will be excluded, as will all grades in courses numbered 600, 601, 700, 750, and 800, and in 100- and 200- level courses.

The graduate student may petition the Dean of the Graduate School to modify the procedures described above. The petition should be accompanied by comments and recommendations from the Graduate Program Coordinator or Supervisory Committee Chairperson.

Scholarship

A cumulative GPA of 3.00 or above is required to receive a degree from the Graduate School. A graduate student's GPA is calculated entirely on the basis of numeric grades in 400- and 500-level courses. The grades of S, NS, CR, NC, and N are excluded, as are all grades in courses numbered 600, 601, 700, 750, and 800, and in courses at the 100, 200, and 300 levels.

Failure to maintain a 3.00 GPA, either cumulative or for a given quarter, constitutes low scholarship and may lead to a change-in-status action by the Graduate School. Failure to maintain satisfactory performance and progress toward a degree may also result in a change-in-status action by the Graduate School.

For more information, see Graduate School Memorandum 16:
grad.washington.edu/policies/memoranda/memo16.shtml

Withdrawal Policy

Refer to the University of Washington Time Schedule for procedures and dates, or look on the Web at
www.washington.edu/students/reg/wdoffleave.html

Language Competency Requirements and Examinations

Competence in one or more languages in addition to English is desirable for all fields of advanced study and is often required, especially in the scholarly

and research-oriented programs leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy.

Requirements for foreign-language competence are established by the graduate faculty in the unit offering the graduate program. Language competence in certain languages other than English (i.e., languages that may have special significance to the field) may be specified as helpful or desirable or may be required. Students should consult the graduate program coordinator for information and advice about desirable or required competence in foreign languages.

When appropriate, students are urged to establish foreign language competence as undergraduates before entering the Graduate School or as early as possible in their graduate careers. The University's language-competence requirements in French, German, and Spanish may be satisfied by successful completion of the standardized examinations given by the Educational Assessment Office. Other foreign language examinations are also given at the UW.

It is assumed that citizens of certain English-speaking countries who are admitted to the Graduate School are competent in the English language; citizens of non-English-speaking countries must demonstrate a satisfactory command of English, both for admission and for appointment as teaching assistants.

Refer to Graduate School Memorandum No. 8, English Language Competence for Admission to the Graduate School (www.grad.washington.edu/policies/memoranda/memo08.shtml) and Graduate School Memorandum 15, Conditions of Appointment for TAs Who Are Not Native Speakers of English (www.grad.washington.edu/policies/memoranda/memo15.shtml) for more information.

Enrollment Requirement

The enrollment requirement for the master's degree is 36 credits, 30 of which must be taken at the University of Washington.

For the doctoral degree, the enrollment requirement is 90 credits, 60 of which must be taken at the University of Washington. With the approval of the degree-granting unit, an appropriate master's degree from a regionally accredited institution may substitute for (30 credits) of enrollment. Doctoral Study requires an immersion in an academic field and its intellectual community. Degree-granting units may require a period of full-time and/or on-site study.

Only courses numbered 400, 500, 600, 700, and 800 can be applied to enrollment or course credit in the major field for advanced degrees (please see the Graduate Courses policy regarding courses numbered 499). Courses numbered 300 are not applicable to enrollment or course credit toward advanced degrees except when applied by permission of the graduate program coordinator or supervisory committee toward the graduate minor or supporting courses. Courses numbered below 300 are not applicable to enrollment or course credit for advanced degrees.

Full-Time Enrollment

Full-time quarterly enrollment for graduate students is 10 credits.

Final Quarter Registration

A student must maintain registration as a full- or part-time graduate student at the University for the quarter the master's degree, the candidate certificate, or doctoral degree is conferred. A student who does not complete all degree requirements by the last day of the quarter must be registered for the following quarter.

Continuous Enrollment and Official On-Leave Requirement

Policy

To maintain graduate status, a student must be enrolled on a full-time, part-time, or official on-leave basis from the time of first enrollment in the Graduate School until completion of all requirements for the graduate degree. (Summer quarter on-leave enrollment is automatic for all graduate students who were either registered or officially on-leave during the prior

spring quarter.) Any student who fails to register for classes or on-leave status after being admitted to the UW will need to be approved for reinstatement by his or her program to regain active student status within the Graduate School. Failure to maintain either continuous enrollment or on-leave status constitutes evidence that the student has resigned from the Graduate School.

Registration is required to take the master's final examination or doctoral general or final examinations. Students may either be registered or eligible to use the graduate registration waiver fee for filing the request for master's degree, submitting a thesis or dissertation, and receiving the degree.

To be eligible for on-leave status, the student must have registered for, and completed, at least one quarter as a graduate student at the University of Washington immediately prior to going on-leave; international students must complete three consecutive quarters (see international graduate students section below).

Any student who has registered for a quarter may NOT submit a petition for on-leave status form directly to the registration office for that quarter unless he/she officially withdraws from all courses before the first day of the quarter. Students who have been registered for even one day of a quarter are deemed to have status for the quarter and will be eligible to register for classes or apply for on-leave for the following quarter. (Spring enables registration for summer or autumn.) The student's email account will be active for the quarter, but library privileges will not be maintained once courses are dropped.

The procedure for going on leave is online at www.grad.washington.edu/policies/memoranda/memo09.shtml.

If a student who is in on-leave status registers in any other status, i.e., matriculated, non-matriculated, graduate nonmatriculated, it will terminate their official on-leave status for that quarter, even if they subsequently drop those courses.

Readmission

A student previously registered in the Graduate School who has failed to maintain graduate student status, but wishes later to resume studies, must for reinstatement to the Graduate School by the published closing dates. If the student is reinstated by the department, registration will occur during the usual registration period.

The Graduate School allows a maximum of six years to complete requirements for a master's degree and 10 years for a doctoral degree. Periods spent on-leave or out of status are included.

Concurrent Degree Programs

Concurrent programs are defined as a pair of programs that may be pursued at the UW by a post-baccalaureate student resulting in completion of the requirements for either two graduate degrees or a graduate and a professional degree. Rather than sequentially completing first one degree and then the other, the student's time and the University's resources may be conserved by arrangements that permit the student to proceed in a coordinated way toward completion of the degree programs. Graduate School policy allows for both formal and informal concurrent degree programs, as described below.

Formal Concurrent Degree Programs

Graduate School policy defines a formal concurrent degree program as a curriculum established by two participating academic units resulting in completion of two graduate degrees, or a graduate and a professional degree. These specific programs must be formally approved by the Graduate School, and students in formal concurrent degree programs are designated by unique program codes.

The two types of formal concurrent degree programs are as follows:

1. Graduate/Professional Degrees

Examples of formal graduate/professional concurrent degrees:

- School of Dentistry: DDS/Master's or Doctoral degree

- School of Law: JD/Master's or Doctoral degree
- School of Medicine: M.D./Master's or Doctoral degree
- School of Pharmacy: PharmD/Master's or Doctoral degree

The graduate program coordinators are the primary representatives of the professional schools, and the graduate degree requirements for the master's degree are those which are in effect at the time the degree is awarded. All program and Graduate School minimum requirements must be met by appropriate graduate courses. It is the responsibility of the student to submit a written list of courses which apply toward the graduate degree at the time the student applies for the master's degree. This list must be approved by both programs.

Requirements for the doctoral degree are those which are in effect at the time the degree is awarded with the understanding that only approved graduate courses will be applicable.

2. Graduate/Graduate degrees

Examples of formal graduate/graduate concurrent programs:

- Master of Health Administration/Master of Business Administration
- International Studies/Epidemiology
- Master of Arts in International Studies/Master of Public Health

To earn two master's degrees in a formal concurrent degree program, a student must complete at least the equivalent of two Graduate School minimum degree requirements of 36 credits each for a minimum total of 72 credits. If one or both of the participating programs require more than the minimum of 36 credits, those additional credits may be "shared" and applied to both degrees. Further, a maximum of 12 credits from one master's program, earned beyond the 36 credit minimum, may be applied in the second master's program towards the Graduate School minimum of 36 credits required. In this case, the minimum number of additional credits for the second degree, with the 12 approved credits, is 24. In all cases the total minimum required credits remains 72. For formal concurrent degree programs, both programs must approve the shared credits counting toward both degrees. A formal concurrent degree program may allow a shared thesis as described within the formal concurrent degree proposal. The proposing programs should follow the best practices guidelines developed by the Graduate School Council (Concurrent Degrees Shared Thesis Best Practices) and articulate these in the proposal sent to the Graduate School.

For formal PhD/masters concurrent programs, up to 12 credits earned toward a PhD may be counted toward a master's degree in another program with the approval of both degree-offering units.

The student is responsible for submitting a list of courses which apply toward each respective degree at the time he or she files an application for the master's degree or schedules the general examination. This list must be approved by both programs.

Informal Concurrent Degree Programs

Students may pursue two degrees from different departments simultaneously in an informal concurrent degree program. These programs have not been approved as formal concurrent programs and do not have unique program codes, but students have flexibility to "share" coursework, given the approval of both programs.

Current graduate students wishing to pursue an informal concurrent degree program must go to apps.grad.uw.edu/applForAdmiss/ and submit an application and fee for the second program.

Graduate School Memorandum 35: Concurrent Degree Programs contains additional information.
grad.washington.edu/policies/memoranda/memo35.shtml.

Master's Degree

Summary of Requirements

- A student must satisfy the requirements for the degree that are in force at the time the degree is to be awarded.
- Total credits required for the degree program must be completed.

- All courses numbered 400-799 that are numerically graded 2.7 and above, or have a grade of satisfactory (S) or credit (CR) count toward total credits. 499 courses are not counted in the total credits.
- At least 18 credits must be in courses numbered 500 and above.
- 18 credits must be numerically graded in department approved 400-level courses accepted as part of the major and in 500-level courses. This excludes 499 and transfer credits.
- No more than six graduate level quarter credits can be transferred from other academic institutions to count toward the credit total.
- No more than 12 UW graduate non-matriculated credits can be applied to the credit total.
- No more than 12 credits derived from any combination of UW graduate non-matriculated credits and transfer credits can be applied to the credit total.
- If a student repeats a non-repeatable class, only one set of credits counts toward the credit total.
- A minimum cumulative GPA (grade point average) of 3.00 is required for a graduate degree at the University.
- The master's degree request must be filed.
- If the master's degree request is filed during weeks 10 and 11, it is not accepted. The system is closed.
- In summer quarter, any master's degree request filed in weeks eight and nine is not accepted. The system is closed.
- All degree requirements must be completed within six years.
- The six-year timeframe begins on the first day of the quarter in which the student — coded as either a graduate non-matriculated student (department code with class 6) or as a graduate student (department code with class 8) — uses a course to satisfy degree requirements in the department to which he or she is admitted.
- Only UW graduate non-matriculated credits taken within the six-year time frame may be applied toward the credit total.
- Quarters spent on-leave and out of status are counted in the six years.
- A student must maintain registration through the end of the quarter in which the degree is conferred or, if eligible, pay the graduate registration waiver fee within 14 days following the last day of the quarter in which all degree requirements were met.
- Thesis track students are required to take a minimum of nine thesis credits in their credit total.
- Thesis track students are required to submit an electronic copy of an acceptably formatted thesis and the supervisory committee approval form to the Graduate School no later than the last day of the quarter.
www.grad.washington.edu/students/etd/.

Second Master's Degree Requirement

A second master's degree may be earned at the UW by completing an additional separate set of requirements. Please refer to Concurrent Degree Programs earlier in this section and to Graduate School Memorandum No. 35 (grad.washington.edu/policies/memoranda/memo35.shtml) for more specific information.

Transfer Credit

A student working toward the master's degree may petition the dean of the Graduate School for permission to transfer to the University of Washington the equivalent of a maximum of six quarter credits of graduate level course work taken at another recognized academic institution. These credits may not have been used to satisfy requirements for another degree. The petition must include a recommendation from the graduate program coordinator and an official transcript indicating completion of the course work. Transfer credits are not entered on the UW transcript.

University of Washington students who are within six credits of completing their undergraduate degree, and who have met the requirements for admission to the Graduate School, may register the quarter immediately preceding admission to Graduate School for up to six credits in 500-level courses in addition to their remaining six credits of required undergraduate work. The graduate program which has admitted the student must approve registration for the courses. The student, after admission to the Graduate School, must file a petition with the dean of the Graduate School to transfer the six credits. The student must also provide a letter or email from Graduations and Academic Records stating that these credits have not been applied toward the undergraduate degree.

Approved transfer credits are applied toward the total credit count only for the master's degree. (Transfer credits are not applicable toward a doctoral degree.) The 18 quarter credits of numerically graded course work, and 18 quarter credits of 500-level-and-above course work may not be reduced by transfer credit.

Credit taken as an undergraduate non-matriculated student or post-baccalaureate student at the UW may not be transferred to a graduate program. Credit by advanced credit examinations is not transferable.

Thesis Program

The master's thesis should be evidence of the graduate student's ability to carry out independent investigation and to present the results in clear and systematic form. Thesis track students are required to submit an electronic copy of an acceptably formatted thesis and the supervisory committee approval form to the Graduate School no later than the last day of the quarter (www.grad.washington.edu/students/etd/) or by the deadline specified in the graduate registration waiver fee. The faculty in the graduate program may require that the student present an additional copy for its own use. The Graduate School publishes online format guidelines for theses and dissertations (www.grad.washington.edu/students/etd/). These guidelines should be read thoroughly before the student begins writing the thesis. The thesis must meet all format requirements before being accepted by the Graduate School. A thesis adviser is available in the Graduate School for consultation during the thesis preparation process.

Non-thesis Programs

The faculty in some graduate programs have arranged programs of study for the master's degree that do not require the preparation of a thesis. These non-thesis programs normally include a more comprehensive plan of course work for more extensive examinations than are required in thesis programs, or they may include some approved research activity in lieu of a thesis.

Final Examination for Master's Degree

As soon as is appropriate, the faculty in the student's graduate program appoints a supervisory committee, consisting of two to four members. The chair and at least one-half of the total membership must be members of the graduate faculty. (See Graduate School Memorandum 13 grad.washington.edu/policies/memoranda/memo13.shtml). The committee chairperson arranges the time and place of the final examination, the results of which must be reported to the Graduate School by the last day of the quarter (last day of finals week) in which degree requirements are met. The examination may be oral or written, and all members of the supervisory committee must certify its results. If the examination is not satisfactory, the committee may recommend to the dean of the Graduate School that the student be allowed to take another examination after a period of further study. A student must be registered the quarter in which any required exam or presentation occurs.

Application for Master's Degree

Students apply for the master's degree on at www.grad.washington.edu/mygrad/student.htm. The online application period commences on the first day of each quarter and closes on Sunday (midnight Pacific Time) of the ninth week of the quarter (eighth week during summer quarter). If degree requirements are not met in the requested quarter, students must complete another degree request for the quarter in which they expect to complete requirements. Students will receive an email confirming receipt of their master's degree request. The filing of the application is the responsibility solely of the student. When the application is received, the student's record is reviewed in the Graduate School. All requirements for the degree must be met by the end of the current quarter if the application is to be approved. Registration must be maintained for the entire quarter in which application for the degree is made. If a student should withdraw during the quarter, the application becomes void and a new one must be submitted at the appropriate time.

Master of Arts for Teachers

Master's degree programs for experienced teachers, which focus upon the fields of knowledge normally taught in the common school and the community college, provide alternatives to the research-oriented master of

arts and master of science degree programs, which emphasize particular fields of knowledge.

Doctoral Degree

The doctoral degree is by nature and tradition the highest certificate of membership in the academic community. As such, it is meant to indicate the presence of superior qualities of mind and intellectual interests and of high attainments in a chosen field. It is not conferred merely as a certificate to a prescribed course of study and research, no matter how long or how faithfully pursued. All requirements and regulations leading to the doctoral degree are devices whereby the student may demonstrate present capacities and future promise for scholarly work.

Summary of Requirements

In order to qualify for the doctoral degree, it is the responsibility of the student to meet the following Graduate School minimum requirements:

- Completion of a program of study and research as planned by the graduate program coordinator in the student's major department or college and the supervisory committee. At least 18 credits of course work at the 500 level and above must be completed prior to scheduling the general examination.
- Presentation of 90 credits, 60 of which must be taken at the University of Washington. With the approval of the degree-granting unit, an appropriate master's degree from an accredited institution may substitute for 30 credits of enrollment.
- Numerical grades must be received in at least 18 quarter credits of course work taken at the UW prior to scheduling the general examination. The Graduate School accepts numerical grades in approved 400-level courses accepted as part of the major, and in all 500-level courses. A minimum cumulative GPA of 3.00 is required for a graduate degree at the University.
- Creditable passage of the general examination.
- Registration as a graduate student is required the quarter the exam is taken and candidacy is conferred.
- Preparation of and acceptance by the dean of the Graduate School of a dissertation that is a significant contribution to knowledge and clearly indicates training in research. Credit for the dissertation ordinarily should be at least one-third of the total credit. The candidate must register for a minimum of 27 credits of dissertation. At least one quarter must come after the student passes the general examination. With the exception of summer quarter, students are limited to a maximum of 10 credits per quarter of dissertation (800).
- Creditable passage of a final examination, which is usually devoted to the defense of the dissertation and the field with which it is concerned. The general and final examinations cannot be scheduled during the same quarter. Registration as a graduate student is required the quarter the exam is taken and the degree is conferred.
- Completion of all work for the doctoral degree within 10 years. This includes quarters spent on-leave or out of status, as well as applicable work from the master's degree from the UW.
- Registration maintained as a full- or part-time graduate student at the University for the quarter in which the degree is conferred (see detailed information under final quarter registration).
- A student must satisfy the requirements that are in force at the time the degree is to be awarded.

Appointment of Doctoral Supervisory Committee

A supervisory committee is appointed by the dean of the Graduate School to guide and assist a graduate student working toward a doctoral degree and is expected to evaluate a student's performance throughout a program. A supervisory committee should be appointed no later than four months prior to a general examination. Appointment of a supervisory committee indicates that the graduate faculty in a student's field finds a student's background and achievement a sufficient basis for admission into a program of doctoral study and research. "Preliminary" examinations, if required, should be completed prior to a request for appointment of a supervisory committee. If preliminary examinations are not an academic unit's requirement, it is appropriate to request appointment of a supervisory committee during a student's first year of study. See Graduate School Memorandum 13:

Supervisory Committees for Graduate Students,
grad.washington.edu/policies/memoranda/memo13.shtml.

Admission to Candidacy for Doctoral Degree

A general examination may be scheduled if: (a) the student has completed 60 credits (some of these credits may be taken the same quarter of the exam); (b) all required program examinations that do not need Graduate School approval have been completed and; (c) all members of the supervisory committee agree that the student's background of study and preparation is sufficient and have approved the student to schedule a general examination. At least four members of a supervisory committee — including the chair, Graduate School representative, and one additional graduate faculty member — must be present at the examination.

If the general examination is satisfactory, the supervisory committee members who participate at the examination sign the warrant and return it to the student's graduate program by the last day of the quarter. If an examination is unsatisfactory, a supervisory committee may recommend that the dean of the Graduate School permit up to a maximum of two additional re-examinations after a period of additional study. Any members of a supervisory committee who do not agree with the majority opinion are encouraged to submit a minority report to the dean of the Graduate School.

The student must be registered as a graduate student during the quarter that he or she takes the general examination. When the Graduate School approves candidacy, a student is identified and designated as a candidate for the appropriate doctoral degree and is awarded a candidate certificate. After achieving candidate status, a student ordinarily devotes his or her time primarily to completing research, writing the dissertation and preparing for the final examination.

A candidate certificate and the doctoral degree may not be awarded the same quarter.

Candidate's Certificate

A candidate certificate is formal recognition of the completion of a very significant step towards a doctoral degree. Students who have passed a general examination and have completed all requirements for a doctoral degree, except a final examination and Graduate School acceptance of a dissertation, are awarded a candidate certificate. Candidacy is conferred on the last day of a quarter, and certificates are issued by Graduation and Academic Records approximately four months after this date.

Dissertation and Final Examination

A candidate must present a dissertation demonstrating original and independent investigation and achievement. A dissertation should reflect not only a mastery of research techniques, but also ability to select an important problem for investigation, and to deal with it competently.

Normally, a dissertation is written in English. However, if there are circumstances that warrant a dissertation be written in another language, approval must be received from the dean of the Graduate School via petition.

The Graduate School publishes online formatting guidelines for theses and dissertations (www.grad.washington.edu/students/etd/) and students should familiarize themselves with the requirements before they begin. A dissertation must meet these format requirements before being accepted by the Graduate School. Thesis and dissertation advisers are available in the Graduate School to answer questions.

A final examination may be scheduled if: (a) a student passed a general examination in a previous quarter; (b) a reading committee is officially established with the Graduate School; (c) the reading committee has read an entire draft of the dissertation and; (d) the entire supervisory committee has agreed that the student is prepared and has approved the student to schedule a final examination. At least four members of a supervisory committee — including the chair, Graduate School representative, and one additional graduate faculty member — must be present at the examination.

If the final examination is satisfactory, the supervisory committee members who participate at the examination sign the warrant and return it to the student's graduate program by the last day of the quarter. Any members of a

supervisory committee who participate at an examination, but do not agree with the majority opinion, are encouraged to submit a minority report to the dean of the Graduate School. If an examination is unsatisfactory, a supervisory committee may recommend that the dean of the Graduate School permit a second examination after a period of additional study.

Registration as a graduate student is required the quarter that a final examination is taken *and* the quarter the dissertation is submitted. The degree is conferred the quarter in which the student's dissertation is accepted by the Graduate School.

Publication of Doctoral Dissertations

Part of the obligation of research is publication of the results and, in the case of doctoral research, this means microfilm publication of the dissertation. This is a Graduate School requirement, in addition to any previous or planned publication of any or all of a dissertation, and provides worldwide distribution of the work. A candidate signs a publication agreement when a dissertation is presented to the Graduate School. Publication in microfilm does not preclude other forms of publication.

Individual PhD Program

The Graduate School maintains the individual Ph.D. program for exceptionally able students whose objectives for study are of an interdisciplinary nature that cannot be met within one of the University units authorized to grant the Ph.D. The program is intended for dissertation topics that require supervision from two or more of the disciplines in which the University offers the Ph.D. It is not intended as a mechanism for offering the Ph.D. within units that do not have their own authorized Ph.D. programs.

A graduate student may apply to the individual Ph.D. program when he or she has completed the master's degree, or has been admitted to the Graduate School and has completed at least three quarters of full-time work at the UW, and has carefully planned an appropriate program of studies.

Proposals, including GRE scores, are due by Dec. 15 of each year. Decisions on admission are made by May 31 of the following year. Information and application materials for the individual Ph.D. program are available at www.grad.washington.edu/students/interdisciplinary/iphd/index.shtml

College of Arts and Sciences

School Overview

Dean

Robert Stacey
50 Communications

Divisional Deans

Catherine Cole -- Dean, Arts
Suzanne Hawley -- Dean, Natural Sciences
George Lovell -- Dean, Social Sciences
Brian Reed -- Dean, Humanities

The departments and schools of the College of Arts and Sciences offer nearly 100 curricula leading to the degrees of Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Music, Bachelor of Design, and Bachelor of Science, as well as graduate study leading to master's and doctoral degrees.

Undergraduate Study

Graduation Requirements

A liberal arts education entails mastery of certain basic skills, exposure to a broad range of academic disciplines, and concentration in a particular field of knowledge. To be awarded a baccalaureate degree a student in the College must fulfill requirements in the following areas: Language Skills, Reasoning and Writing in Context, Areas of Knowledge, Diversity, and a Major (see table below). All required courses must be taken for a numerical grade. In addition, the student must present at least 90 credits outside the major department and must meet minimum GPA requirements as specified below.

Requirement*	Credits	
Language Skills	5-20	<ul style="list-style-type: none"> English composition (5 credits) Foreign language (0-15 credits, depending on placement or high school background)
Reasoning and Writing in Context	15	<ul style="list-style-type: none"> Quantitative/symbolic reasoning (QSR) (5 credits) Additional writing (W) courses (10 credits)

Areas of Knowledge	75	General-education courses to include at least 20 credits in each of the following three areas: <ul style="list-style-type: none"> • Visual, Literary, & Performing Arts (VLPA) • Individuals & Societies (I&S) • The Natural World (NW)
Diversity	3	Sociocultural, political, and economic diversity (DIV)
Major	50-90	An area of specialization, usually in a single department
Minor (optional)	25-35	An additional area of specialization
Electives	varies	Free choice; as many credits as necessary to bring the total to 180

* Requirements of colleges other than Arts and Sciences are based on these, but may differ. Students who have not chosen a major are advised to follow the College of Arts and Sciences requirements.

Language Skills

To receive a degree from the College of Arts and Sciences, students whose first enrollment in college (whether at the UW or elsewhere) was in autumn quarter 1985 or later are required to complete 5 credits of English composition with a minimum 2.0 grade. They must also complete coursework through the end of the first-year college sequence in a foreign language, with a 2.0 or higher grade in the third-quarter course, or demonstrate equivalent proficiency through one of the following: successful completion of the third-year or higher level of high school language instruction; by passing a proficiency examination and placing into a course beyond the first year; or by receiving a passing grade in a qualifying course beyond the first-year level. Credits used for these two requirements (including the entire first year of foreign language, if taken) cannot also be applied to the Areas of Knowledge requirements described below.

Reasoning and Writing in Context

Students who first entered college autumn quarter 1985 or later must complete a minimum of 5 credits in Quantitative or Symbolic Reasoning (QSR) and 10 credits of additional composition courses or courses that emphasize the development of writing skills in the context of an academic discipline (W courses).

QSR and writing courses, if they apply, can also be counted toward Areas of Knowledge or major requirements. The writing requirement is in addition to the English composition requirement mentioned in the preceding paragraph.

Areas of Knowledge

The Areas of Knowledge requirement is the means by which the student develops a breadth of knowledge. Undergraduate courses are currently divided broadly into three categories: Visual, Literary, & Performing Arts; Individuals & Societies; and the Natural World. Each student must select at least 20 credits in courses from each of the three fields and an additional 15 credits from any courses in the three fields. Of the 75 total credits required, 15 may be from courses in the student's major department.

Diversity

No fewer than 3 credits of courses focusing on the sociocultural, political, and economic diversity of human experience at local, regional, or global scales.

Course Designators

The following symbols, included in course descriptions in this catalog, indicate which, if any, of the above requirements are fulfilled by certain courses:

VLPA -- Visual, Literary, & Performing Arts (Area of Knowledge requirement)

I&S -- Individuals & Societies (Area of Knowledge requirement)

NW -- The Natural World (Area of Knowledge requirement)

QSR -- Quantitative and Symbolic Reasoning

DIV -- Diversity

Courses that meet the foreign-language requirement and the additional-writing requirement are not marked. The third-quarter (or second-semester) course in any language meets the language requirement, so long as the entire first-year sequence totals at least 12 credits (regardless of whether the student earned credit for the earlier parts of the sequence). Consult the quarterly Time Schedule for writing-intensive courses that meet the additional-writing requirement.

Major

In fulfilling the requirements for a major, the student engages in thorough study of a discipline or subject, aimed at developing knowledge in depth. This part of the student's program is determined by the department, school, or faculty committee with which the major study is pursued. Measured in academic credits, the "major" required of each student consists of 50 or more prescribed credits in a department of the College or a closely related group of departments. Descriptions of major programs are shown below.

Minor

Completion of a minor, available through many departments, is optional. Requirements are shown under individual department undergraduate programs, below, or in a minors handout available in UAA Advising, 141 Mary Gates Hall. The following interdisciplinary minors are also offered: Arctic Studies; Disability

Studies; Diversity; Education, Learning, and Society; Human Rights; Labor Studies; Paleobiology; and Values in Society. Websites for these minors may be found in the alphabetical listing of Arts and Sciences degree programs.

Credits Required Outside Major Department

So that the student does not overspecialize, the College limits to 90 the number of credits from a single department that the student may elect to count in the 180 credits required for the baccalaureate degree. A department itself can require no more than 70 credits from courses within the department, and no more than 90 credits from within the department and related fields combined, as constituting its major program for the baccalaureate degree. Exceptions to these restrictions may be granted by the Dean.

GPA Required for Graduation

To be eligible to receive the baccalaureate degree, the student must achieve at least a 2.00 cumulative GPA in the major (some departments prescribe a higher minimum GPA for the major), as well as a 2.00 cumulative GPA for all work done in residence through the University.

Applying for Graduation

Students should apply for the baccalaureate degree no later than the first quarter of their final year. Seniors who apply by announced quarterly deadlines receive Graduating Senior Registration Priority (GSP), allowing them to register first for the following quarter. GSP status is limited to two quarters.

All current and past UW students may graduate under the College requirements published in this catalog. Students may use the department requirements in effect at the time they are admitted to the major, if they graduate within 10 years of that time. Otherwise, the department may insist on more recent major requirements. Students wishing to fulfill a previous set of requirements should see an adviser for details and options. All responsibility for fulfilling graduation requirements rests with the student concerned.

Limits on Physical Education Courses Allowed Toward Graduation

A student graduating from the College of Arts and Sciences may count a maximum of three credits of 100-level physical-education activity courses taken at the University of Washington, or their equivalents at other collegiate institutions, as elective credits toward graduation. At present, physical-education courses are not offered at the University.

Graduate Study

Students who intend to work toward advanced degrees must apply for admission to the [Graduate School](#) and must meet the general requirements outlined in this General Catalog, as well as the requirements established by the graduate faculty in the department or unit offering the degree program. Graduate students must satisfy the requirements for an advanced degree in force at the time the degree is to be awarded.

American Ethnic Studies

Department Overview

B504 Padelford

American Ethnic Studies exposes students to key content, methodologies, and theories in the comparative and interdisciplinary study of African Americans, Asian/Pacific Americans, and Chicanos in the United States.

Undergraduate Program

Adviser

B509 Padelford, Box 354380
(206) 221-0664

The Department of American Ethnic Studies offers the following undergraduate programs:

- The Bachelor of Arts degree with a major in American ethnic studies
- A minor in diversity

Bachelor of Arts

Suggested First- and Second-Year College Courses: United States history, literature, drama, arts, sociology, political science, ethnic studies.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

60 credits as follows:

1. *Core courses (30 credits):*
 - a. 15 credits of AES 150, AES 151, AES 212
 - b. 15 credits of AFRAM 101, AAS 101, CHSTU 101
2. *Concentration:* 30 credits in one of the following: African American Studies, Asian/Pacific American Studies, Chicano Studies, Comparative American Ethnic Studies. See department for list of concentration courses. Some concentration requirements may be met while fulfilling the core courses requirement.
3. *Electives:* Sufficient electives to reach 60 credits of approved courses applied to the major.

Minor

Adviser

B505 Padelford, Box 354380

(206) 616-5789

Email: divminor@uw.edu

Diversity minor requirements: 25 credits to include the following:

1. One foundation course (5 credits) chosen from an approved list of courses. A list of courses is available at <http://depts.washington.edu/divminor/>.
2. Minimum four additional courses, with at least one each from four of the five following categories (20 credits): arts/cultural; historical; global; contemporary/institutional; applications. A list of courses by category is available at depts.washington.edu/divminor/.
3. Minimum 15 credits must be completed in residence through the UW.
4. Maximum 10 credits from one department and maximum 10 credits from the student's major department may be applied toward the minor.
5. Diversity minor students are strongly encouraged to complete an internship, volunteer project, research project, study abroad program, intergroup dialogue course, or some applied learning opportunity that promotes the goals of the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The American Ethnic Studies curriculum prepares undergraduate students to understand the breadth, key content, methodologies, and theories in the field of ethnic studies as well as comparative interdisciplinary knowledge of African American, Asian/Pacific American, and Chicano issues. The major is designed to help students acquire the skills to think and write critically about race, class, and ethnicity in social and historical contexts and multiple categories of social diversity.
- *Instructional and Research Facilities:* Writing Center
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Students have the opportunity to become actively engaged in personalized research and discovery through independent study and research courses in each program concentration.
- *Department Scholarships:* None
- *Student Organizations/Associations:* Ethnic Studies Student Association

American Indian Studies

Department Overview

C514 Padelford

American Indian Studies fosters Indigenous wellness, political sovereignty and self-determination, cultural revitalization, and cross-cultural understanding. It also engages with the histories, psychological and social realities, expressive cultures, traditional land- and water-based practices, and political status of Indigenous peoples in the Pacific Northwest and beyond.

Undergraduate Program

Adviser

C514 Padelford, Box 354305
(206) 543-9082

The Department of American Indian Studies offers the following undergraduate programs:

- Bachelor of Arts degree with a major in American Indian studies
- Minors in American Indian studies and in Oceania and Pacific Islander Studies

Bachelor of Arts

Suggested First- and Second-Year College Courses: Completion of AIS 102 and AIS 103. Completion of two courses from AIS 170, AIS 202, AIS 203, HSTAA 209/AIS 209, or HSTAA 210/AIS 210. Courses that sharpen writing and analytical reasoning skills. Exposure to courses in history, environmental studies, sociology, anthropology, ethnic studies, literature, political science, communications, and gender, women, and sexuality studies.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

55 credits

1. Introductory courses (10 credits): AIS 102, AIS 103
2. Content courses (10 credits): two courses from AIS 170, AIS 202, AIS 203, HSTAA 209/AIS 209, and HSTAA 210/AIS 210
3. Concentrations (25 credits): Minimum 5 credits each from governance; environment and health; and culture and history. (See department website for courses that fulfill concentration requirements.)
4. Electives (10 credits): Any AIS courses not used to satisfy other major requirements; also, approved courses taught by AIS adjunct faculty. (See department website for adjunct faculty courses.)

5. Minimum 30 credits completed at the 300 level or above

Minor

American Indian Studies: Minimum 30 credits

1. Introductory courses (10 credits): AIS 102, AIS 103
2. Content course (5 credits): one selected from AIS 170, AIS 202, AIS 203, HSTAA 209/AIS 209, and HSTAA 210/AIS 210
3. Electives (15 credits): in AIS courses; minimum 5 credits at the 300 level or above

Oceania and Pacific Islander Studies: Minimum 25 credits

1. Required Core Courses (15 credits): AIS 102; one from AAS 206, AAS 210; one from AES 494, AIS 497, ANTH 489
2. Electives (10 credits): two courses from the following, including at least one at the 300 or 400 level: ANTH 307/AAS 300, ANTH 306, ANTH 312, ARCHY 325, ENGL 257, GWSS 392, AAS 320, AAS 360, AAS 385, AAS 392, AAS 402, SMEA 103, SMEA 485; or any other course with significance for Oceania/Pacific Islander Studies, as approved by the program adviser.
3. Minimum 50% or 15 credits (whichever is greater) completed in residence at the UW Seattle campus.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The AIS curriculum prepares students to understand the breadth, key content, methodologies, and theories in American Indian and Indigenous studies, while developing their skills to write and think critically. The degree prepares students to earn advanced degrees in related fields, as well as to pursue careers involving critical thinking and knowledge of American Indian and the Indigenous experiences.
- *Honors Options Available:* None
- *Undergraduate Research, Internships, and Service Learning:* Contact adviser for internship opportunities
- *Department Scholarships:* None
- *Student Organizations/Associations:*
 - American Indian Science and Engineering Society (AISES): College of Engineering, 013 Loew Hall
 - American Indian Student Commission “ASUW: asuwaisc@uw.edu
 - First Nations at the UW: Samuel E. Kelly Ethnic Cultural Center, 3931 Brooklyn Avenue N. E.
 - Medicine Wheel Society: Samuel E. Kelly Ethnic Cultural Center
 - Native Organization of Indigenous Scholars: Samuel E. Kelly Ethnic Cultural Center

Anthropology

Department Overview

314 Denny

Anthropology is the study of human beings in all their cultural and biological diversity. It includes the study of human evolution, the archaeological record, language and culture, the relationship between humans and their environment, and cultural modes of being as these differ in time and space. In studying anthropology, students can better understand how to find ways to live together in today's world, respecting cultural diversity while building upon common human values.

Study of anthropology at the University of Washington comprises three sub-disciplines:

- *Archaeology* is the study of the human past through investigation of material remains (artifacts, food remains, features, structures, etc.) and their relationships in space and time.
- *Biological anthropology* focuses on understanding human variation through the study of the ecological, demographic, genetic, developmental, paleontological, and epidemiological dimensions of modern human adaptation and its evolutionary basis.
- *Sociocultural anthropology* is the study of human societies, their cultures and histories, and the circuits of power and exchange that link them to the world at large.

Study at the undergraduate level can further entail any of four optional tracks: Medical Anthropology and Global Health, Anthropology of Globalization, Archaeological Sciences, and Human Evolutionary Biology.

Undergraduate Program

Adviser
316 Denny, Box 353100
(206) 543-7772

The Department of Anthropology offers the following undergraduate programs:

- Bachelor of Arts degree with a major in anthropology
- Bachelor of Arts degree with a major in anthropology, with options in medical anthropology and global health (MAGH), anthropology of globalization (AG), archaeological sciences (ASc), human evolutionary biology (HEB), or Indigenous Archaeology (IA)
- Bachelor of Science degree with a major in anthropology, with options in medical anthropology and global health (MAGH); archaeological sciences (ASc); or human evolutionary biology (HEB)
- Minor in anthropology

Suggested First- and Second-Year College Courses: ARCHY 205; BIO A 201; any additional 200-level ANTH course; and one from CS&SS 221/SOC 221/STAT 221, STAT 220, STAT 311, Q SCI 381, or ARCHY 495.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Bachelor of Arts

Major Requirements

55 credits as follows:

1. *Core courses (20 credits)*: BIO A 201; any 200-level ANTH course; any 200-level ARCHY course; and one from the following: CS&SS 221/SOC 221/STAT 221, STAT 220, STAT 311, Q SCI 381, or ARCHY 495
2. 35 additional ANTH, ARCHY, and BIO A credits distributed across the subfields or concentrated as suits the interests of the student. Minimum 20 of these credits in upper-division (300- or 400-level) courses. One 100-level ANTH, ARCHY, or BIO A course, or AIS 102 may be counted toward the major, but is not required.
 - a. The following AIS courses may apply toward this requirement: AIS 202, AIS 203, AIS 209, AIS 210, AIS 311, AIS 330, AIS 335, AIS 340, AIS 425, AIS 443, AIS 480. No limit on the number of AIS courses that may apply to this requirement.
 - b. Maximum 12 credits (18 credits for departmental Honors students) from ANTH 499, ARCHY 499, and BIO A 499 combined may be counted toward the major.
3. *Additional major requirements*:
 - a. Minimum 2.00 cumulative GPA for courses counted toward the major
 - b. Minimum 15 upper-division credits in anthropology completed through the UW.
4. Students may pursue either the general anthropology major or one of the four options shown below.

Medical Anthropology and Global Health (MAGH) Option: Requirements for the general anthropology major, as shown above, to include either ANTH 215 or ANTH 302 and 15 additional credits from ANTH and BIO A courses approved for the MAGH option. A list of approved courses is available on the department website.

Anthropology of Globalization (AG) Option: Requirements for the general anthropology major, as shown above, to include 20 credits from courses in ANTH, ARCHY, and BIO A approved for the AG option. A list of approved courses is available on the department website.

Archaeological Sciences (ASc) Option: Requirements for the general anthropology major, as shown above, to include ARCHY 205 and at least 15 credits from courses approved for the ASc core, and at least 15 credits from courses approved for the ASc elective lists. Lists of approved courses are available on the department website.

Human Evolutionary Biology (HEB) Option: Requirements for the general anthropology major, as shown above, to include BIO A 351 or BIO A 355; either BIO A 101 or BIO A 348; and 15 credits from courses approved for the HEB option. A list of approved courses is available on the department website.

Indigenous Archaeology (IA) Option: Requirements for the general anthropology major, as shown above, to include AIS 102, ARCHY 205, three courses from the approved IA core list, and 15 credits from courses approved for the IA elective list. Lists of approved courses are available on the department website.

Bachelor of Science

Major Requirements

75 credits

1. *Core Courses (20 credits)*: ARCHY 205; BIO A 201; any 200-level ANTH course; one from the following: CS&SS 221/SOC 221/STAT 221, STAT 220, STAT 311, Q SCI 381, or ARCHY 495
2. Completion of one of the following options (45 credits)
 - a. *Medical Anthropology and Global Health (MAGH)*: ANTH 215 or ANTH 302; minimum 40 credits from courses approved for the MAGH list; see department website for approved courses.
 - b. *Archaeological Sciences (ASc)*: Minimum 15 credits from ASc core course list; minimum 15 credits from approved ASc elective course list; minimum 15 additional credits in ANTH, ARCHY, or BIO A; see department website for approved courses
 - c. *Human Evolutionary Biology (HEB)*: BIO A 351 or BIO A 355; BIO A 101 or BIO A 348; minimum 35 credits from approved HEB course list; see department website for approved courses
3. Additional credits from Department of Anthropology courses at the 200 level or above: (10 credits)
4. Additional Requirements
 - a. Minimum 2.00 cumulative GPA for courses counted toward the major
 - b. Minimum 40 credits in upper-division (300-400 level) courses; one 100-level ANTH, ARCHY, or BIO A course may be counted toward the major, but is not required.
 - c. Maximum 12 credits (18 credits for departmental Honors) from ANTH 499, ARCHY 499, and BIO A 499 combined may be counted toward the major
 - d. Minimum 35 upper-division credits in Department of Anthropology courses completed through the UW
 - e. Minimum 50 credits of Natural World (NW) courses in Department of Anthropology courses
 - f. Minimum 55 ANTH, ARCHY, and BIO A credits

Minor

Minor Requirements: 30 credits (at least 15 credits at upper-division level) from courses with the following prefixes: ANTH, ARCHY, BIO A. ANTH 100 may be applied to the minor but is not required. (Certain AIS courses may apply toward this requirement. See departmental adviser for list.) Minimum 2.0 grade required in each course.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The study of anthropology develops skills in critical thinking, research, and writing, as well as technical skills specific to the different subfields (ethnographic field techniques, interpretation of data, statistical analysis, archaeological methods of data collection and interpretation). An undergraduate degree prepares students for many positions that involve working with people, as well as for academic studies in a variety of fields. Careers in anthropology can be developed through employment with government agencies, museums, teaching and research, private consulting firms, and nongovernmental organizations.

- *Instructional and Research Facilities:* Undergraduate students have access to the following facilities for classroom training in laboratory methods and for research experiences subject to faculty approval and supervision: the Burke Museum (ethnological, archaeological, natural history, and archival collection), Quaternary Research Center, Biodemography Laboratory, Luminescence Dating Laboratory, Electron Microscope Laboratory Cooperative, Geoarchaeology Laboratory, Digital Imaging and Microscopy Laboratory, Geographical Information System (GIS) Computer Laboratory, Primate Evolutionary Biomechanics Laboratory. In addition, the department has a writing center offering undergraduate writing support for anthropology classes.
- *Honors Options available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The Department of Anthropology supports students who undertake community-based internships under faculty supervision.
- *Department Scholarships:*
 - The Brett E Baldwin Scholarship, for approximately \$1,000, is awarded to an outstanding graduate or undergraduate majoring in anthropology.
 - The Wienker Prize for Best Undergraduate Essay. Four awards are given each year, one in each sub-discipline for the best essay in an undergraduate anthropology class, and one for the best senior honors thesis.
- *Student Organizations/Associations:* The Anthropology Club is run by and for students in the department.

Graduate Program

Graduate Program Coordinator
329 Denny Hall, Box 353100
(206) 685-1562

The department recognizes three principal subfields of anthropology: archaeology, biological anthropology, and sociocultural anthropology (including linguistic anthropology). The department offers three distinct PhD programs within the sub-disciplines. A concurrent MPH/PhD degree program with four options in the School of Public Health is also offered. The MA degree, which usually requires two years, may be earned within the PhD program as a thesis or non-thesis option. Completion of the PhD usually requires at least three years beyond the master's level. Graduate students are admitted to, and specialize in, their chosen subfields from the beginning of their graduate studies.

Admission Requirements

1. Official transcripts
2. Three recommendations
3. Statement of purpose
4. GRE scores
5. TOEFL for international students
6. Admission is for autumn only
7. Application materials due by December 15

Degree Requirements

Minimum 90 credits

Archaeology PhD

1. Completion of core requirements (ARCHY 510, ARCHY 576, ARCHY 599), one area studies course, three methods courses, and one "social impacts in archaeology" course (ARCHY 465, ARCHY 467, ARCHY 512, or ARCHY 573)
2. Comprehensive written examination, language translation, teaching requirement, general examination, dissertation colloquium, dissertation field research, and dissertation.

Biological Anthropology PhD

1. Completion of core requirements (BIO A 525), five courses in human biology, paleo anthropology/anatomy, evolution, and primatology (see list of approved courses on department website), and one approved statistics sequence.
2. Comprehensive written examination, master's paper, teaching requirement, general examination, dissertation colloquium, dissertation research, and dissertation.

Sociocultural Anthropology PhD

1. Completion of core requirements (ANTH 507, ANTH 508, ANTH 550, ANTH 551, ANTH 565, ANTH 566, ANTH 567) and four additional courses at the 400-500 level with different members of the anthropology faculty.
2. First-year portfolio, research competency paper, teaching requirement, language competency, general examination, dissertation colloquium, dissertation field research, and dissertation.

Financial Aid

One multi-year recruitment fellowship is awarded to an outstanding entering student. A limited number of teaching and research assistantships and hourly positions are offered primarily to advanced students. Applicants should apply for Foreign Language Area Studies Fellowships if qualified. Applicants are encouraged to seek funding from outside sources. Work-study positions may also be available for eligible graduate students.

Department Scholarships

Student Training in Anthropological Research Tools and Skills (STARTS), in support of graduate students conducting pre-dissertation pilot research.

The Brett E. Baldwin Scholarship, for approximately \$1,000, awarded to an outstanding graduate or undergraduate majoring in anthropology.

Evan David James Fellowship, for approximately \$5,000, awarded to an outstanding graduate student conducting research in any time period in the PNW.

Ronald Leroy Olson Fellowship, for one quarter of funding (tuition and a stipend), for UW graduate students in the field of anthropology. Whenever possible, such students are to be members of a Native American or Native Alaskan Tribe, ideally from Washington, Alaska, or British Columbia.

Applied and Computational Mathematical Sciences

Program Overview

C36 Padelford

Mathematics is the common language of modern science, engineering, and business. Techniques of mathematical modeling and data analysis are key instruments in the tool kit of modern practitioners and researchers in a wide array of disciplines. ACMS is an interdisciplinary program in the mathematical sciences that provides sound training in mathematical modeling, scientific computation, mathematical reasoning, and statistical analysis. The program is jointly administered by the Departments of Applied Mathematics, Computer Science and Engineering, Mathematics, and Statistics, offering students access to their combined resources. An ACMS major is an excellent stepping stone to a career in engineering and the physical, life, and management sciences.

Undergraduate Program

Adviser

C36 Padelford, Box 354350
(206) 543-6830

advising@math.washington.edu

ACMS offers a Bachelor of Science degree that builds on the strengths of the four mathematical sciences departments as well as the many quantitatively oriented departments across campus. All students complete a core set of courses developing basic skills in modeling, computation, mathematics, and statistics. Students choose one of the eight option areas listed below for further training and specialization.

1. *Biological and Life Sciences* focuses on basic techniques of mathematical modeling and computing that are employed in the life sciences.
2. *Discrete Mathematics and Algorithms* gives students a broad background in mathematics and computation with special emphasis on discrete mathematics and its application to optimization and algorithm design.
3. *Engineering and Physical Sciences* is an excellent choice for students with an interest in the physical world and classical areas of applied mathematics.
4. *Mathematical Economics and Quantitative Finance* provides a firm foundation in applied and computational mathematics as well as a basic grounding in economic theory.
5. *Operations Research* provides a firm foundation in the mathematical tools of operations research, particularly optimization and stochastic modeling (effective summer quarter 2018, admission suspended until further notice).
6. *Scientific Computing and Numerical Algorithms* focuses on the design, mathematical analysis, and efficient implementation of numerical algorithms for such problems.
7. *Social and Behavioral Sciences* provides a foundation in commonly used statistical and computational techniques followed by flexibility in pursuing different sets of advanced courses.

8. *Data Science and Statistics* focuses on building, using, and interpreting statistical models from scientific or engineering data.

Bachelor of Science

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126, PHYS 121, PHYS 122, PHYS 123, CSE 142, CSE 143

Program Admission Requirements

Applications are accepted at the beginning of autumn and spring quarters. Admission is competitive. Admission decisions are based on grades in core courses and a student's overall academic record. Completion of minimum requirements does not guarantee admission. Minimum requirements: minimum 2.50 GPA in the following courses, with a minimum 2.0 grade in each course: CSE 142, CSE 143; MATH 124, MATH 125, MATH 126; one from MATH 307, MATH 308, AMATH 351, AMATH 352.

Major Requirements

90 credits

1. A minimum GPA of 2.50 for all courses counted toward the major; minimum grade of 2.0 in each course taken toward the major.
2. *Core:* 43 credits to include MATH 124, MATH 125, MATH 126; MATH 308; MATH 307 or AMATH 351; MATH 390/STAT 390; CSE 142, CSE 143; AMATH 352; AMATH 381/MATH 381, AMATH 383. Students in the *Data Science and Statistics Option* substitute MATH 394/STAT 394 for MATH 390/STAT 390.
3. Completion of one of the following options:
 - a. *Biological and Life Sciences Option.* 47 credits to include option core (27 credits): PHYS 121, PHYS 122, PHYS 123 or BIOL 101 and BIOL 102 or BIOL 180 and BIOL 200; MATH 324, AMATH 353, AMATH 422, AMATH 423; and option electives (20 credits): outside area (12 credits or double major/double degree; see adviser for options) and 8 credits of approved courses at the 300 level or above, chosen from the four participating departments.
 - b. *Discrete Mathematics and Algorithms Option.* 47 credits to include option core and option electives. Option core: 33 credits for non-Computer Science and Engineering majors - PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH 394/STAT 394, CSE 373, CSE 417, and two of CSE 374, CSE 410, CSE 413, CSE 415; 9 credits for Computer Science/Computer Science and Engineering double major/double degree - MATH 394/STAT 394, CSE 421, CSE 431. Option electives: 14 credits for non-Computer Science and Engineering majors, 23 credits for Computer Science/Computer Science and Engineering double majors, to include 9 credits from MATH 407, MATH 408, MATH 409, MATH 461, MATH 462, or one of AMATH 481, AMATH 482, or AMATH 483. Remaining 15 credits from approved courses at the 300 level or above from the four participating departments.
 - c. *Engineering and Physical Sciences Option.* 47 credits to include option core (30 credits): PHYS 121, PHYS 122, PHYS 123, MATH 324, AMATH 401, AMATH 402, AMATH 403; and option electives (17 credits): outside area (11 credits or double major/double degree; see adviser for options) and 6 credits of approved courses at the 300 level or above, chosen from the four participating departments.
 - d. *Mathematical Economics and Quantitative Finance Option.* 47 credits to include option core and electives. Option core (27 credits): PHYS 121, PHYS 122, PHYS 123 or ECON

200, ECON 201, ECON 300; MATH 300, MATH 327, MATH 407; and either MATH 408 or STAT 423. Option electives: Either (1) or (2), below. (1) 20 credits including at least 15 credits from CFRM 405, CFRM 410, CFRM 415, CFRM 420, CFRM 425, ECON 301, ECON 400, ECON 401, ECON 404, ECON 421, ECON 422, ECON 424, ECON 426, ECON 435, ECON 472, ECON 482, ECON 483, ECON 485, ECON 486 (only one of CFRM 420 and ECON 424 may be counted toward the major); at least 5 additional credits at the 300 level or above from AMATH, CSE, MATH, STAT, or from the Department of Economics (taken from ECON courses listed above). (2) Complete a double major with a Bachelor of Science degree in economics.

- e. *Operations Research Option.* (As of summer quarter 2018, admission to the Operations Research Option is suspended until further notice.) 47 credits to include option core and electives. Option core (30 credits): PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH 394/STAT 394, MATH 395/STAT 395; and at least two of the following: MATH 407, MATH 408, MATH 409. Option electives: Either (1) or (2), below. (1) 17 credits, including at least 6 credits from MATH 491/STAT 491, MATH 492/STAT 492, STAT 421, STAT 423; at least 8 credits from OPMGT 301, OPMGT 402, OPMGT 443, OPMGT 450, OPMGT 490, QMETH 450, QMETH 490, IND E 321, IND E 337, IND E 410, IND E 412, IND E 424, IND E 426, IND E 430, IND E 433, (with at least one course at the 400 level); at least 3 additional credits at the 300 level or above from the four participating departments or from the departments of Management Science and Industrial Engineering (taken from IND E courses listed above). (2) Complete a double degree in Management Science in the Foster School of Business or in Industrial Engineering in the College of Engineering.
- f. *Scientific Computing and Numerical Algorithms Option.* 47 credits to include option core (27 credits): PHYS 121, PHYS 122, PHYS 123, MATH 300, MATH 327, two of MATH 464, MATH 465 AMATH 481, AMATH 482, or AMATH 483; and option electives (20 credits), to include 11 credits from the following: AMATH 301; AMATH 353 or MATH 309; CSE 373 or CSE 326; CSE 410; AMATH 401, AMATH 402, AMATH 403; MATH 407, MATH 408, MATH 409; MATH 427, MATH 428; remaining 9 credits from approved courses at the 300 level or above from the four participating departments.
- g. *Social and Behavioral Sciences Option.* 47 credits to include option core (31 credits): PHYS 121, PHYS 122, PHYS 123, STAT 340, STAT 341, STAT 342, STAT 423; and option electives (16 credits): outside area (10 credits or double major/double degree; see adviser for options) and 6 credits of approved courses at the 300 level or above, chosen from the four participating departments.
- h. *Data Science and Statistics Option.* 46-47 credits to include program core (29 or 30 credits): PHYS 121, PHYS 122, PHYS 123, AMATH 301 or STAT 302, STAT 395/MATH 395, STAT 391, CSE 414; and option electives (17 credits): at least 6 credits from List A and 6 credits from List B. Remaining credits from approved courses (List C) at the 300 level or above, chosen from the four participating departments. See adviser for approved lists.

See adviser for additional information on program options, for possible substitutions, and for approval of elective choices noted above.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The ACMS degree emphasizes the development of advanced skills in discrete and continuous mathematical modeling, computing and scientific computation, mathematical reasoning and analytic skills, and statistical reasoning and analytic skills. Students develop an expertise at an advanced level in an applications area. This set of skills provides the basis for careers in a wide array of quantitative disciplines including engineering; the physical, life, and social sciences; as well as business and management sciences. In addition, the ACMS program has developed partnerships with a number of departments on campus to facilitate the pursuit of double majors.
- *Instructional and Research Facilities:* The program has access to the combined instructional and research facilities of the four participating departments, as well as the Mathematics and Statistics library and the Math Study Center.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The program is provided with internship opportunities periodically, which are then passed on to students.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* MAA Student Chapter, Actuarial Club, SIAM

Applied Mathematics

Department Overview

202 Lewis Hall

Applied mathematics is concerned with mathematical modeling and analysis of problems from the physical, biological, and social sciences, and from engineering.

Undergraduate Program

Adviser

202 Lewis Hall, Box 353925
(206) 543-5493

The department offers the following undergraduate programs:

- Bachelor of Science degree with a major in applied mathematics
- Bachelor of Science degree with a major in computational finance and risk management
- The Bachelor of Science degree with a major in applied and computational mathematical sciences, offered in cooperation with departments of [Computer Science and Engineering](#), [Mathematics](#), and [Statistics](#). See [Applied and Computational Mathematical Sciences \(ACMS\)](#) for specific degree information. Advising for ACMS is available through the Department of Mathematics.
- Minors in applied mathematics and in computational finance.

Bachelor of Science with a Major in Applied Mathematics

Department Admission Requirements

1. Minimum 2.0 grade in each of MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
2. Minimum 2.0 grade in AMATH 301
3. Admission is twice a year. Application deadlines: 5 p.m. the second Friday of autumn quarter; 5 p.m. the second Friday of spring quarter
4. Admission is capacity constrained. Meeting minimum requirements does not guarantee admission. Admission is based on a holistic review of the student's record to include: grades in courses required for admission, overall cumulative GPA, and rigor of courses completed; time to degree set by the UW Satisfactory Progress Policy, including frequency of incompletes or withdrawals and number of repeated courses; personal statement that demonstrates interest in pursuing advanced study in the field of applied mathematics and related fields.
5. Successful applicants typically have earned above a minimum 2.50 cumulative GPA in courses listed above with no individual course grade lower than a 2.0.

General Education Requirements

1. Areas of Knowledge: VLPA (20 credits); I&S (20 credits); NW (20 credits). 15 additional credits in any area.

2. English Composition: 5 credits
3. Additional Writing: 10 credits
4. Foreign Language: completion of the third college quarter of a foreign language
5. Quantitative and Symbolic Reasoning: 4 or 5 credits from the QSR list

Major Requirements

Minimum 55 credits

1. *Mathematics*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136) (15 credits)
2. *Computing*: AMATH 301 (4 credits)
3. *Introductory Applied Mathematics*: AMATH 351, AMATH 352, AMATH 353 (9 credits)
4. *Electives* (minimum 27 credits):
 - a. Minimum two courses from AMATH 401, AMATH 402, AMATH 403
 - b. Minimum two courses from AMATH 342, AMATH 383, AMATH 422, AMATH 423
 - c. Minimum two courses from AMATH 481, AMATH 482, AMATH 483, CFRM 410, CFRM 420, CFRM 421
5. Minimum 2.00 cumulative GPA in courses applied to the major

Bachelor of Science with a Major in Computational Finance and Risk Management

Department Admission Requirements

1. Minimum 2.0 grade in each of MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
2. Minimum 2.0 grade in AMATH 301
3. Admission is twice a year. Application deadlines: 5 p.m. the second Friday of autumn quarter; 5 p.m. the second Friday of spring quarter
4. Admission is capacity constrained. Meeting minimum requirements does not guarantee admission. Admission is based on a holistic review of the student's record to include: grades in courses required for admission, overall cumulative GPA, and rigor of courses completed; time to degree set by the UW Satisfactory Progress Policy, including frequency of incompletes or withdrawals and number of repeated courses; personal statement that demonstrates interest in pursuing advanced study in the field of applied mathematics and related fields.
5. Successful applicants typically have earned above a minimum 2.50 cumulative GPA in courses listed above with no individual course grade lower than a 2.0.

General Education Requirements

1. Areas of Knowledge: VLPA (20 credits); I&S (20 credits); NW (20 credits). 15 additional credits in any area.
2. English Composition: 5 credits
3. Additional Writing: 10 credits
4. Foreign Language: completion of the third college quarter of a foreign language
5. Quantitative and Symbolic Reasoning: 4 or 5 credits from the QSR list

Major Requirements

Minimum 69 credits

1. *Mathematics*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136) (15 credits)
2. *Computing*: AMATH 301, CFRM 425 (7 credits)
3. *Statistics for Finance*: CFRM 410 (3 credits)
4. *Applied Mathematics*: AMATH 351, AMATH 352, AMATH 353 (9 credits)
5. *Quantitative Finance*: CFRM 405, CFRM 415, CFRM 420 (9 credits)
6. *Electives* (minimum 26 credits from the following): CFRM 421, CFRM 422, CFRM 430, CFRM 442, AMATH 481, AMATH 482, AMATH 483
7. Minimum 2.00 cumulative GPA in courses applied to the major

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minors

Applied Mathematics

Minor Requirements: Minimum 27 credits

1. MATH 124, MATH 125, MATH 126 or equivalent
2. Four applied mathematics courses at the 300 level or above (excluding AMATH 400, AMATH 498, AMATH 499)
3. Minimum 2.0 grade required in each course.

Computational Finance

Minor Requirements: 29-30 credits

1. *Core Courses (15 credits)*: CFRM 405, CFRM 410, CFRM 415, CFRM 420 (or ECON 424), CFRM 425
2. *Additional Requirements (14-15 credits)*:
 - a. MATH 125, or MATH 135, or equivalent
 - b. MATH 126, or MATH 136, or equivalent
 - c. STAT 311 or STAT 390
3. Minimum 2.0 cumulative GPA for courses applied to the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Through the Applied Mathematics major, students will gain the ability to apply mathematics to problems that society is facing today in the physical,

engineering and biological sciences, industry, and many additional application areas. Students develop advanced skills in mathematical modeling, computing and scientific computation, mathematical reasoning and analytical skills. Through the Computational Finance and Risk Management major, students will gain the ability to master mathematical and computing aspects, such as financial software development, financial modeling, machine learning and data science; gain advanced quantitative computational finance competencies and next generation risk management skills.

- *Honors Options Available:* None
- *Research, Internships, and Service Learning:* When available, internship opportunities are passed on to students. Course credit available for undergraduate reading/research with faculty.
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* None currently active

Graduate Program

Graduate Program Coordinator
Lewis Hall, Box 353925
(206) 543-5493

The department offers graduate programs of study leading to the degrees of master of science and doctor of philosophy. These programs involve broad training in those mathematical methods and techniques that have been found useful in applications, in-depth study in at least one field of application, and opportunities to explore various specialized aspects of applied mathematics.

Master of Science, Applied Mathematics

Offered on campus.

Admission Requirements

1. Baccalaureate degree from a regionally accredited college or university in the U.S. or its equivalent from a foreign institution, either in mathematics with a strong background in applications such as physical, engineering, biological, or social sciences with a strong background in applications-oriented mathematics. Proficiency in coursework that includes: calculus, differential equations, linear algebra, and numerical analysis or scientific computing. Recommended: advanced calculus and real analysis.
2. Minimum 3.00 GPA
3. GRE general test scores
4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency.

Degree Requirements

Minimum 36 credits

1. *Core Courses (20 credits):* AMATH 567, AMATH 568, AMATH 569, AMATH 584.
2. *Additional Courses:* from AMATH or other departments. Any non-AMATH courses taken to fulfill degree requirements must be at the graduate level, numerically graded, and approved by the department.

3. *Applied Mathematics Courses*: minimum 24 credits from the Applied Mathematics curriculum. Core courses count toward this requirement.
4. Minimum nine numerically graded courses, including core courses listed above, with a minimum 3.20 cumulative GPA. One may be substituted with 4 credits of AMATH 500 or AMATH 600.
5. *Program Plan*: approved no later than the end of the first quarter of registration.
6. *Satisfactory Progress*: minimum 3.20 GPA. Students normally complete requirements for an MS degree in one year.

Master of Science, Applied and Computational Mathematics

Offered both on campus and online. Requirements are the same for both degrees. See adviser for possible exceptions.

Admission Requirements

1. Baccalaureate degree from a regionally accredited college or university in the U.S. or its equivalent from a foreign institution, either in mathematics with a strong background in applications such as physical, engineering, biological, or social sciences with a strong background in applications-oriented mathematics. Proficiency in coursework that includes: calculus, differential equations, linear algebra, and numerical analysis or scientific computing. Recommended: advanced calculus and real analysis.
2. Minimum 3.00 GPA
3. GRE general test scores
4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency.

Degree Requirements

Minimum 36 credits

1. *Core Courses (20 credits)*: AMATH 501, AMATH 502, AMATH 503, AMATH 581.
2. *Additional Courses*: from AMATH or other departments. Any non-AMATH courses taken to fulfill degree requirements must be at the graduate level, numerically graded, and approved by the department.
3. *Applied Mathematics Courses*: minimum 24 credits from the Applied Mathematics curriculum. Core courses count toward this requirement.
4. Minimum nine numerically graded courses, including core courses listed above, with a minimum 3.20 cumulative GPA. One may be substituted with 4 credits of AMATH 500 or AMATH 600.
5. *Program Plan*: approved no later than the end of the first quarter of registration.
6. *Satisfactory Progress*: minimum 3.20 GPA. Full-time students normally complete requirements for an MS degree in one year.

Master of Science, Computational Finance and Risk Management

The MS-CFRM addresses the demand in the financial-services profession for advanced quantitative and computational finance skills, and next generation risk-management competencies. Three degree options are available: general program (42 credits), computing concentration (54 credits), and risk management concentration (54 credits).

Admission Requirements

1. Proficiency in coursework that includes calculus through partial differentiation, matrix algebra, and one-dimensional optimization. Probability and statistics equivalent to an upper-level undergraduate course or entry-level graduate course. A programming language such as Java or C++, or a mathematics or statistics programming language such as Matlab or R/S-PLUS.
2. Baccalaureate degree from a regionally accredited college or university in the U.S. or its equivalent from a foreign institution, with a minimum 3.00 GPA (on a 4.0 scale)
3. GRE, GMAT, or waiver petition
4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency.

Degree Requirements

Minimum 42 or 54 credits

1. *Core Courses (26 credits)*: CFRM 501, CFRM 502, CFRM 503, CFRM 504, CFRM 505, CFRM 509, and either CFRM 506 or CFRM 507
2. *CFRM program options*:
 - a. General program (minimum 16 credits): remaining credits satisfied by available CFRM elective courses
 - b. Computing concentration (minimum 28 credits) from
 - i. CFRM 520, CFRM 521, CFRM 522, CFRM 523, CFRM 524, AMATH 582, AMATH 583
 - ii. CFRM 506, if CFRM 507 taken as a core course
 - iii. Up to 12 non-CFRM elective credits at graduate level, approved by CFRM program director
 - c. Risk management concentration (minimum 28 credits) from
 - i. CFRM 521, CFRM 530, CFRM 531, CFRM 532, CFRM 540, CFRM 541, CFRM 542, CFRM 580
 - ii. CFRM 507, if CFRM 506 taken as a core course
 - iii. Up to 12 non-CFRM elective credits at graduate level, approved by CFRM program director
3. *Final Examination*: Students pursuing a thesis give an oral defense. Final examination not required for non-thesis students.
4. *Satisfactory Progress*: minimum 3.20 GPA

Doctor of Philosophy

Admission Requirements

Primarily a research degree, based on proficiency in applied mathematics, and the ability to carry out an independent investigation. The dissertation must exhibit original mathematical contributions relevant to a significant area of application.

1. Minimum 3.40 GPA (either undergraduate or graduate, or both)
2. GRE

3. Three letters of recommendation sent directly to the department
4. Proficiency in English: Applicants whose native language is not English must demonstrate English language proficiency.

Degree Requirements

Minimum 90 credits

1. *Course Requirements:* Two of the following three sequences taken within the first year: AMATH 561, AMATH 562, AMATH 563; AMATH 567, AMATH 568, AMATH 569; either AMATH 581 or AMATH 584, and AMATH 585, AMATH 586. AMATH 600 (Reading during first five quarters, including first summer) (4 credits, 2 each with separate faculty members)
2. *Minimum 13 Numerically Graded Courses:* Minimum 9 courses from Applied Mathematics curriculum. Maximum two courses at the 400 level (or cross-listed with courses at the 400 level).
3. *Supervisory Committee:* formed no later than end of the second year
4. *Qualifying Examination:* three written two-hour examinations, covering core course material
5. *General Examination:* oral examination
6. *Dissertation:* 27 credits over at least three quarters; at least one quarter after student passes the general examination
7. *Final Examination:* oral defense of dissertation
8. *Satisfactory Performance:* Minimum overall 3.40 GPA
9. *Satisfactory Progress:* timely passing of examinations. Department funding contingent on satisfactory progress.

Financial Aid

Both research and teaching assistantships are available to full-time students who qualify. Fellowship funds for the study of applied mathematics are available and awarded on a competitive basis.

Research Facilities

Five mid-scale computer servers (12-cores and 24 GBRAM each), available to faculty, staff, students, and visitors via physical or remote access. All faculty and student accounts use Dropbox for backup and cloud access.

In addition to desktop computers, the department maintains five network printers, scanner facilities, six Bloomberg terminals, local laptops and projectors, camera and camcorders and other computing peripherals, including a conference room wired with a large-screen television and webcams for remote conferencing.

Licensing for commercial software packages such as Matlab, Maple and Mathematica, Microsoft products and Adobe, and media tools, is provided by the College of Engineering and the UW IT Department. In addition, the department makes use of many free and open source tools such as Python, Numpy, and Scipy, as well as mathematical software packages.

Art, Art History, and Design

School Overview

104 Art

The School of Art serves a dual role within the University of Washington — both a professional school and an academic department. As a professional school it trains students for active careers in the visual arts; as a school of the College of Arts and Sciences it offers studio and lecture courses. All course offerings and curriculum requirements are based on the underlying philosophy that an awareness and understanding of the visual arts are necessary to a liberal education, and that a liberal education is necessary to the training of a professional artist.

The school's academic advising office offers preview information sessions for prospective college transfer or high school students. More information: art.washington.edu/preview

Undergraduate Program

Adviser

104 Art, Box 353440

(206) 543-0646

uaskart@uw.edu

The School of Art, Art History, and Design offers the following undergraduate programs:

- Bachelor of Arts degree with concentrations in interdisciplinary visual art, painting and drawing, photomedia, and three-dimensional forum
- Bachelor of Arts degree with a major in art history
- Bachelor of Design degree with majors in industrial design, interaction design, or visual communication design
- A minor in art history
- Bachelor of Arts degree with a major in interdisciplinary visual arts, or painting and drawing (effective winter quarter 2018, admission suspended until further notice)
- Bachelor of Fine Arts degree with a major in painting and drawing, photomedia, or three-dimensional forum (effective winter quarter 2018, admission suspended until further notice)

Bachelor of Arts with a Major in Art

Department Admission Requirements

1. Minimum 2.50 cumulative GPA
2. 5 credits college-level art with a minimum 2.5 grade
3. Art does not accept postbaccalaureate applicants.

How to Declare a Major in Art

1. Current UW Students/Freshmen: After completing any 100-or 200-level ART class in the School of Art, Art History, and Design, meet with an academic adviser (room 104 Art) to declare the major.
2. Transfer Students: Complete any 5-credit introductory art class with a minimum 2.5 grade prior to transferring to UW. During initial orientation and advising appointment, meet with an academic adviser (room 104 Art) to declare the major.

Major Requirements

1. Core courses (40 credits)
 - a. 15 credits introductory art classes: ART 101, ART 140, ART 190, ART 191, ART 233, ART 240, ART 245, ART 246, ART 253, ART 260, ART 272, ART 290, ART 292
 - b. 10 credits from ART 400, ART 440, ART 453, ART 494
 - c. 15 credits art history to include one 300-level class from an approved list.
2. Concentrations (tracks) (30 credits)
 - a. Interdisciplinary Visual Art: 5-credit additional introductory ART class; 20 credits from ART 333, ART 345, ART 350, ART 353, ART 355, ART 360, ART 365, ART 372, ART 390, ART 392, ART 393, ART 395; 5 credits from the following: ART 400, ART 450, ART 453, ART 457, ART 458, ART 490, ART 492, or ART 496
 - b. Painting and Drawing: ART 290 or ART 292; ART 390, ART 392; ART 393; ART 490; ART 492
 - c. Photomedia: ART 241; ART 242; 15 credits of ART 340; either ART 400 or ART 440
 - d. Three-Dimensional Forum: 10 credits additional introductory art classes; 20 credits from ART 333, ART 353, ART 372
3. Minimum 35 credits taken in 300/400 level courses
4. Minimum 40 credits of ART-prefixed courses taken in residence through the UW

Bachelor of Arts with a Major in Art History**Department Admission Requirements**

Entering freshmen and transfer students may declare the major by meeting with an academic adviser (room 104 ART) on or after their orientation/registration date. art.washington.edu/undergraduate-students

Currently enrolled University students must present a minimum 2.50 GPA and meet with an academic adviser (room 104 ART) any time during the quarter. art.washington.edu/advising

Art History does not accept postbaccalaureate applicants.

Major Requirements

60 credits

1. 10 credits from ART H 200, ART H 201, ART H 202, ART H 203, ART H 204, ART H 206, ART H 209, ART H 212, ART H 214, ART H 220, ART H 233, ART H 270, ART H 272, ART H273, ART H 290

2. 20 credits from ART H 309, ART H 310, ART H 311, ART H 312, ART H 314, ART H 333, ART H 361, ART H 373, ART H 380, ART H 381, ART H 390, ART H 391
3. 20 credits from ART H 400, ART H 412, ART H 413, ART H 414, ART H 435, ART H 471, ART H 473, ART H 484, ART H 488, ART H 491, ART H 492, ART H 494
4. 10 credits from ART H electives to include any ART H courses listed above or other courses with an ART H prefix (10 credits)

Minor

Minor Requirements: 30 credits of art history courses, of which 15 must be upper-division. Minimum 2.0 grade in each course applied to the minor. Minimum 15 credits completed through the UW.

Bachelor of Design

Department Admission Requirements

3.00 minimum GPA

For currently enrolled students

Admission to Industrial Design, Interaction Design, and Visual Communication Design: DESIGN 166. Students receiving a minimum 3.7 grade in DESIGN 166 are admitted. Students below a minimum 3.7 grade may apply to the design program via the design workshop in June. For details on the design workshop, see department website art.washington.edu.

For transfer students

Admission to Industrial Design, Interaction Design, and Visual Communication Design: DESIGN 166 (see admission requirements for currently enrolled students) or the equivalent of DESIGN 166 at their previous school. Students apply for admission to the UW, and attend the design workshop in June. Transfer students should meet with a School of Art adviser prior to applying to the UW to discuss the design workshop and selection process. See program guides at department website for specific information: art.washington.edu.

Admission Policy for Postbaccalaureate Applicants: Postbaccalaureate study in studio art is limited; admission requirements vary within each major. See information concerning specific postbaccalaureate admissions online at department website: art.washington.edu.

Major Requirements

93-103 credits, as follows:

Industrial Design (89-93 credits)

1. Successful completion of design admission selection process
2. 76-78 credits from DESIGN 206, DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 211, DESIGN 316, DESIGN 317, DESIGN 318, DESIGN 319, DESIGN 322, DESIGN 324, DESIGN 445, DESIGN 446, DESIGN 485, DESIGN 486
3. 3-5 credits from DESIGN 325, DESIGN 326, DESIGN 373, DESIGN 374, DESIGN 376, DESIGN 400, DESIGN 467, DESIGN 483, DESIGN 488

4. 10 credits of art history

Interaction Design (87-93 credits)

1. Successful completion of design admission selection process
2. 61-63 credits from DESIGN 206, DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 215, DESIGN 371, DESIGN 372, DESIGN 383, DESIGN 481, DESIGN 483, DESIGN 485, DESIGN 486
3. 16-20 credits from DESIGN 325, DESIGN 326, DESIGN 373, DESIGN 374, DESIGN 376, DESIGN 400, DESIGN 467, DESIGN 488
4. 10 credits of art history

Visual Communication Design (89-93 credits).

1. Successful completion of design admission selection process.
2. 76-78 credits from DESIGN 207, DESIGN 208, DESIGN 209, DESIGN 210, DESIGN 214, DESIGN 368; DESIGN 369, DESIGN 370, DESIGN 371, DESIGN 372, DESIGN 376, DESIGN 466; DESIGN 478, DESIGN 485, DESIGN 486
3. 3-5 credits from DESIGN 325, DESIGN 326, DESIGN 373, DESIGN 374, DESIGN 376, DESIGN 400, DESIGN 467, DESIGN 483, DESIGN 488
4. 10 credits of art history

Bachelor of Arts

As of winter quarter 2018, admission to the Bachelor of Arts degree with a major in interdisciplinary visual arts, or painting and drawing, is suspended until further notice.

Interdisciplinary Visual Arts (IVA), Painting and Drawing (Students may earn a Bachelor of Arts or a Bachelor of Fine Arts with a major in Painting and Drawing, but not both.)

Department Admission Requirements

2.50 minimum GPA

Admission to the Interdisciplinary Visual Arts Major for Freshmen or Currently Enrolled

Students: Complete 5 credits of 100-/200- level art, then meet with an Art adviser to declare the major.

Admission to the Interdisciplinary Visual Arts Major for Transfer Students: Complete equivalent of 5 credits of 100-/200-level prior to transferring. Once admitted to the UW, students meet with an Art adviser to declare the major. Prior to transfer, students may address questions to uaskart@uw.edu.

Admission to the Painting and Drawing Major for Freshmen and Currently Enrolled Students: Complete ART 190, then meet with an Art adviser to declare the major.

Admission to the Painting and Drawing Major for Transfer Students: Once admitted to the UW, students meet with an Art adviser to enroll in ART 190. Students who transfer with college credits in painting and drawing may present a portfolio for advanced placement in the program. Prior to transfer, students may address questions to uaskart@uw.edu.

Major Requirements

Interdisciplinary Visual Arts (60 credits)

1. ART 260 (5 credits)
2. 15 credits of introductory art selected from ART 101, ART 124, ART 126, ART 131, ART 140, ART 190, ART 191, ART 201, ART 202, ART 224, ART 226, ART 227, ART 232, ART 233, ART 245, ART 246, ART 272, ART 273, ART 280, ART 290, ART 292, DESIGN 165, DESIGN 166, DESIGN 208
3. 25 upper-division credits in art selected from ART 327, ART 328, ART 329, ART 332, ART 333, ART 334, ART 335, ART 338, ART 339, ART 345, ART 350, ART 351, ART 352, ART 353, ART 355, ART 360, ART 361, ART 365, ART 380, ART 390, ART 392, ART 393, ART 395, ART 400, ART 427, ART 428, ART 450, ART 457, ART 458, ART 490, ART 492, ART 496, ART 498, ART H 498, ART H 499
4. 15 credits ART H courses

Painting and Drawing (65 credits)

1. 5 credits: ART 190
2. 15 credits drawing classes: 5 credits of ART 290; 5 credits of ART 390; 5 credits of ART 490
3. 20 credits painting classes: 5 credits of ART 292; 5 credits of ART 392; 5 credits of ART 393; 5 credits of ART 492 or ART 494
4. 15 credits of ART H, which may include 5 credits of ART 361
5. 10 credits of studio ART electives

Bachelor of Fine Arts

As of winter quarter 2018, admission to the Bachelor of Fine Arts degree with a major in painting and drawing, photomedia, or three-dimensional forum, is suspended until further notice.

Painting and Drawing (Students may earn a Bachelor of Fine Arts or a Bachelor of Arts with a major in Painting and Drawing, but not both), Photomedia, Three-Dimensional Forum

Department Admission Requirements

3.00 minimum GPA

For currently enrolled students

Admission to Painting and Drawing: Complete ART 190, then meet with an Art adviser to declare the major.

Admission to Three-Dimensional Forum (for entering freshman or currently enrolled students): ART 272 followed by two from ART 201, ART 202, ART 233 ART 273. Students apply while taking the third course, no later than the third week of the quarter in which the third course is being taken. See guidelines/deadlines for application at this [webpage](#). Address questions to Art advising at (206) 543-0646 or uaskart@uw.edu.

Admission to Photomedia: Admission is competitive. Students enroll in ART 140 spring quarter of their freshman year to prepare the portfolio required for the competitive selection process for ART 241 autumn quarter. Students selected to register for ART 241 work with the photomedia faculty autumn quarter, revising their portfolio which is then used to select students admitted to the photomedia major winter quarter. See department website at art.washington.edu/ for timing and suggestions for successful completion of portfolio requirements.

For transfer students

Admission to Painting and Drawing: Once admitted to the UW, students meet with an Art adviser to enroll in ART 190. Students who transfer with college credits in the proposed area of study may present a portfolio for advanced placement in the program. Prior to transfer, address questions to uaskart@uw.edu.

Admission to Three-Dimensional Forum: Students are assigned an advising appointment with an Art adviser during UW orientation, when placement and timeline for application to 3D4M are determined. Students who transfer with college credits in ceramics, glass, or sculpture may present a portfolio for advanced placement in 3D4M and apply to the major when minimum course requirements are satisfied. Address questions to Art advising at (206) 543-0646 or uaskart@uw.edu.

Admission to Photomedia: Admission is competitive. Transfer students must apply for admission to the UW for summer or autumn quarter, must have completed an equivalent course to ART 140, and must submit their portfolios by mid-August for consideration to register for ART 241 autumn quarter. Students selected to register for ART 241 work with photomedia faculty autumn quarter, revising their portfolios which are then used to select students admitted to the photomedia major winter quarter. See department website at art.washington.edu for information on timing and suggestions for successful completion of portfolio requirements.

Admission Policy for Postbaccalaureate Applicants: Postbaccalaureate study in studio art is limited; admission requirements vary within each major. See information concerning specific postbaccalaureate admission online at department website: art.washington.edu.

Major Requirements

Painting and Drawing (90 credits)

1. 5 credits: ART 190
2. 15 credits drawing classes: 5 credits of ART 290; 5 credits of ART 390; 5 credits of ART 490
3. 40 credits painting classes: 5 credits of ART 292; 5 credits of ART 392; 5 credits of ART 393; 10 credits ART 492 or 5 credits of ART 492 and 5 additional credits ART 490; 15 credits of ART 494
4. 15 credits studio art or related electives
5. 15 credits ART H, which may include 5 credits of ART 361

Photomedia (80 credits)

1. 55 credits: ART 140 or adviser-approved course; ART 240; ART 241; ART 340 (15 credits); ART 361; ART 440 (15 credits)
2. 10 credits: ART and DXARTS courses
3. 15 credits: ART H, ANTH 209, DXARTS 200

Three-Dimensional Forum (75 credits)

1. 25 credits from one of the following tracks:
 - a. *Ceramics*: ART 253; one from ART 233, ART 272, or ART 273; ART 353 (15 credits) or ART 353 (10 credits) and either ART 332 or ART 333
 - b. *Glass*: ART 233; one from ART 253, ART 272, or ART 273; ART 333 (15 credits) or ART 333 (10 credits) and either ART 332 or ART 353
 - c. *Sculpture*: ART 273; one from ART 233, ART 253, or ART 272; ART 332 (15 credits) or ART 332 (10 credits) and ART 333 or ART 353
2. 20 credits of ART 453
3. 15 credits of ART electives
4. 15 credits ART H or ART 361

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*:
 1. Practiced problem-finding and problem-solving skills
 2. Expertise in visual literacy
 3. Polished presentation and communication skills
 4. Collaboration and leadership experience
 5. Research methods and ability to complete resulting projects
 6. Motivated for and by critical feedback
 7. Ability to network, create, and engage in community
- *Study Abroad*: art.washington.edu/study-abroad/art
- *Instructional and Research Facilities*: art.washington.edu/spaces
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). Available for Art History and for the Bachelor of Arts in Art.
- *Research, Internships, and Service*
Learning: art.washington.edu/advising/internships; art.washington.edu/design/design-resources
- *Department Scholarships*: art.washington.edu/advising/undergraduate-scholarships

Graduate Program

Graduate Program Coordinator
 104 Art Building, Box 353440
 (206) 543-0646
gradart@u.washington.edu

The Master of Fine Arts program offers an intense, two-year studio and seminar/classroom experience leading to an advanced degree in visual art. The program builds on prior, significant academic experience and studio work. Admission is competitive to any one of the following five programs: ceramics, painting and drawing, photography, sculpture, and visual communication design.

Applicants to the master's degree program in art history normally have a broad undergraduate background in art history.

The PhD program in the Division of Art History prepares graduates for university-level teaching, curator positions at major museums, and independent research in the field. Before beginning work for the PhD, students should have completed a master of arts degree in the history of art.

Master of Fine Arts

Admission Requirements

1. Bachelor of fine arts degree or equivalent (determined by the quality of the applicant's work and equivalent experience, based on UW BFA requirements) with a minimum 3.00 GPA in the undergraduate art major.
2. Graduate Record Examination is not required. Admission is competitive. Application deadline is February 1, for admission the following autumn quarter.

Degree Requirements

For each program, 90 credits

Ceramics

1. *Ceramics Studio*: 20 credits of ART 553
2. *Interdisciplinary Seminar*: 25 credits of ART 590
3. *Art History, Theory, and Criticism*: 10 credits of approved courses
4. *Studio Electives* : 15 credits of approved electives
5. *Thesis*: 20 credits of ART 700. The thesis may consist of one major work or a body of work that involves one central theme. Ceramics graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery along with a one person show at the Ceramics Gallery.

Painting and Drawing

1. *Drawing Studio*: 6 credits of ART 591
2. *Painting Studio*: 25 credits of ART 592
3. *Graduate Seminar*: 30 credits of ART 594
4. *Art History, Theory, and Criticism*: 10 credits of approved courses
5. *Studio electives*: 9 credits of approved electives
6. *Thesis*: 10 credits of ART 700. The thesis may consist of one major work or a body of work that involves one central theme. Painting and drawing graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Photography

1. *Photography Studio*: 20 credits of ART 515
2. *Interdisciplinary Seminar*: 25 credits of ART 590
3. *Art History, Theory, and Criticism*: 15 credits of approved courses

4. *Studio Electives*: 15 credits of approved electives
5. *Thesis*: 15 credits of ART 700. The thesis may consist of one major work or a body of work that involves one central theme. Photography graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Sculpture

1. *Sculpture Studio*: 20 credits of ART 552
2. *Interdisciplinary Seminar*: 25 credits of ART 590
3. *Art History, Theory, and Criticism*: 10 credits of approved courses
4. *Studio Electives*: 15 credits of approved electives
5. *Thesis*: 20 credits of ART 700. The thesis may consist of one major work or a body of work that involves one central theme. Sculpture graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Visual Communication Design

1. *Design Studio*: 25 credits of ART 580/ART 582
2. *Design Seminar*: 20 credits of ART 581
3. *Art History, Theory, and Criticism*: 15 credits of approved courses
4. *Studio Electives*: 20 credits of approved electives
5. *Thesis*: 10 credits of ART 700. The thesis may consist of one major work or a body of work that involves one central theme. Design graduates exhibit their thesis work in the annual MFA exhibition at the Henry Art Gallery.

Master of Arts

Admission Requirements

1. Bachelor of Arts degree with major in the history of art, or equivalent coursework, with a minimum 3.00 GPA or B average in art history courses. Students in other majors may apply if they have a strong background in art history.
2. One copy of all academic transcripts (international applicants submit two copies)
3. Three letters of recommendation
4. Statement of professional objectives in the field
5. Samples of the applicant's written work
6. Graduate Record Examination scores (General Test)

Degree Requirements

55 to 65 credits

1. 55 credits in the thesis track or 65 credits in the non-thesis track. Minimum 45 credits in the thesis track or 55 credits in the non-thesis track must be numerically graded art history courses numbered 400 and above, exclusive of thesis or practicum credits. Maximum 10 credits in related fields, in numerically graded courses numbered 300 and above, may be approved in place of art history courses. Maximum 12 credits of ART H 600 may be counted toward the minimum credit requirement for the master of arts degree.

2. Minimum 5 numerically graded credits each in four of five major areas: African or Native American; East Asian; Ancient, Classical, and Medieval; Italian and Northern Renaissance, Baroque, and Rococo; or late eighteenth- to twenty-first-century Western.
3. Minimum 15 credits in 500-level seminars, in addition to ART H 500 and ART H 504, both of which must be taken within the first year of residence. At least one seminar each in a Western and a non-Western area
4. Knowledge of French, German, or Italian, or of Chinese or Japanese if appropriate. Degree candidates specializing in Native American art may substitute Spanish for French, German, or Italian. Candidates in the thesis track must, in addition, demonstrate knowledge in a second language appropriate to the student's area of study as determined by the faculty. Petitions for exemption from the second language requirement are considered as warranted. Language requirements may be satisfied by passing graduate proficiency examinations (available in French, German, Italian, and Spanish), or by completing the third quarter of the second year of French, German, Italian, Chinese, Japanese, or other appropriate language as a graduate student at the UW with a minimum 3.00 grade. Students are expected to satisfy at least one language requirement no later than the first quarter.
5. Students in the thesis track take 10 credits in ART H 700; students in the non-thesis track take 10 practicum credits in ART H 598.

Doctor of Philosophy

Admission Requirements

1. Prior preparation in art history at a general level (usually master of arts degree in the history of art)
2. One copy of all academic transcripts (international applicants submit two copies)
3. Three letters of recommendation
4. Statement of professional objectives in the discipline
5. Samples of written research work in art history
6. Graduate Record Examination scores

Graduation Requirements:

Minimum 90 credits

1. 60 credits in numerically graded art history courses numbered 400 and above, beyond the master of arts degree or equivalent, and exclusive of dissertation credits; maximum 20 credits in related fields in numerically graded courses numbered 300 and above may be approved for credit in place of art history courses; minimum 10 credits in areas other than those tested by the general examination; at least 30 credits in 500-level seminars
2. Knowledge of German, French, or Italian, or of Chinese or Japanese if appropriate; research capability in a second language judged appropriate to the student's area of study; knowledge of any other languages considered necessary by the faculty. Language requirements may be satisfied by passing graduate-proficiency examinations (available in French, German, Italian, and Spanish), or by completing the third quarter of second-year French, German, Italian, Chinese, Japanese, or other appropriate language as a graduate student at the UW with a minimum 3.0 grade.
3. General examination: covers three specific fields of art history chosen from the following: African, Native American, Chinese, Japanese, Ancient, Medieval, Renaissance, Baroque and eighteenth century, Modern, and Contemporary; no more than two fields may be selected from the same area.

4. 30 dissertation credits (ART H 800) distributed over a minimum of three quarters
5. Dissertation demonstrating original and independent investigation and achievement

Scholarships and Teaching Assistantships

Scholarships are awarded annually to new and returning students, based on merit. Applicants admitted to the MFA program may be offered School of Art scholarships for the coming year on a merit basis. Further application is not required.

The School of Art offers a limited number of teaching assistantships to incoming graduate students on a merit basis, as determined by each program. Enrolled graduate students may apply for a limited number of additional, competitive teaching assistantships.

Art history offers certain scholarship funds, as well as teaching assistantships, for art history graduate students. A small number of grants are awarded to outstanding entering students, but otherwise financial aid and assistantships are awarded only to students who have completed at least one year of graduate study.

Asian Languages and Literature

Department Overview

225 Gowen

The Department of Asian Languages and Literature offers instruction in the principal languages and literatures of Asia, including East, Southeast, Central, and South Asia. Emphasis is placed on the roles of these languages within the cultures they serve as well as on linguistic, textual, and literary analysis. Courses on Asian literature in English are offered for majors and nonmajors alike.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Asian Languages and Literature offers the following undergraduate programs:

- The Bachelor of Arts degree with majors in Chinese, Japanese (with either a linguistic or literature concentration), Korean, South Asian languages and literature (Hindi and Sanskrit), and Asian Languages and Culture
- Minors in Chinese, Japanese, Indonesian Language and Culture, Japanese, Korean, South Asian languages and literature, Vietnamese Language and Culture, and Asian Languages and Cultures

Bachelor of Arts

Suggested First- and Second-Year College Courses: First and second years of the target foreign language(s): Chinese, Japanese, Korean, or South Asian (Hindi or Sanskrit). (For the Asian Languages and Cultures major, first year of an Asian language, or languages.) Any courses relating to the area or discipline of major study.

Department Admission Requirements

1. Minimum 20 credits of college coursework (or department-approved equivalent) in the intended primary language of concentration. The most recent course completed in the intended primary language of concentration must be taken through the UW, with a minimum 2.5
2. Completion of one writing course (W-prefix) taught in English with a minimum 2.0 grade.
3. The department prefers that prospective majors present a cumulative 2.50 GPA. Students with a cumulative GPA below 2.50 may be considered for the major if they submit materials in addition to transcripts, clarifying any aspect of past coursework. Denied applicants may appeal.
4. Transfer students must be enrolled at the UW before applying to the major.
5. For the major in Asian Languages and Cultures, students in good academic standing may declare the major at any time, without fulfilling requirements stated above.

Note: A student entering the junior year without two years of the appropriate foreign language is not able to complete the degree requirements in two years unless he or she takes accelerated courses such as Chinese or Japanese through the UW during summer quarter.

Major Requirements

Chinese

Minimum 50 credits

1. Minimum 50 credits in Chinese language, linguistics, literature, and/or culture. Maximum 10 credits may be in courses outside Asian Languages and Literature. See department for list of courses outside Asian Languages and Literature that may apply. (Students who begin language study with first-quarter Chinese need 75 credits to complete the major.)
2. *Language:* CHIN 213 (heritage-track Chinese, considered equivalent of third-year level) or CHIN 303 required, unless waived because of advanced skills. Students may take additional modern Chinese language courses (CHIN 411, CHIN 412, CHIN 413, CHIN 445, I BUS 490 [when the topic is business Chinese], CHIN 470, CHIN 482, CHIN 496 [when the topic is advanced language instruction]) toward the major, or may take additional courses in linguistics, literature, culture, and/or classical language beyond the minimum 30 credits required as shown in 3, below. No more than 20 credits of modern Chinese language courses may apply toward the major, although students may need to take more to reach the required third-year level of language competence.
3. Linguistics, literature, culture, and/or classical language courses (minimum 30 credits), to include CHIN 451, CHIN 452 (10 credits); CHIN 342 or CHIN 442 (5 credits); CHIN 461, CHIN 463 (10 credits). See department for additional courses in linguistics, literature, culture, and/or classical language that may apply.

Japanese

Minimum 50 credits

1. Minimum 50 credits in Japanese language, linguistics, literature, and/or culture. (Students who begin language study with first-quarter Japanese need 75 credits to complete the major.)
2. *Language:* JAPAN 303 (or JAPAN 334) required, unless waived because of advanced skills. Maximum 20 language credits may be counted toward the major, chosen from JAPAN 203 (or five credits of JAPAN 234); JAPAN 245; or any 300- or 400-level Japanese language courses. See department for list of approved language courses.
3. Linguistics, literature, and/or culture courses (minimum 30 credits, including at least 25 credits taken in the department.) Minimum 5 credits of advanced work, which may require linguistics, literature, and/or culture prerequisites. Any such prerequisites also count toward the 30-credit requirement. See department for list of approved courses.
4. Students entering with advanced language skills complete a placement test and interview to determine language course placement. Students who need fewer than 20 credits to complete JAPAN 303, or for whom JAPAN 303 is waived because of advanced skills, must still earn a minimum 50 credits for the major. These students may take 400-level Japanese language courses (placement interview may be required), or additional linguistics, literature, and/or culture courses. Students are strongly encouraged to consult an adviser to determine both language and other course options.

Korean

50-75 credits

1. *Language*: (15-45 credits; minimum 15 credits beyond second year)
2. Area-related humanities and social science courses (30-35 credits, to reach minimum 50 credits for the major).
3. Students placed beyond second year Korean must take 35 credits of area-related humanities and social science courses.

South Asian Languages

70 credits

1. *Language*: 45 credits beyond first-year level in a single South Asian language (Hindi or Sanskrit)
 - a. *Basic Language*: For Hindi - HINDI 201, HINDI 202, HINDI 203, HINDI 301, HINDI 302, HINDI 303; for Sanskrit - SNKRT 201, SNKRT 202, SNKRT 203, SNKRT 311, SNKRT 312, SNKRT 313
 - b. *Advanced Language, Literature, and Linguistics*: 15 credits at 400 level, all drawn from either the following Hindi or Sanskrit courses, depending on the basic language selected: For Hindi - HINDI 404, HINDI 421, HINDI 422, HINDI 423, HINDI 431, HINDI 451; for Sanskrit - SNKRT 491, SNKRT 492, INDN 401, INDN 402, INDN 410
2. *Literature in Translation (10 credits)*: ASIAN 203, ASIAN 206
3. *South Asian History (5 credits)*: One course from among HSTAS 202, HSTAS 401, HSTAS 402, HSTAS 403, HSTAS 404
4. *South Asian Humanities and Social Sciences (5 credits)*: Chosen in consultation with adviser. A list of courses that satisfy this requirement is included on the expanded description of the major available from the adviser.
5. *Capstone Seminar (5 credits)*: INDN 490

Asian Languages and Cultures

60 credits

1. Core Courses
 - a. Primary language. Second-year level (course numbered 203 or above) in one Asian language (15 credits)
 - b. Literature, culture, linguistics at 300-400 level, chosen from Asian Languages and Literature courses, not primarily using original-language materials. See department for list of approved courses. (5 credits)
2. Electives
 - a. Literature, culture, linguistics, chosen from Asian Languages and Literature courses, not primarily using original-language materials. See department for list of approved courses. (10 credits)
 - b. Language, literature, culture, linguistics. Any combination of language and/or disciplinary Asian Languages and Literature courses, subject to major's other requirements. See

department for list of approved courses. (30 credits; 10 credits may be chosen from outside Asian Languages and Literature.)

3. At least 30 credits at the 300-400 level
4. Minimum 2.0 cumulative GPA for courses applied to the major
5. Minimum 30 credits taken in residence through the UW

Minor

Minor Requirements

Chinese: 30 credits

1. Minimum 30 credits in modern Chinese language, linguistics, literature, culture, and/or classical language, taken within Asian Languages and Literature. (See department for Asian Languages and Literature courses other than Chinese that may be counted toward the minor.)
2. *Language:* CHIN 213 (heritage-track Chinese, considered equivalent to third-year level) or CHIN 303 (or equivalent). Maximum 15 credits of modern Chinese language, which may include CHIN 213, CHIN 301, CHIN 302, CHIN 303, or certain 400-level Chinese courses. First and second-year Chinese courses may not apply to the minor.
3. *Linguistics, literature, culture, and/or classical language:* Minimum 15 credits to include CHIN 342 or CHIN 442 (5 credits) and CHIN 461 or CHIN 463 (5 credits). Additional credits in linguistics, literature, culture, and/or classical language may be taken from courses on the department website.

Indonesian Language and Culture: 30 credits

1. *Language Courses:* 15 credits of second- and/or third-year Indonesian language (INDO 211, INDO 212, INDO 213; INDO 311, INDO 312, INDO 313)
2. *Culture Courses:* 15 credits of humanities and social science courses offered through the UW, chosen from approved Indonesian-related content courses or joint-listed equivalents. See department website for approved list.
3. Minimum 15 credits from 1 and 2 (above) taken at the 300 level or above
4. Minimum 2.0 cumulative GPA for courses applied to the minor

Japanese: 30 credits

1. Minimum 30 credits in Japanese language, linguistics, literature, and culture
2. Minimum 15 credits at the 300 or 400 level
3. *Language:* JAPAN 303 (or equivalent). Maximum 15 credits of Japanese language, which may include 300- or 400-level Japanese language courses. See department for list of approved courses. First and second-year Japanese courses may not apply to the minor. Students entering with advanced language skills complete a placement test and interview to determine language course placement. Students for whom JAPAN 303 is waived because of advanced skills must still earn a minimum 30 credits for the minor. These students may take 400-level Japanese language courses (placement interview may be required), or additional linguistics, literature, and/or culture courses. Students should consult an adviser to determine both language and other course options.
4. Linguistics, literature, and culture: Minimum 15 credits, all taken in the department. See department for list of approved courses.

5. In addition to JAPAN 303 and 15 credits of Japanese linguistics, literature, and culture, students choose 10 additional credits in language, linguistics, literature, or culture.
6. Minimum 2.00 cumulative GPA for all courses applied to the minor
7. Minimum 15 credits taken in residence through the UW

Korean: 30 credits

1. *Language courses:* 15 credits at or above third-year level (KOREAN 301, KOREAN 302, KOREAN 303, and/or KOREAN 345)
2. 15 credits in Korea-related humanities and social sciences courses: ASIAN 207 (when Korea is the topic), ASIAN 498 (when Korea is the topic), HSTAS 212, HSTAS 481, HSTAS 482, KOREAN 415, KOREAN 416, KOREAN 417, KOREAN 445, KOREAN 499, JSIS A 448
3. Minimum 15 credits taken in residence through the UW.

South Asian Languages and Literature (Bengali, Hindi, Sanskrit, Urdu): 30 credits

1. *Language courses:* 15 credits at the second-year level or above in a single Indic language: for Bengali, BENG 201, BENG 202, BENG 203; for Hindi, HINDI 201, HINDI 202, HINDI 203; for Sanskrit, SNKRT 201, SNKRT 202, SNKRT 203; for Urdu, URDU 201, URDU 202, URDU 203
2. South Asia related humanities and social science courses (15 credits): Literature (5 credits) ASIAN 203 or ASIAN 206; South Asia area studies (10 credits) chosen in consultation with adviser. A list of courses that satisfy this requirement may be found on the following website: <https://asian.washington.edu/south-asian-undergraduate-minor>.
3. Minimum 15 credits taken in residence through the UW.

Vietnamese Language and Culture: 30 credits

1. *Language:* 15 credits of second and/or third year Vietnamese (VIET 211, VIET 212, VIET 213, VIET 214, VIET 311, VIET 312, VIET 313)
2. *Culture:* 15 credits of Vietnamese-related humanities and social science courses offered at UW, chosen from approved list. See department for approved courses.
3. Minimum 15 credits at the 300 level or above
4. Minimum cumulative 2.00 GPA for courses applied to the minor

Asian Languages and Culture: 30 credits

1. Primary language (15 credits): second-year (200-level) courses, or above, in one Asian language
2. Language, literature, culture, linguistics (15) credits: 10 credits of disciplinary (non-language) courses; 5 credits may be chosen from outside Asian Languages and Literature. (See department for list of approved courses.)
3. Minimum 15 credits at the 300-400 level
4. Minimum 2.0 cumulative GPA for courses applied to the minor
5. Minimum 15 credits taken in residence through the UW

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*
 - *Language:* A student of one of the languages achieves competency in speaking, listening, reading, and writing. Skills acquired for the **minor** include the ability to manage simple spoken communicative tasks and social situations; to understand sentence-length utterances on familiar topics in face-to-face situations; to read simple connected texts dealing with personal and social topics; to write short essays on familiar topics grounded in personal experience and immediate surroundings. Skills acquired for the **major** include the ability to manage spoken communicative tasks, including topics of common interest, description and narration, expression of personal viewpoints, and presentation and support of an argument; to understand the main idea and important details of connected spoken discourse, ranging from face-to-face situations to radio and TV broadcasting; to understand the main idea and important details of written texts in a range of styles and registers; to write routine social correspondence using the appropriate conventions, and to write connected essays of several paragraphs in an appropriate linguistic register.
 - *Linguistics:* A student with a **minor** achieves competency in understanding the basic structure of the language, including its grammatical forms, writing system, and phonology; recognizing the language's historical relationships with other languages in the geographical region; understanding the structured and hierarchical nature of linguistic systems. A student with a **major** additionally achieves competency in understanding basic linguistic concepts and terminology in such fields as syntax, morphology, and phonology, and applying them to the analysis of the linguistic structures of the language; understanding the historical development of the language, including its historical linguistic features and dialectal development; recognizing the relationship between linguistic structures and literary forms and devices.
 - *Literature:* A student with a **minor** achieves competency in identifying major works and forms within the literary tradition; understanding the place of selected literary texts within the ongoing tradition; understanding the historical and cultural contexts of major literary forms and works; understanding the roles of literary works and literary activity within the culture; utilizing basic research skills. A student with a **major** additionally achieves competency in reading selected literary texts in the original; employing linguistic and philological analysis as tools for understanding literary texts; performing formal analysis of literary texts; analyzing literary texts with reference to relevant literary traditions and intertextual dynamics; analyzing literary texts with reference to their historical background and broader cultural context; practicing critical reading of primary and secondary texts; employing research and writing skills to produce formal written analysis of literary texts.
 - *Asian Languages and Cultures: Common Skills:* Basic foundation in at least one Asian language, including competency in speaking listening, reading, and writing; fundamental skills in critical thinking, research, and oral and written communication; knowledge of various Asian cultural traditions, familiarity with disciplinary methodologies of the humanities. *Shared Outlook:* Appreciation of Asian cultures in broader regional and international contexts, emphasizing mutual relations and influences. *Skills Specific to Students' Individual Choices:* Varying levels of competence in from one to three Asian languages; advanced proficiency in disciplinary methodologies; more in-depth knowledge of selected Asian cultural traditions; comparative understanding of cultural phenomena and their history across different regions of Asia. *Career Preparation:* Skills in one or more languages, critical thinking, research, and written and oral communication; capacity to explore and find connections among diverse fields of knowledge; adaptability, broad skill set, and learning capacity (as opposed to narrow specialization) necessary to succeed within the diverse and rapidly changing technological, economic, social, and cultural environments of today's global economy in such fields as teaching and research, professional programs, consulting firms, commerce, law, the media, museums, cultural

institutions, public administration, government agencies, and non-governmental organizations.

- *Instructional and Research Facilities:* None
- *Honors Program:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Distinction (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* None offered
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* None

Graduate Program

Graduate Program Coordinator
225 Gowen, Box 353521
(206) 543-4996

The department offers programs of study leading to the master of arts and doctor of philosophy degrees with specializations in (1) the languages and literatures of China; (2) the language and literature of Japan; (3) the languages and literatures of South Asia, subsuming Sanskrit and Hindi; (4) Buddhist studies. All graduate students affiliate themselves with one of these programs. The department does not offer degrees or specializations in language pedagogy.

Master of Arts, Buddhist Studies

Admission Requirements

1. Undergraduate major in the language and literature of specialization (four years of language training if the language is Chinese or Japanese; fewer years of language acquisition may be acceptable in South Asian languages), or equivalent background. Other students may qualify for admission, but must acquire program prerequisites during the earliest stages of their graduate study.
2. Statement of academic goals
3. Three letters of recommendation addressed to the Graduate Program Coordinator

Degree Requirements

45-54 credits plus language requirements

1. *Coursework requirement:*
 - a. *Non-thesis program:* 45 course credits, 18 at the 500 level and above. Seminars and text reading courses must be included. Language study through the fourth-year level in the major language.
 - b. *Thesis program:* 45 course credits plus 9 thesis credits. Minimum 18 of the 45 course credits at the 500 level or above. Seminars and text reading courses must be included. Language requirements the same as in the non-thesis program. MA thesis. Oral examination.
2. *Foreign language requirements:* Competence in the major language.

Master of Arts, Chinese

Admission Requirements

1. Minimum 3.00 undergraduate GPA in the junior and senior years
2. Three letters of recommendation and statement of purpose
3. Strong undergraduate preparation in one of the following: Chinese language and literature, another foreign language and literature, Asian regional studies, comparative literature, linguistics, English, philosophy, or history. Completion of four years of modern Chinese and one year of classical Chinese, each with a minimum 3.00 GPA.
4. Students lacking such preparation may be admitted provisionally, and are required to make up deficiencies during their first year of residence.

Degree Requirements

38-40 credits

1. Two options: (1) thesis program, and (2) non-thesis program which requires two seminar or research papers in lieu of a thesis, and two 500-level departmental courses in addition to the requirements specified below.
2. *Coursework requirements:*
 - a. *Second-Year Classical Chinese*(15 credits): CHIN 551, CHIN 552, CHIN 553
 - b. *Methods and Materials* (5 credits): CHIN 559
 - c. *History of Chinese Literature* (5 credits): Any one course of the following three-quarter sequence: CHIN 461, CHIN 462, CHIN 463
 - d. *Chinese Language* (5 credits): CHIN 442
 - e. Minimum one course from each of the following two groups (8-10 credits):
 1. *Group I -- Literature:* CHIN 461, CHIN 462, CHIN 463; CHIN 482; CHIN 554, CHIN 555, CHIN 556; CHIN 561, CHIN 562, CHIN 563; CHIN 573; CHIN 575; CHIN 580; CHIN 582; CHIN 583; CHIN 590; CHIN 591, CHIN 592, CHIN 593
 2. *Group II -- Linguistics and Philology:* CHIN 443; CHIN 531, CHIN 532, CHIN 533; CHIN 540; CHIN 541; CHIN 542; CHIN 544; CHIN 557; CHIN 558
3. *MA examination:* Covers Chinese literature: second part focuses on language (linguistics and philology) and texts. Normally taken no later than autumn quarter of the third year.

Master of Arts, Japanese Language and Literature

Admission Requirements

1. Minimum 3.00 undergraduate GPA in the junior and senior years
2. Three letters of recommendation and statement of purpose
3. Strong undergraduate preparation in any of the following: Japanese language and literature, with the equivalent of at least four years' work in the language; another language and literature, Asian regional studies, comparative literature, linguistics, art history, English, philosophy, or history.
4. A student lacking such preparation may be admitted, but is expected to concentrate initially on coursework to compensate for deficiencies. In case of inadequate training in Japanese, intensive courses are available.

Degree Requirements

45-75 credits

1. *Coursework*: Minimum 45 credits above the 300 level earned through a combination of coursework and research. At least 18 credits in numerically graded courses at the 400 and 500 level, and 18 credits at the 500 level and above.

The following courses normally constitute a minimal level of training: JAPAN 321, JAPAN 322, JAPAN 323 (no graduate credit); JAPAN 421, JAPAN 422, JAPAN 423; JAPAN 431, JAPAN 432, JAPAN 433; JAPAN 471, JAPAN 472, JAPAN 473. Students with a background comparable to this may enter more advanced courses. Less well prepared students may require a program considerably in excess of the minimum 45 credits.

The student completes requirements by submitting (1) a thesis, or (2) two research papers.

2. *MA general examination*: two written examinations, one pre-modern (pre-Meiji) literature, the other modern.

Master of Arts, Japanese Language and Linguistics

Admission Requirements

1. Minimum 3.00 undergraduate GPA in the junior and senior years
2. Three letters of recommendation and statement of purpose
3. Strong undergraduate preparation in any of the following: Japanese language and literature, with the equivalent of at least four years' work in the language; another language and literature, Asian regional studies, comparative literature, linguistics, art history, English, philosophy, or history
4. A student lacking such preparation may be admitted, but is expected to concentrate initially on coursework to compensate for deficiencies. In case of inadequate training in Japanese, intensive courses are available.

Degree Requirements

45-75 credits

1. *Coursework*: Minimum 45 credits above the 300 level earned through a combination of coursework and research. Minimum 18 credits in numerically graded courses at the 400 and 500 level, and 18 credits at the 500 level and above.

The following courses normally constitute a minimal level of training: JAPAN 421, JAPAN 422, JAPAN 423 (if language training is necessary); JAPAN 342 (no graduate credit); JAPAN 343 (no graduate credit); JAPAN 440; JAPAN 442; JAPAN 443. Students with a background comparable to this may enter more advanced courses. Less well prepared students may require a program considerably in excess of the minimum 45 credits.

The student completes requirements by submitting (1) a thesis or (2) two research papers.

2. *Linguistics*: Two written examinations in Japanese linguistics, whether in descriptive linguistics, theoretical linguistics, applied linguistics, or sociolinguistics.

Master of Arts, South Asian Languages and Literature

Admission Requirements

1. Minimum 3.00 undergraduate GPA in the last 90 quarter or 60 semester credit hours
2. Three letters of recommendation and statement of purpose
3. Preference given to students with prior preparation in a South Asian language and literature, in South Asian regional studies, or in a humanistic discipline pertinent to the study of South Asian civilization. Students lacking such preparation may be admitted but must add courses to compensate for deficiencies. South Asian language specializations at the UW are Sanskrit and Hindi.

Degree Requirements

45-75 credits

1. *Coursework:*
 - a. *Non-thesis program:* 45 course credits, 18 at the 500 level and above. Language study through the fourth-year level in the student's major language. Two approved seminar papers.
 - b. *Thesis program:* 45 course credits plus 9 thesis credits. At least 18 credits at the 500 level or above. Language requirements are the same as in the non-thesis program. An acceptable MA thesis. Oral examination.
2. *Foreign language requirement:* Competence in the major South Asian language.

Doctor of Philosophy, Buddhist Studies

Admission Requirements

MA degree in Asian Languages and Literature at the UW and satisfactory evaluation by South Asian language faculty. Students with comparable background, usually successful completion of a relevant MA degree at another institution, may be considered.

Degree Requirements

90 credits

1. Competence in their major Asian languages
2. Written examinations in two research languages other than English and the student's native language (i.e., one written examination in addition to that completed at the MA level)
3. Ability to do original research utilizing primary languages of Buddhist traditions in accord with chosen areas of concentration
4. Recommended: competence in a modern research language in order to pursue research in the field, e.g., in India, Nepal, Sri Lanka, Tibet, China, or Japan
5. Three written field examinations. At least two of these examinations directly related to some aspect of Buddhist Studies; a third will fall within the general purview of South Asian languages and literature in an adjacent field or discipline.
6. Comprehensive oral examination
7. Dissertation

Doctor of Philosophy, Chinese

Admission Requirements

1. Completion of 45 credits (minimum three quarters) of graduate study in the department.
2. Petition stating post-MA academic plans and goals.
3. Normally an MA degree in Chinese language and literature or an MA in another pertinent field; e.g., linguistics, comparative literature, philosophy, history, or Asian regional studies. A student, however, must satisfy all course and examination requirements for the department's MA program. Upon admission, such a student should be prepared to take courses in modern Chinese at the 500 level, and should have at least two years of Classical Chinese.
4. Students intending to go directly from the BA to the PhD need exceptionally strong background preparation in literary study or linguistics, are expected to satisfy all curriculum requirements for the MA, and must petition the department for special permission to bypass the MA.

Degree Requirements

90 credits:

1. *Course requirements:* Complete the course requirements for the MA in Chinese. Equivalent courses from other programs may be substituted subject to written approval by the regular instructor. CHIN 461, CHIN 462, CHIN 463 not taken for the MA must be taken for the PhD. Post-MA coursework should be designed to strengthen weaknesses in the student's background, and to establish and develop three fields of special study that the student pursues in depth.
2. *Field requirements:* Three fields. Familiarity with both original texts and secondary scholarship of each field. Show potential for carrying out original research in these areas or fields. Written field examinations.

The three fields must reflect both the primary components of the department's graduate-level offerings, i.e., language (linguistics and philology) and literature. In at least one field students are encouraged to incorporate some aspect of Chinese history and culture, exclusive of strictly literary or linguistic facets. A student may offer one field from outside the department; e.g., general linguistics, literary criticism, a non-Chinese literature, Chinese philosophy or religion, or a specific period of Chinese history. Such a field must be related in a significant way to the student's overall course of study.

3. *Examinations:* Taken in the three fields separately. Prior to the general examination the student demonstrates reading knowledge of an additional Asian language and a pertinent European language.

Doctor of Philosophy, Japanese

Admission Requirements

Students are admitted first to the department, then later petition for entry to the PhD program. Applicants with an MA in Japanese literature and culture from another institution complete at least 45 credits of coursework, then submit a petition, which allows them to bypass other MA requirements. Students without an MA in Japanese literature and culture enter the MA program and complete all requirements before submitting a petition. See the Japanese MA program for more information.

Degree Requirements

95 credits

1. *Course requirements:* In addition to the minimum 45 credits or equivalent required for the master's program, at least 50 credits of coursework at the graduate level, 20 of which at the 500 level.
 - a. Modern Japanese: JAPAN 431, JAPAN 432, JAPAN 433 (may be bypassed with previous training, if approved)
 - b. Classical Japanese and kambun: JAPAN 471, JAPAN 472, JAPAN 505 (may be bypassed with previous training, if approved)
 - c. 10 credits in classical Japanese literature and culture: JAPAN 571, JAPAN 572, or JAPAN 573
 - d. 10 credits in modern Japanese literature and culture: JAPAN 531, JAPAN 532, or JAPAN 533
2. Additional coursework may be required.
3. *Language requirement:* In addition to English and Japanese, proficiency in a third language related to the student's course of study.
4. *Fields:* Advanced studies in three distinct fields. One must be classical Japanese literature and one modern Japanese literature. Each requires a substantial research paper. The third field may be pursued outside the department.
5. *General examination*
6. *Dissertation and final examination*

Doctor of Philosophy, South Asian Languages and Literature

Admission Requirements

Normally entry is contingent upon successful completion of the MA degree in Asian Languages and Literature at the UW and a satisfactory evaluation by South Asian Language program faculty. Students with sufficient background, usually successful completion of a relevant MA degree at another institution, may be considered.

Degree Requirements

90 credits

1. *Languages:* Competence in the major South Asian language, to include written examinations in two research languages other than English and the student's native language (i.e., one examination in addition to the examination completed at the MA level). One of these must be a European language.
2. *Fields:* Three written field examinations, at least two of which must fall within the general purview of South Asian languages and literature. The third may have as its subject an adjacent field or discipline, if the candidate so chooses.
3. *Comprehensive oral examination*
4. *Dissertation*

Financial Aid

Financial aid for graduate students newly entering the department is very limited and is awarded on a competitive basis. National Resource Fellowships are awarded for the study of Chinese, Japanese, and Korean. The department offers incoming graduate students limited opportunities for teaching assistant positions in Chinese, Japanese, and Korean. Since some financial aid is determined by need, all prospective students are urged to submit the Free Application for Federal Student Aid (FAFSA), and to apply for other forms of aid mentioned in the department's cover letter to prospective students.

Astronomy

Department Overview

C319 Physics-Astronomy Building

Modern research in astronomy and astrophysics encompasses a large number of disciplines and specialties. Research areas include planetary systems and astrobiology, stellar structure and evolution, interstellar matter, binaries and compact objects, galactic structure and dynamics, galaxies and quasars, and large scale structure and cosmology.

Undergraduate Program

Adviser

C319 Physics-Astronomy, Box 351580
(206) 543-2888

office@astro.washington.edu

The Department of Astronomy offers the following undergraduate program:

- The Bachelor of Science degree with a major in astronomy

Bachelor of Science

Suggested First-Year Courses: MATH 124, MATH 125, MATH 126, MATH 308, MATH 324; PHYS 121, PHYS 122, PHYS 123. At community colleges it is better to take courses in physics, chemistry, mathematics, and computer science rather than the usual introductory astronomy courses.

Department Admission Requirements

1. Minimum requirements for consideration: PHYS 121, PHYS 122, PHYS 123 (or transfer equivalent; may be presently enrolled in PHYS 123). Minimum 2.00 cumulative GPA for physics courses. Either MATH 124, MATH 125, MATH 126 or MATH 134, MATH 135 (or full transfer equivalent; may be presently enrolled in MATH 126 or MATH 135).
2. Standard admission is twice a year. Application deadlines: third Friday of autumn quarter and third Friday of spring quarter.

Winter quarter transfer admission: Students transferring to the UW in autumn or winter quarter may also apply the third Friday of winter quarter.

3. Meeting minimum requirements does not guarantee admission. Admission is capacity constrained, based on holistic review of a student's record as follows:
 - a. Academic performance to include review of overall GPA and content of all courses completed; frequency of incompletes or withdrawals and number of repeated courses; and an academic record that demonstrates interest in science, technology, engineering, and/or mathematics.
 - b. Personal statement, consisting of a brief (500-1,000 word) description of the student's interest and goals in the astronomy major and addresses strategies of success in the major. In cases of exceptional or extenuating circumstances, the personal statement may

include a petition for waiver of one of the stated minimum requirements shown in admission requirement 1, above. A more extensive list of possible additional topics is provided on the Astronomy Department Undergraduate Admission web page.

Consult the Astronomy Department website for additional application information and sample graduation plans.

Major Requirements

89 credits as follows:

1. ASTR 300, ASTR 321, ASTR 322, ASTR 323
2. 9 graded credits of astronomy 400-level courses (with at least 3 credits in ASTR 480 or ASTR 499). Data analysis (ASTR 480) and senior-year research (ASTR 499) are highly recommended, especially for students planning graduate work.
3. PHYS 121, PHYS 122, PHYS 123; PHYS 224, PHYS 225, PHYS 226, PHYS 227, PHYS 228; PHYS 321, PHYS 322, PHYS 334
4. MATH 124, MATH 125, MATH 126, and 6 credits from MATH 307, MATH 308, MATH 309, MATH 324, MATH 326, AMATH 352, OR AMATH 353
5. An additional 6 physics credits in courses at the 300 level or above in physics (chosen from PHYS 311, PHYS 323, PHYS 324, PHYS 325, PHYS 328, PHYS 331, PHYS 335, PHYS 421, PHYS 422, PHYS 423, PHYS 424, PHYS 431, PHYS 432, PHYS 433, PHYS 434) or engineering as approved by adviser.
6. No grade below 2.0 is acceptable in courses fulfilling the above requirements.
7. Undergraduates interested in advanced work in astronomy are advised to take a double major in astronomy and physics. Undergraduates interested in immediate employment at an observatory or other scientific institution should include computing and electronics courses as part of their program. As a capstone sequence of hands-on research and dissemination of results, the following is highly recommended: ASTR 480, followed by either ASTR 481 or ASTR 499 or a Research Experience for Undergraduates (REU) project, and ending with ASTR 482.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* With this degree, students obtain knowledge of the components of the universe, an understanding of the physics of its structure, and the technical skills to obtain and analyze data from telescopes. Graduates go on to graduate school or work at observatories or in industrial applications (lasers, x-ray, optical imaging) or in teaching applications. Students are able to do the following:
 - Understand the principal findings, common application, and current problems within astronomy as a scientific discipline
 - Be versed in the computational methods and software resources utilized by professional astronomers
 - Have experience operating modern astronomical instrumentation and analyzing a range of experimental data
 - Assess, communicate, and reflect their understanding of astronomy and the results of astrophysical experiments in both oral and written formats
 - Learn in a diverse environment with a variety of individuals, thoughts, and ideas
- *Instructional and Research Facilities:* The department operates a 30-inch telescope with modern instrumentation, primarily for students, at the Manastash Ridge Observatory near Ellensburg. The

department is also part of a consortium of universities that operate a 3.5-meter optical/infrared telescope located on Sacramento Peak, New Mexico and that are partners in the innovative Sloan Digital Sky Survey and the future Large Synoptic Survey Telescope. Students also have access to a variety of national facilities, such as the Kitt Peak and Cerro Tololo observatories and the Very Large Array. A variety of research is conducted with satellite instruments such as the Hubble Space Telescope. Data analysis and theoretical research are conducted on the department's cluster of computers, and on a variety of UW and national supercomputer facilities. Undergraduate majors often assist faculty members in acquisition, reduction, and interpretation of data.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Washington State Space Grant, NSF research experiences for undergraduates. NASA internships, outreach opportunities
- *Department Scholarships:* Baer Prize. See adviser for details.
- *Student Organizations/Associations:* The Society of Physics Students. Undergraduate Astronomy Institute/Palen Radio Astronomy Group. League of Astronomers. See adviser for details.

Of Special Note: The first required astronomy course, ASTR 321, must be preceded by at least one year of college physics and mathematics. Any lower-division astronomy courses count as electives and not as part of the major. To finish in four years, the student must have completed PHYS 123 before winter quarter of the sophomore year. Students are encouraged to take the capstone sequence: spring: ASTR 480; summer: ASTR 481 or ASTR 499 or an REU (Research Experiences for Undergraduates) program; autumn: ASTR 482.

Graduate Program

Graduate Program Coordinator
C319 Physics-Astronomy, Box 351580
(206) 543-2888
grad@astro.washington.edu

Graduate courses in solar system, stellar, galactic, and extragalactic astrophysics are offered. The heart of the program, collaboration of students and faculty members in research at the frontiers of astronomy, involves developing techniques and insight necessary for successful research and, subsequently, defining a thesis topic. Thesis research may use theoretical, computational, or observational material (obtained through facilities of the UW or one of the national ground- or space-based observatories, or a combination). Active research programs in observations and theory are carried out in a variety of areas, including astrobiology and extrasolar planets, interplanetary dust and comets, stellar atmospheres and interiors, stellar evolution and populations, interacting binary stars and compact objects, interstellar matter and nebulae, computational astrophysics and data mining, galaxies and quasars, large scale structure and cosmology, and dark matter and energy.

Doctor of Philosophy

Admission Requirements

Most entering students have a bachelor's degree in physics. Entering students are not required to have a background in astronomy, although some knowledge of general astronomy is expected of those to whom a teaching assistantship is offered. Interested undergraduates are urged to concentrate on preparation in physics and mathematics before entering.

Visit www.astro.washington.edu/grad for details on admission requirements. Most application material is submitted through the Graduate School online application.

Degree Requirements

90 credits minimum, to include the following:

Typically PhD students take formal courses during their first two years at the UW while sampling research projects with various faculty. Areas covered include planetary astronomy, stellar interiors and atmospheres, interstellar medium, galaxies, dynamics, cosmology, physical processes, observational astronomy, and a variety of special topics. Early on, students may embark on faculty-supervised research programs.

Core Curriculum: Typical core courses include ASTR 507, ASTR 519, ASTR 521, ASTR 531, ASTR 557, ASTR 561 in one year, and ASTR 508, ASTR 509, ASTR 511, ASTR 512, ASTR 513, ASTR 541 in the alternate year, along with ASTR 500 and ASTR 581 (latter two often offered annually). In addition, each quarter students take a third course emphasizing additional physical or mathematical science study or astronomical research.

Examinations: (1) Qualifying written examination covering general knowledge, taken and passed by the end of the third year. (2) General examination, an oral examination on a topic related to a student's proposed PhD research topic.

Dissertation: Students begin PhD research after passing the general examination, typically in the third or fourth year at UW. Most students complete the PhD thesis and defense two to three years later.

A master of science degree is offered but the department is not currently accepting students for a master's-only program. Students typically earn the master's degree as part of the PhD program. The departmental requirements for a master's degree are either (1) adequate performance on the qualifying exam or (2) an approved and supervised master's thesis.

Assistantships

Normally all students making satisfactory academic progress receive financial support. More than three-quarters of the department's graduate students hold fellowships or research assistantships. Teaching assistantships are available, primarily in elementary astronomy courses.

Biochemistry

Program Overview

303 Bagley

Biochemistry is the study of the living organism at the molecular level. It draws on the techniques of analytical, organic, inorganic, and physical chemistry in determining the molecular basis of vital processes.

Undergraduate Program

Adviser

303 Bagley, Box 351700

(206) 616-9880, (206) 543-9343, (206) 685-8376

advisers@chem.washington.edu

The Biochemistry Program offers the following programs of study:

- The Bachelor of Science degree with a major in biochemistry (requires 195 credits)
- The Bachelor of Arts degree with a major in biochemistry

Suggested First- and Second-Year Courses: BIOL 180, BIOL 200 (or BIOL 201, BIOL 202); CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242; MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 with one physics lab course strongly recommended).

Bachelor of Science

Program Admission Requirements

Application to BA and BS degree programs in biochemistry is capacity constrained. Applicants are considered in the following groups: Direct Freshman Admission, Research/Honors Admission, Early Admission, and Regular Admission. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are considered twice each academic year and are due on the second Friday of October and the second Friday of April, with the exception of Direct Freshman Admission. The application and additional information is available at depts.washington.edu/chem/undergrad/.

Direct Freshman Admission

1. Open to freshman students formally admitted to the UW
2. Indication on the UW freshman application of biochemistry as the student's first choice of major
3. Successful direct-admission applicants generally have received a minimum 1400 on the SAT (math and verbal sections), or minimum 30 on the ACT
4. Admission is for autumn quarter only

Research/Honors Admission

1. Students with exceptional records can apply for consideration for admission to the biochemistry major via the Honors or Research track. Students seeking admission should submit an application that includes:
 - a. Cover sheet (available on the Department of Chemistry website)
 - b. Unofficial transcript
 - c. Statement of purpose. May include a description of interest in biochemistry, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.
 - d. (Research track only) Written letter or recommendation from research adviser
2. Honors Track. Students participating in the chemistry Honors sequence who have completed the following courses with a minimum 3.00 cumulative GPA: CHEM 145, CHEM 155; MATH 124 and MATH 125, or MATH 134 and MATH 135
3. Research Track. Students who have performed at least 6 credits of undergraduate research (CHEM 199, CHEM 299, or higher) and who provide a strong recommendation from faculty research adviser. Chemistry undergraduate research may be considered as well.

Early Admission

1. Course requirements: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); BIOL 180; MATH 124, MATH 125 (or MATH 134, MATH 135)
2. Factors included in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS biochemistry program typically have a cumulative GPA greater than 3.20 in courses listed above under course requirements. Successful applicants for the BA biochemistry program typically have a cumulative GPA greater than 3.00 in courses listed above under course requirements.

Regular Admission

1. Course requirements: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238 (or CHEM 335, CHEM 336); BIOL 180, BIOL 200; MATH 124, MATH 125 (or MATH 134, MATH 135)
2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS biochemistry program typically have over the minimum 2.5 cumulative GPA in courses listed above under course requirements, with no individual course grade lower than a 2.0. Successful applicants for the BA biochemistry program typically have a cumulative GPA greater than 2.00 in courses listed above under course requirements, with no individual grade below a 1.7.

Major Requirements

103-114 credits

1. *General Chemistry*: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165)
2. *Organic Chemistry*: CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347)
3. *Physical Chemistry*: CHEM 452, CHEM 453 (or CHEM 455, CHEM 456, CHEM 457)
4. *Biochemistry*: BIOC 426, BIOC 440 (or BIOC 450), BIOC 441 (or BIOC 451), BIOC 442
5. *Biology*: BIOL 180, BIOL 200
6. *Mathematics*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
7. *Physics*: PHYS 121, PHYS 122, PHY 123 (or PHYS 114, PHYS 115, PHYS 116), with the PHYS 121 sequence recommended
8. *Genome Science*: GENOME 361 or GENOME 371
9. 11 credits chosen from a current department list (available in 303 Bagley or at depts.washington.edu/chem/undergrad/degreqs.html) of upper-division science classes including math, biology, microbiology, chemistry, and genome sciences. Up to 9 credits of approved advanced-level undergraduate research may also be applied to this requirement. Research conducted outside chemistry or biochemistry must first be approved by a biochemistry adviser.
10. *Grade and Graduation Requirements*: Minimum 2.0 grade and minimum cumulative 2.50 GPA required for all chemistry, biology, and biochemistry courses counted toward the major. Minimum 2.50 GPA required for the BIOC 440, BIOC 441, and BIOC 442 sequence. Minimum 2.50 cumulative GPA required for graduation.

Bachelor of Arts

Program admission requirements same as for BS degree, above.

Major Requirements

90-92 credits as follows:

1. *General Chemistry*: either CHEM 142, CHEM 152, CHEM 162, (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165)
2. *Organic Chemistry*: either CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242, or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347
3. *Biochemistry*: BIOC 405, BIOC 406
4. *Physical Chemistry*: CHEM 452, CHEM 453
5. *Biology*: BIOL 180, BIOL 200
6. *Mathematics*: either MATH 124, MATH 125, MATH 126, or MATH 134, MATH 135, MATH 136
7. *Physics (12-15 credits)*: either PHYS 121, PHYS 122, PHYS 123, or PHYS 114, PHYS 115, PHYS 116
8. *Science Electives*: 9 credits to be taken from a current department list available in 303 Bagley or at depts.washington.edu/chem/undergrad/degreqs.html. Up to 3 credits of advanced

undergraduate research may count toward this requirement. Research conducted outside chemistry or biochemistry must first be approved by a biochemistry adviser.

9. *Grade and Graduation Requirements:* Minimum 1.7 grade in chemistry, biochemistry, and biology courses required for the major. Minimum 2.00 cumulative GPA required for graduation.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* At the conclusion of their studies, graduating biochemistry majors should possess a general working knowledge of the basic areas of biochemistry; be proficient in basic laboratory skills; have the ability to carry out strategies for solving scientific problems; have an understanding of the principles and applications of modern instrumentation, computation, experimental design, and data analysis; have had the opportunity to gain experience with a research project; have the ability to communicate scientific information clearly and precisely; have the ability to read, understand, and use scientific literature; have an awareness of the broader implications of biochemical processes; have had the opportunity to work as part of a team to solve scientific problems; and have had an introduction to opportunities in, and requirements for, the careers available to biochemistry majors.

Students planning a career in biomedical research, the health professions, or biotechnology find the biochemistry degree to be an excellent choice. The degree is also good preparation for graduate school in any aspect of biochemical or biomedical research.

- *Instructional and Research Facilities:* Research facilities for the department are housed in the Biochemistry-Genetics Building, which provides approximately 52,000 square feet of research space, conference rooms, and a departmental library. In the immediate vicinity are the departments of Immunology, Genome Sciences, Microbiology, and Pharmacology, as well as programs in biomolecular structure, molecular medicine, neurobiology, and molecular and cellular biology, with which the department has common research interests. Laboratories are equipped with modern research equipment and are supported by external, centralized research facilities. An emphasis on biomedical research is facilitated by the location of the department within the School of Medicine.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

Research, Internships, and Service Learning: No formal internship program. Students are encouraged to pursue national and regional internships. See adviser for more information.

- *Program Scholarships:* Resident tuition scholarships and book prizes are awarded annually by the Department of Chemistry to eligible chemistry and biochemistry majors. Applications are available during the month of March for the following academic year. See department adviser for more information.
- *Student Organizations/Associations:*
 - Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
 - Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
 - The Free Radicals: a general undergraduate club for chemistry and biochemistry majors.

Of Special Note:

- The Bachelor of Science in biochemistry degree requires a minimum of 193 credits.
- Students are strongly encouraged to participate in undergraduate research.

Biology

Department Overview

106 Kincaid

Biology is the broadly based study of living organisms and has become an increasingly dynamic and wide-ranging discipline. It may be approached by focus on cell and molecular processes, development, organismal physiology and morphology, natural history, evolution, conservation, or ecology. The aim is to elucidate general principles applicable to many different sorts of organisms rather than to concentrate on any particular taxonomic group. Biology is often interdisciplinary in nature and may involve aspects of biochemistry, botany, genetics, microbiology, zoology, and many other natural sciences.

Undergraduate Program

Adviser

318 Hitchcock, Box 355320

206-543-9120

bioladv@uw.edu

The Department of Biology offers the following programs of study:

- The Bachelor of Arts degree with a major in biology.
- The Bachelor of Science degree with a major in biology. Students choose one of the following options: ecology, evolution, and conservation; general; molecular, cellular, and development; physiology; and plant.
- A minor in paleobiology.

Designed for students desiring breadth of training, the Bachelor of Arts program does not require physics. Students do not select an emphasis, and hence have greater flexibility in upper-division biology electives.

The Bachelor of Science options are as follows:

1. *Ecology, Evolution, and Conservation.* Emphasizes ecological and evolutionary processes and conservation biology. Relates these areas to systematics, the distribution and abundance of organisms, and environmental policy. Prepares students for graduate study in ecology and evolution, for professional schools that seek individuals with strong system-level approaches to problem solving, and for careers in natural resources and conservation.
2. *General.* Emphasizes breadth of training in biology. This is the most flexible program and offers a greater variety of advanced electives than other options. Attractive to students desiring K-12 teaching credentials or who otherwise wish to tailor their degree to their needs.
3. *Molecular, Cellular, and Development.* Designed for students who wish to pursue graduate studies in genetics, biochemistry, microbiology, cell biology, or developmental biology, as well as for candidates for professional schools such as medicine and dentistry.
4. *Physiology.* Emphasizes physiological processes from the cellular to the organismal levels, and across all groups of organisms. An attractive option for students interested in graduate and professional fields in animal and human physiology, medicine, and veterinary sciences.

5. *Plant*. Offers students both breadth and depth of training in the field of botany. Ideal for students desiring to enter graduate programs in botany or for those wishing to pursue careers in the plant biology or horticultural fields in state and federal agencies.

Each of the above bachelor's degree programs in the biological sciences can be combined with Washington State requirements to prepare students to teach biology in public schools at the secondary level. See the Biology Teaching Program adviser for specific requirements.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Same as for the Bachelor of Science degree as described below, except no physics or third quarter of organic chemistry is required.

Department Admission Requirements

Same as for the Bachelor of Science degree as described below.

Major Requirements

87-98 credits

1. BIOL 180, BIOL 200, BIOL 220; or BIOL 240 (15 credits)
2. One of the following general and organic chemistry sequences (15-23 credits)
 1. CHEM 120, CHEM 220, CHEM 221
 2. CHEM 142 (or CHEM 143), CHEM 152 (or CHEM 153), CHEM 223, CHEM 224
 3. CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238
 4. CHEM 143, CHEM 153, CHEM 237, CHEM 238
3. Physics: not required
4. One of the following calculus/statistics sequences (9-10 credits)
 1. MATH 124 and MATH 125
 2. Q SCI 291 and Q SCI 292
 3. Either BIOST 310, Q SCI 381 or STAT 311; Q SCI 482
 4. One approved calculus class and one approved statistics class; see adviser for approved lists.
5. Genetics: either GENOME 361, GENOME 371, or BIOL 340/FISH 340 (3-5 credits)
6. Natural history/biodiversity: one course selected from approved list (3 credits)
7. 300- and 400-level courses, in addition to any 300-/400-level courses taken to fulfill requirements above. See department website for approved courses. (42 credits.)
8. Minimum 2.0 cumulative GPA for courses applied toward major requirements

Bachelor of Science

Suggested First- and Second-Year Courses: Students should concentrate on general chemistry and mathematics the first year, biology and organic chemistry the second year (see major requirements for

specific courses). Transfer students: complete an entire sequence at one school if possible. It is not necessary, or even desirable, to complete the Areas of Knowledge requirement during the first two years.

Department Admission Requirements

Application to the BA and BS degree programs is capacity constrained. Applications, accepted quarterly, are due the second Friday of autumn, winter, spring, and summer quarters, by 11:59 p.m. Applications received after the quarterly deadline are considered for the subsequent quarter.

Minimum requirements for consideration

1. Matriculated student in good academic standing at UW Seattle.
2. Minimum 2.0 grade in each of BIOL 180, BIOL 200, and BIOL 220; or in BIOL 240
3. Minimum 2.50 cumulative GPA for any supporting chemistry, physics, mathematics, and biology courses (or other courses that may apply to major requirements) completed at time of application.
4. Personal statement: May include description of interest in biology, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.

Meeting minimum requirements does not guarantee admission. Other factors include overall academic record and difficulty of other courses completed; time to degree set by UW Satisfactory Progress Policy, including frequency of incompletes or withdrawal grades and number of repeated courses; relevant work and life experience; and record of honors.

Major Requirements

87-104 credits for all options:

1. BIOL 180, BIOL 200, BIOL 220; or BIOL 240 (15 credits)
2. One of the following general and organic chemistry sequences:
 - a. CHEM 120, CHEM 220, and CHEM 221
 - b. CHEM 142 (or CHEM 143), CHEM 152 (or CHEM 153), CHEM 223, CHEM 224
 - c. CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, CHEM 239
 - d. CHEM 143, CHEM 153, CHEM 237, CHEM 238, CHEM 239
3. One of the following two-quarter sequences of mathematics (calculus/statistics):
 - a. MATH 124 and MATH 125
 - b. Q SCI 291 and Q SCI 292
 - c. Either BIOS 310, Q SCI 381, or STAT 311; Q SCI 482
 - d. One approved calculus class and one approved statistics class; see adviser for approved lists.
4. Two quarters of physics: PHYS 114 and PHYS 115, or PHYS 121 and PHYS 122
5. Genetics: either GENOME 361, GENOME 371, or BIOL 340/FISH 340.
6. Natural history/biodiversity: one course selected from approved list (3 credits)
7. *Option Requirement:* 300- and 400-level courses selected from lists specific to each option. See department website for additional information. (34 credits)

*CHEM 162 is not required for this degree; however, CHEM 237, CHEM 238, and CHEM 239 are required by many professional programs and graduate schools, and that sequence does require CHEM 162.

8. *Additional Degree Requirements:*

- a. Minimum 2.00 cumulative GPA for all UW courses applied toward major requirements, including required supporting courses (chemistry, physics, mathematics), introductory biology, and upper-division coursework. (A grade of 2.0 is not required in individual courses.)
- b. Minimum 15 credits of 400-level biology electives taken through the UW.
- c. Two 300- or 400-level laboratory courses

Because of the differing specific requirements and choices for each option, it is extremely important for students to work closely with the Biology departmental advisers to insure completion of these 22-25 credits.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Paleobiology

Along with the departments of [Anthropology](#) and [Earth and Space Sciences](#), the Department of Biology offers a minor in paleobiology. For more information on the minor, see its entry [elsewhere](#) in the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The department graduates between 350 and 400 students each year. Biology degrees are applicable to many different fields, depending upon student interests. Students in the program gain analytical and laboratory skills that prepare them for entry-level positions in a variety of biologically related areas, including, but not limited to, biotechnology, laboratory and/or field research support, health science support, wildlife biology, and ecology and conservation work with a variety of agencies, consulting firms, and research organizations in the Northwest. Students may enter graduate programs that focus on some aspect of biological science (such as genetics, microbiology, immunology, ecology, environmental health, or cell and molecular biology), or enter a variety of professional programs, such as veterinary medicine, medicine, dentistry, pharmacy, laboratory medicine, and nursing.
- *Instructional and Research Facilities:* The Department of Biology occupies 128,000 square feet in Hitchcock, Johnson, and Kincaid Halls. Extensive research laboratories, teaching laboratories, computer workstations, and support services are found throughout the department.

Specialized facilities include more than 16,000 square feet of greenhouse, seawater facilities, growth rooms, electron microscopes, and other specialized equipment. Undergraduates have access to most of these facilities, especially those engaged in undergraduate research.

Off campus, the internationally recognized Marine Research Station, Friday Harbor Laboratories, provides many opportunities for undergraduates, from courses to research apprenticeships.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Biology faculty welcome undergraduates into their research programs, often working closely with them. Approximately 40 percent of the 900 undergraduate biology majors finish with undergraduate research experience.

UW proximity to such Seattle area organizations as the Fred Hutchinson Cancer Research Center, Swedish Hospital, numerous biotech companies, NOAA, National Marine Fisheries Research Center, the Seattle Aquarium, and the Woodland Park Zoo, as well as the close ties of Biology faculty to Friday Harbor Laboratories and the faculty in the College of the Environment provide opportunities for biology majors to develop internships within these organizations. See adviser for ways to get credit for such experiences.

- *Department Scholarships:* Several scholarships are available, in a few cases to biology majors only. Most of these support students wishing to pursue an undergraduate research experience. They are competitive, sometimes highly so. They include:
 - *Howard Hughes Undergraduate Research Internship:* approximately 20 per year for freshmen and 20 per year for juniors and seniors.
 - *Friday Harbor Laboratory (FHL) Apprenticeships:* \$3,000 for one quarter, spring or autumn.
 - *Mary Gates Scholarships:* very competitive, across all science disciplines.
 - *Herschel and Caryl Roman Scholarship:* \$2,500-\$5,000 annually to one or two students who have an interest in genetics research.
 - *Porath/Johnson Endowed Scholarship:* one-year, \$5,000 scholarship to an outstanding biology major.

For qualifications, deadlines, and other details, see adviser or consult the Department of Biology website.

- *Student Organizations/Associations:* Beta Beta Beta Biology Honor Society, tribeta@uw.edu; Pre Med Society (Alpha Epsilon Delta), aed@uw.edu.

Graduate Program

Graduate Program Coordinator
106 Kincaid Hall, Box 351800
206-685-8240
biolgrad@u.washington.edu

Doctor of Philosophy

Admission Requirements

1. UW Graduate School requirements as shown at www.grad.washington.edu/students/index.shtml
2. Academic background equivalent to that required of students receiving a BS degree from the department www.biology.washington.edu. Assessment of background and requirements for any remedial work occurs prior to the beginning of autumn quarter in the student's first year.

Degree Requirements

1. Request appointment of a Supervisory Committee no later than autumn quarter of the second year in residence. Meet at least once annually with the Supervisory Committee.
2. Upon completion of 18 graded credits and 60 regular credits of coursework, schedule the general examination, which consists of a written research proposal followed by an oral examination, taken no later than spring quarter of the second year in residence. Successful completion makes the student a candidate for the PhD degree.
3. Hold an appointment as a teaching assistant (TA) for at least three quarters while in residence.
4. Request appointment of a dissertation reading committee at the beginning of the quarter of anticipated graduation. The committee consists of three members of the student's Supervisory Committee.
5. Successfully defend the doctoral dissertation at the final examination. After completion of 27 dissertation credits, the student is ready to take the final examination, devoted to the subject of the dissertation. The format of the examination is a public seminar.

Chemistry

Department Overview

303 Bagley

Chemistry is a branch of natural science that deals principally with the properties of molecules, the chemical reactions that occur between them, and the natural laws that describe molecular interactions. Chemistry is a central science, having strong interactions with biology, medicine, earth and environmental sciences, physics, and mathematics.

Undergraduate Program

Adviser

303 Bagley, Box 351700

(206) 616-9880, (206) 543-9343, (206) 685-8376

advisers@chem.washington.edu

The Department of Chemistry offers the following programs of study:

- The Bachelor of Arts degree with a major in chemistry
- The Bachelor of Science degree with a major in chemistry - ACS certified
- The Bachelor of Science degree with a major in chemistry
- A minor in chemistry

The Bachelor of Science degree is designed primarily for those who wish to pursue a career in chemistry or a career in which chemistry plays a central role.

The department offers two Bachelor of Science degrees. The Bachelor of Science with a major in chemistry (ACS certified) meets guidelines established by the American Chemical Society (ACS). It provides an extensive education in all branches of chemistry and also emphasizes laboratory training. The non-certified major does not emphasize laboratory work as strongly, offers more options among chemistry courses, and allows more flexibility in incorporating coursework outside of chemistry.

The Bachelor of Arts in chemistry fills the needs of students whose chosen career requires a strong background in chemistry with additional expertise in other disciplines.

Bachelor of Science

Suggested First- and Second-Year Courses: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347); MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.

Department Admission Requirements

Application to BA and BS degree programs in chemistry is competitive. Applicants are considered in the following groups: Direct Freshman Admission, Research/Honors, Early Admission, and Regular Admission. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are considered twice each academic year and are due on the second Friday of October and the second Friday of April, with the exception of Direct Freshman Admission. The application and additional information is available at depts.washington.edu/chem/undergrad/.

Direct Freshman Admission

1. Open to freshman students formally admitted to the UW
2. Indication on the UW freshman application of chemistry as the student's first choice of major
3. Successful direct-admission applicants generally have received a minimum 1400 on the SAT (math and verbal sections) or a minimum 30 on the ACT.
4. Admission is for autumn quarter only.

Research/Honors

1. Students with exceptional records can apply for consideration for admission via the Honors or Research track. Students seeking admission should submit an application that includes:
 - a. Cover sheet (available on the Department of Chemistry website)
 - b. Unofficial transcript
 - c. Statement of purpose: May include a description of interest in chemistry, career goals, undergraduate research interests, degree interest (BA or BS), and any other information applicant believes is useful in evaluating the application.
 - d. (Research Track only) Written letter or recommendation from research adviser.
2. Honors Track. Students participating in the chemistry Honors sequence who have completed the following courses with a minimum cumulative GPA of 3.00: CHEM 145, CHEM 155 (10 credits); MATH 124 and MATH 125 (or MATH 134 and MATH 135) (10 credits).
3. Research Track. Students who have performed at least 6 credits of undergraduate research (CHEM 199, CHEM 299, or higher) and who provide a strong recommendation from faculty research advisers. Biochemistry undergraduate research may be considered as well.

Early Admission

1. Course requirements: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); PHYS 121, PHYS 122 (recommended) or PHYS 114, PHYS 115. MATH 124, MATH 125 (or MATH 134, MATH 135)
2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS chemistry and BS chemistry-ACS certified programs typically have a cumulative GPA greater than 3.20 in courses listed above under course requirements. Successful applicants for the BA chemistry program typically have a cumulative GPA greater than 3.00 in courses listed above under course requirements.

Regular Admission

1. Course requirements: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238 (or CHEM 335, CHEM 336). PHYS 121, PHYS 122 (recommended) (or PHYS 114, PHYS 115). MATH 124, MATH 125 (or MATH 134, MATH 135)
2. Factors in the admission decision include academic performance as measured by GPA in courses required for application, difficulty of other courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, relevant work and life experience, and record of honors.
3. Successful applicants for the BS chemistry and BS chemistry-ACS certified programs typically have a cumulative GPA greater than 2.50 in courses listed above under course requirements, with no individual grade lower than a 2.0. Successful applicants for the BA chemistry program typically have a cumulative GPA greater than 2.00 in courses listed above under course requirements, with no individual grade lower than 1.7.

Major Requirements

Chemistry (ACS-Certified)

93-107 credits

1. *Chemistry and Biochemistry Courses:*
 - a. *General Chemistry:* CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165)
 - b. *Organic Chemistry:* CHEM 237, CHEM 238, CHEM 239, CHEM 241, and CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346 and CHEM 347)
 - c. *Inorganic Chemistry:* CHEM 312, CHEM 317, and CHEM 416 (students completing CHEM 165 are exempt from CHEM 312)
 - d. *Analytical Chemistry:* CHEM 321, CHEM 426
 - e. *Physical Chemistry:* CHEM 455, CHEM 456, CHEM 457, CHEM 461
 - f. *Biochemistry:* BIOC 405 (contact adviser regarding alternative prerequisites for BIOC 405), or CHEM 432 or CHEM 436
 - g. *Advanced Chemistry:* 5 credits of numerically graded CHEM or BIOC 400-level courses (not previously listed) and one more course with laboratory (currently CHEM 428, CHEM 462, CHEM 463, CHEM 464, and CHEM 466)
 - h. Strongly recommended, research credits in CHEM 399 and CHEM 499.
2. *Mathematics:* MATH 124, MATH 125, MATH 126 and two additional math courses above 300 (recommended MATH 307 and MATH 308, or AMATH 351 and AMATH 352); (alternative math requirement: MATH 134, MATH 135, MATH 136)
3. *Physics:* PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.
4. *Grade Requirements:* Minimum 2.0 grade in each chemistry course; minimum 2.50 GPA for courses used to satisfy the major degree requirements; minimum overall cumulative 2.50 GPA and minimum 183 credits required for graduation.

Chemistry

90-101 credits

1. *Chemistry and Related Courses:*

- a. *General Chemistry:* CHEM 142, CHEM 152, CHEM 162, and CHEM 312 (or accelerated series CHEM 143, CHEM 153, and CHEM 312; or Honors series CHEM 145, CHEM 155, CHEM 165, and CHEM 416)
 - b. *Organic Chemistry:* CHEM 237, CHEM 238, CHEM 239, and CHEM 241 (or CHEM 335, CHEM 336, CHEM 337, and CHEM 346)
 - c. *Physical Chemistry:* CHEM 455, CHEM 456, CHEM 457
 - d. *Advanced Chemistry Laboratories:* Two of the following three: CHEM 317, CHEM 321, or CHEM 461
 - e. *Additional Laboratories:* 5 additional laboratory credits chosen from the following: CHEM 242, CHEM 317, CHEM 321, CHEM 347, CHEM 426, CHEM 428, CHEM 461, CHEM 462, CHEM 463, CHEM 464, CHEM 466, and BIOC 426
 - f. *Science Electives:* 11 credits chosen from CHEM 242, CHEM 317, CHEM 321, CHEM 347, any 400-level numerically graded chemistry or biochemistry courses, or MATH 307 (or AMATH 351). Students with a chemistry GPA of 3.30 or higher may apply up to 6 credits of approved research (CHEM 399 or CHEM 499) toward satisfying this requirement. CHEM 498 may *not* be used to satisfy this requirement.
2. *Mathematics:* MATH 124, MATH 125, MATH 126 and one course above 300 (recommended: MATH 308 or AMATH 352); alternative MATH requirement: MATH 134, MATH 135, MATH 136.
3. *Physics:* PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.
4. *Grade Requirements:* Minimum 2.0 grade in each chemistry course; minimum 2.50 GPA required for all chemistry, mathematics, and physics courses used to satisfy major requirements; minimum overall cumulative 2.50 GPA and minimum 180 credits required for graduation.

Bachelor of Arts

Suggested First- and Second-Year Courses: CHEM 142, CHEM 152, CHEM 162 (or accelerated series CHEM 143, CHEM 153; or Honors series CHEM 145, CHEM 155, CHEM 165); CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347); MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121, PHYS 122, PHYS 123 (or PHYS 114, PHYS 115, PHYS 116 plus one physics lab course). PHYS 121 sequence recommended.

Department Admission Requirements

Same as for Bachelor of Science, shown above

Major Requirements

79-82 credits as follows:

1. *Chemistry Courses:*

- a. *General Chemistry*: : CHEM 142, CHEM 152, CHEM 162, CHEM 312 (or accelerated series CHEM 143, CHEM 153, CHEM 312; or Honors series CHEM 145, CHEM 155, CHEM 165)
 - b. *Organic Chemistry*: CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242 (or CHEM 335, CHEM 336, CHEM 337, CHEM 346, CHEM 347)
 - c. *Analytical Chemistry*: CHEM 321
 - d. *Advanced Chemistry Lab*: Either CHEM 317 or CHEM 461
 - e. *Advanced Chemistry*: 11 credits of numerically graded CHEM 400-level courses to include either CHEM 455, CHEM 456, CHEM 457 series, or CHEM 452, CHEM 453 series
2. *Mathematics*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
 3. *Physics*: One year of physics including at least 1 credit of laboratory (PHYS 114, PHYS 115, and PHYS 116 and at least one of PHYS 117, PHYS 118, or PHYS 119; or PHYS 121, PHYS 122, and PHYS 123; PHYS 121 sequence recommended).
 4. *Grade Requirements*: Minimum 2.00 GPA in chemistry courses counted toward major; minimum 1.7 grade in all required chemistry courses

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minor

Minor Requirements: 35-44 credits as follows:

1. One of the following three sequences:
 - a. CHEM 142, CHEM 152, CHEM 162, and one of CHEM 223, CHEM 237, or CHEM 335
 - b. CHEM 145, CHEM 155, CHEM 165, and one of CHEM 223, CHEM 237, or CHEM 335
2. MATH 124 (or Q SCI 291 and Q SCI 292)
3. PHYS 114 or PHYS 121
4. Three of the following four groups:
 - a. CHEM 312 (or CHEM 165)
 - b. CHEM 321
 - c. One of CHEM 452, CHEM 455, or CHEM 456
 - d. One of CHEM 224, CHEM 238, CHEM 336
5. Minimum 2.00 GPA for the minor; minimum 1.7 grade in each course presented for the minor.
6. A minimum of 15 credits taken for the minor must be completed in residence at the University of Washington.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: At the conclusion of their studies, graduating chemistry majors should have a general knowledge of the basic areas of chemistry with a working knowledge of at least one area: be proficient in basic laboratory skills; have the ability to carry out strategies for solving scientific problems; have an understanding of the principles and applications

of modern instrumentation, computation, experimental design, and data analysis; have had the opportunity to gain experience with a research project; have the ability to communicate scientific information clearly and precisely; have the ability to read, understand, and use scientific literature; have an awareness of the broader implications of chemical processes; have had the opportunity to work as part of a team to solve scientific problems; and have had an introduction to opportunities in, and requirements for, the careers available to chemistry majors.

Teaching high school chemistry, environmental or patent law practice, or working in the chemical industry in sales or management positions are career choices for which the BA in chemistry is generally useful.

- *Instructional and Research Facilities:*
 - Departmental facilities include a spectroscopic and analytical instrumentation laboratory (NMR, GC-MS, X-Ray, IR), Chemistry Library, Center for Enabling New Technologies through Catalysis (CENTC), Center for Process and Analytical Chemistry (CPAC), Materials and Devices for Information Technology Research (MDITR), Center for Nanotechnology, and extensive computing capabilities.
 - The department's local area network (LAN) is extended through a fiber optic cable to the university-wide network that is connected to Internet, HEPNET, SPAN, and other national and international computer networks.
 - The Chemistry Study Center offers assistance to students in 100-level chemistry courses and has 40 Pentium computers available to undergraduates taking chemistry courses.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* No formal internship program. Students are encouraged to pursue national and regional internships. See advisers for information.
- *Department Scholarships:* Resident tuition scholarships and book prizes are awarded annually by the Department of Chemistry to eligible chemistry and biochemistry majors. Applications are available during the month of March for the following academic year. See department advisers for more information.
- *Student Organizations/Associations:*
 - Alpha Chi Sigma: the UW affiliate of the national chemistry-related science organization for chemistry and biochemistry majors
 - Phi Lambda Upsilon: the UW affiliate of the national chemistry honorary society
 - The Free Radicals: a general undergraduate club for chemistry and biochemistry majors

Of Special Note:

- The BS degree in chemistry requires a minimum of 180 credits to graduate.
- The BS degree in chemistry, ACS-Certified option, requires a minimum of 183 credits to graduate.
- The BA degree in chemistry requires a minimum of 180 credits to graduate.
- Students are strongly encouraged to participate in undergraduate research.
- The maximum number of credits that may be earned combining CHEM 199 and CHEM 299 is 12; the maximum number of credits that may be earned combining CHEM 399 and CHEM 499 is 24.

Graduate Program

Graduate Program Coordinator
109D Bagley, Box 351700
(206) 543-4787
graduate@chem.washington.edu

The master of science and doctor of philosophy programs are designed to lead to positions of leadership and independent investigation in research institutes, industrial laboratories, and government agencies, and to positions as teachers, researchers, or administrators in colleges and universities in chemistry or allied fields.

Students can pursue research in the following areas of chemistry: analytical, bioanalytical, bioinorganic, bioorganic, biophysical, environmental, inorganic, materials, medicinal, nuclear, organic, organometallic, physical, polymer, process analytical, and theoretical.

Thesis research for the MS and dissertation research for the PhD must constitute an original contribution of knowledge worthy of report in the scientific literature.

Refer to the [Chemistry Department website](#) for more detailed information regarding admission and graduation requirements.

Master of Science

The department offers primarily the PhD degree. The master of science program is not open to master's-only students, except under specific conditions.

Degree Requirements

45 credits

With Thesis - 36 approved credits with 18 in courses at the 500 level or above; 18 credits in courses at the 400 or 500 level taken for numerical grade with a minimum 2.7 grade in each graded course; 9 credits in thesis research.

Without Thesis - Same as with thesis, except that additional coursework may be substituted for the required research. Minimum 3.00 GPA required.

Doctor of Philosophy

Admission Requirements

1. Baccalaureate degree with major in chemistry or allied sciences
2. GRE scores

Degree Requirements

90 credits

1. *Required coursework:* 18-27 credits of coursework to support the student's individualized program of study, approved by the Graduate Program Coordinator, at the 400 or 500 level, with a minimum 2.7 grade in each graded course, and a minimum 3.00 GPA
2. *Seminars:* Participation in departmental seminars
3. *Dissertation:* minimum 27 credits of dissertation (CHEM 800)
4. Candidacy examinations covering area of specialization

Cinema and Media Studies

Program Overview

B-531 Padelford

From our smartphones to the movie theater, human experiences across the globe today are shaped by the media we view and create. Visual media are entwined with culture, art, politics, and entertainment. Understanding these relationships is at the core of Cinema and Media Studies. Out of this mastery, a world of possibilities opens up. Our students and alumni do much more than watch film and television. They build skills as active participants with media, able to critically engage with it as analysts and researchers who communicate their findings clearly and persuasively. They interpret and utilize the tools of visual communication to affect and influence the world.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Cinema and Media Studies offers the following programs of study:

- Bachelor of Arts with a major in cinema and media studies.
- Bachelor of Arts with a major in comparative literature and options in literary studies and in cinema studies
- Minors in comparative literature (literary studies only) and environmental cultures and values
- Students selecting the cinema studies option in comparative literature are ineligible also to receive the Bachelor of Arts degree with a major in cinema and media studies.

Bachelor of Arts with a major in Cinema and Media Studies

Suggested First-and Second-Year College Courses: Any course related to the area or discipline of major study.

Department Admission Requirements

One from CMS 270, CMS 271, CMS 272, CMS 273, CMS 274, or CMS 275; minimum 2.00 cumulative GPA; completion of one course fulfilling either College of Arts and Sciences English composition requirement or W (writing) requirement (5 credits).

Department Policy for Double Majors

Students receiving a BA in Cinema and Media Studies are ineligible to also receive the BA in Comparative Literature with Cinema Studies Option. Any other double major is acceptable, including Comparative Literature majors selecting the Literary Studies Option.

Major Requirements (60 credits)

1. Core courses: CMS 301; CMS 480 (10 credits)
2. History courses: either CMS 310 or CMS 311; one of CMS 312, CMS 313, CMS 314, or CMS 315 (10 credits)
3. Critical concepts courses: one from CMS 302, CMS 303, or CMS 304; either CMS 320 or CMS 321 (10 credits)
4. Approved electives (30 credits). See adviser for approved list.
 - a. Minimum 20 credits from 300- and 400-level courses
 - b. Minimum 10 credits from CMS courses
 - c. May include additional history and critical concepts CMS courses
 - d. Maximum 5 credits of independent study (CMS 490) and maximum 5 credits of internship (CMS 491)
5. At least 35 credits applied toward the major completed in residence through the UW.
6. Minimum 2.0 cumulative GPA for courses applied to the major

Bachelor of Arts with a major in Comparative Literature

Suggested First- and Second-Year College Courses: Courses in foreign languages, classics, history, philosophy, literature, and writing.

Department Admission Requirements

One of C LIT 250, C LIT 251, or C LIT 252; minimum 2.00 cumulative GPA; completion of one course fulfilling either College of Arts and Sciences English composition requirement or W (writing) requirement (5 credits).

Major Requirements

50 credits

1. Core Courses: one of C LIT 250, C LIT 251, or C LIT 252; one of C LIT 320, C LIT 321, C LIT 322, C LIT 323; C LIT 400 (15 credits).
2. CMS course: one of CMS 310, CMS 311, CMS 312, CMS 313, CMS 320, CMS 321 (5 credits)
3. 300-400 level electives. See adviser for approved list. (15 credits)
4. Options
 - a. Literary Studies
 - i. One of C LIT 360, C LIT 361, or C LIT 362; one additional course from C LIT 320, C LIT 321, C LIT 322, C LIT 323, C LIT 360, C LIT 361, C LIT 362 (10 credits)
 - ii. One from 300/400-level comparative literature courses. See adviser for approved list (5 credits)
 - iii. One course must focus on literature written before 1800.
 - b. Cinema Studies
 - i. One from CMS 270, CMS 271, CMS 272 (5 credits)

- ii. One from CMS 310, CMS 311, CMS 312, or CMS 313; one from CMS 301, CMS 302, CMS 303, CMS 303, CMS 320, or CMS 321 (10 credits)
 - iii. Maximum 5 credits of internship (CMS 491) may be applied toward the cinema studies option with approval of the faculty internship coordinator
5. Minimum 35 credits applied toward the major completed in residence through the UW
 6. Minimum 2.00 cumulative GPA for courses applied to the major

Minors

Comparative Literature (Literary Studies Only)

Minor requirements: 30 credits

1. C LIT 250, C LIT 251, or C LIT 252 (5 credits)
2. C LIT 400 (5 credits)
3. Two differently numbered courses from C LIT 320, C LIT 321, C LIT 322, C LIT 323 (10 credits)
4. Remaining credits in upper-division literature courses offered through Comparative Literature, Cinema, and Media, and the following participating departments: Asian Languages and Literature, Classics, English, Germanics, Near Eastern Languages and Civilization, Romance Languages and Literature, Scandinavian Studies, and Slavic Languages and Literatures. See adviser for approved list.

Environmental Cultures and Values

Minor requirements: 25 credits

1. CHID 450 or C LIT 450 (5 credits)
2. 20 credits with at least one course taken from each of the following (see department for approved list)
 - a. Area I: Environmental Values and Histories
 - b. Area II: Cultures, Communities, and the Environment
 - c. Area III: Ecocriticism and Ecoaesthetics
3. Minimum 15 upper division credits
4. Minimum 15 credits outside student's major
5. Minimum 15 credits taken through UW Seattle campus

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of comparative literature provides training in the analysis and critique of varied kinds of social texts and discourses. It stresses the centrality of historical and cross-cultural awareness for effective interpretation of both verbal and visual texts. Students earning the degree in comparative literature may pursue advanced work at the MA and PhD. level in language and literature programs, or allied curricula in film studies, philosophy, intellectual history, and cultural studies. They may aim for degrees in education, specializing in language arts, foreign language teaching, or both. Comparative literature majors may also find jobs in fields where liberal arts skills, such as strong writing ability and fluency in foreign languages, are valued.

Cinema and media studies emphasizes the study of film, television, and related media in the context of global culture. It stresses the importance of historical and cultural awareness for effective interpretation of visual, audiovisual, and verbal texts. Students may pursue work at the MA and PhD levels in allied curricula in the humanities and the arts. They may aim for a broad range of careers including advertising, education, entertainment law, information technology, media archiving, museum work, or public relations. Or, they may seek positions related to film, television, and digital media production, marketing, or distribution.

- *Honors Options Available:* Comparative Literature major only. With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). With Distinction (Departmental Honors, by invitation). See adviser for requirements.
- *Undergraduate Research, Internships, and Service Learning:* See adviser for internship information.
- *Department Scholarships:* None
- *Student Organizations/Associations:*
 - UW Film Club, <https://www.facebook.com/UwFilmClub>

Graduate Program

Graduate Program Coordinator
 B531 Padelford, Box 354338
 (206) 543-7542
clitgrad@uw.edu

The department offers study with faculty members from the following participating departments: Asian Languages and Literature, English, French and Italian Studies, Germanics, Near Eastern Languages and Civilization, Scandinavian Studies, Slavic Languages and Literatures, Spanish and Portuguese Studies, and Gender, Women, and Sexuality Studies. Study leads to a master of arts or doctor of philosophy degree. Students concentrate on graduate courses in comparative literature and specialize in two or more national literatures of major interest to them, studied in the original language. With permission, a PhD. aspirant may choose as a third area of study a field outside literature (e.g., philosophy, religion, art, political thought).

Master of Arts

Admission Requirements

Bachelor of Arts degree in Comparative Literature, English, or any other literature, or equivalent background; advanced reading knowledge in one language other than English.

Degree Requirements

45 credits

1. *Coursework:* Minimum 45 quarter credits at the 400 and 500 level; at least 25 at the 500 level. Three courses in comparative literature. Remaining credits to include study in two or more literatures with at least three courses in each of two literatures.
2. *Language Requirements:* Advanced reading knowledge in at least one language other than English and a basic reading knowledge of a second, demonstrated before starting to write the MA

essay. Language competence attested either by examinations or by satisfactory coursework in the language.

3. *Essay*: Prepared after completion of coursework, under supervision of two faculty members.
4. *Study Abroad*: Students may participate in exchange programs offered through individual language and literature departments or through the UW's Office of International Programs and Exchanges.

Doctor of Philosophy

Admission Requirements

Master of arts degree in Comparative Literature, English, or any other literature, or equivalent background; advanced reading knowledge in two languages other than English.

Degree Requirements

90 credits

1. *Coursework*: Minimum 90 postbaccalaureate degree credits at the 400 and 500 level; at least half in each section of the program at the 500 level. Credits include: (1) minimum 30 credits in comparative literature courses; (2) 30 credits in the literature of major interest to the student; (3) 20 credits in the student's minor field (or, if more than one minor field is chosen, at least 15 credits in each); (4) 10 elective credits chosen from any area of the student's choice. One of two minor fields may be extra-literary.
2. *Language Requirements*: Advanced reading knowledge in one language other than English and a basic reading knowledge of a second, demonstrated before PhD examinations. Language competence attested either by examinations or by coursework in the language.
3. *General Examination*: Requires one quarter; taken after completion of the 90-credit course requirement and language requirements.
4. *Dissertation*: Topics chosen from a broad range of areas. See department website for more information.
5. *Final Examination*: Oral examination devoted to the dissertation and to fields covered by written examinations.
6. *Study Abroad*: Students may participate in exchange programs offered through individual language and literature departments or through the UW's Office of International Programs and Exchanges

Financial Aid

The department awards teaching assistantships annually to qualified students and provides up to five years of support toward the PhD. to students who enter with a B.A. Teaching assistantships can be assigned in comparative literature, cinema studies, or in any of the national literature departments affiliated with Comparative Literature.

Classics

Department Overview

218 Denny

The discipline of classics concerns itself with the cultures of ancient Greece and Rome from prehistoric times to the Middle Ages. The department is concerned with the Greek and Latin languages and their literatures, including poetry, drama, history, philosophy, rhetoric, and political theory, as well as with classical art and archaeology. The ancient cultures of Greece and Rome hold an extraordinary place in the American past and present, thanks to their central role in forming the basic conceptual categories that shape our intellectual, professional, and civic lives. The vast temporal and geographic gulf that divides these ancient cultures from modernity brings students and scholars of classics face to face with the otherness of antiquity and forces a critical examination of our own cultural roots.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Classics offers the following programs of study:

- The Bachelor of Arts degree with majors in classics, Greek, Latin, and classical studies.
- Minors in classical studies, Greek, Latin, and classics and ancient history.

The majors in classics, Greek, and Latin emphasize the development of expertise in Greek and Latin and can include coursework in the history, literature, philosophy, science, and the art and archaeology of these two contrasting but related cultures. Students who intend to continue their studies to the PhD degree are advised to take the BA in classics or, alternatively, the BA in Latin or Greek with as many courses in the second language as possible.

A fourth major, the Bachelor of Arts with a major in classical studies, is especially suited to students wishing to explore the literature, history, art, archaeology, and philosophy of classical antiquity, primarily through English translations. The classical studies major demands less study of the classical languages of Greece and Rome than is required for the other majors. Students with no previous exposure to Greek or Latin can complete the classical studies major in two years. Students have often combined this major with another major such as English, history, or art history, and even with a non-humanities major such as computer science, biochemistry, or economics.

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Latin and/or classical Greek, classics in translation, ancient history, classical art and archaeology, ancient philosophy.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

Greek (52-58 credits)

1. Either GREEK 101, GREEK 102, GREEK 103; or GREEK 300, GREEK 301 (10-15 credits)
2. 15 credits of 300-level GREEK courses, excluding GREEK 300 and GREEK 301
3. 20 credits of 400-level GREEK courses
4. 5 credits from approved classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. See adviser for approved list.
5. CLAS 495 (2-3 credits)

Latin (52-58 credits)

1. Either LATIN 101, LATIN 102, LATIN 103; or LATIN 300, LATIN 301 (10-15 credits)
2. 15 credits of 300-level LATIN courses, excluding LATIN 300 and LATIN 301
3. 20 credits of 400-level LATIN courses
4. 5 credits from approved classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. See adviser for approved list.
5. CLAS 495 (2-3 credits)

Classics (67-68 credits)

1. 15 credits of 300-level classical Greek, excluding GREEK 300, GREEK 301
2. 15 credits of 300-level Latin, excluding LATIN 300, LATIN 301
3. Minimum 30 credits in 400-level GREEK and LATIN courses, with at least 10 credits in each language
4. 5 credits from approved classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. See adviser for approved list.
5. CLAS 495 (2-3 credits)

Classical Studies (61-67 credits). Especially suited for students not preparing for graduate study in classics but wishing to explore the literature, history, art, archaeology, and philosophy of classical antiquity, primarily through English translation.

1. Either Greek or Latin through 307, or the equivalent (25-30 credits)
2. 34 additional credits chosen with department approval from the following courses: Greek and Latin at the 400 level; classics in English, classical art and archaeology, ancient history, the history of ancient philosophy, and the history of ancient science. See adviser for approved list
3. CLAS 495 (2-3 credits)

Note: Competence to take 400-level courses which count toward the Latin, Greek, and classics majors generally requires four-to-six quarters (20-30 credits) of previous study.

Minor

Minor Requirements: Minimum 30 credits as follows for each of the minors except classical studies, which requires 25 credits:

- *Classical Studies:* 25 credits chosen with departmental approval from classics in English, classical art and archaeology, ancient history, history of ancient philosophy, and history of ancient science, or up to 15 credits of Latin or Greek. Minimum 15 credits must be at the 300/400 level. See list of acceptable courses. .
- *Greek:* 25 credits in Greek and 5 credits chosen with departmental approval from classics in English, classical art and archaeology, ancient history, history of ancient philosophy, and history of ancient science. Minimum 15 credits must be at the 300/400 level. See list of acceptable courses.
- *Latin:* 25 credits in Latin and 5 credits chosen with departmental approval from classics in English, classical art and archaeology, ancient history, history of ancient philosophy, and history of ancient science. Minimum 15 credits must be at the 300/400 level. See list of acceptable courses.
- *Classics and Ancient History:* 30 credits from the course list below, including at least 20 upper-division credits (15 of which must be taken at the UW). 100-level credit is not accepted. Minimum 10 credits from each department (Classics and History). A minimum grade of 2.0 is required in each course. Not available to students pursuing majors or other minors in classics.

Courses: CLAS 210, CLAS 320, CLAS 322, CLAS 324, CLAS 326, CLAS 328, CLAS 330, CLAS 424, CLAS 427, CLAS 428, CLAS 430, CLAS 432, CLAS 435, CLAS 445, CLAS 496 (except when topic is medieval); CL AR 340, CL AR 341, CL AR 342, CL AR 343, CL AR 442, CL AR 443, CL AR 444, CL AR 446, CL AR 447, CL AR 448; GREEK (all upper-division courses except GREEK 300 and GREEK 301); LATIN (all upper-division courses except LATIN 300, LATIN 301, LATIN 401, and LATIN 402); HSTAM 205, HSTAM 302, HSTAM 312, HSTAM 313, HSTAM 314, HSTAM 330, HSTAM 401, HSTAM 402, HSTAM 403; HIST 490 (when topic is ancient), HIST 498 (when topic is ancient).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The undergraduate study of classics emphasizes critical analysis of language and culture and clear and effective writing. The BA with a major in classics is a respected terminal degree in itself. Like other degree programs in the humanities, it emphasizes the acquisition of those analytic and communications skills which are indispensable for careers in government, journalism, law, industry, medicine, and business. The classics major (especially in its more language-intensive forms) is often a mark of distinction when a graduate applies for admission to professional school.

Many who take the bachelor's degree in classics go on to pursue graduate work in the subject at leading PhD programs. Graduates include winners of prestigious national awards such as Mellon Fellowships for graduate study and the Rhodes Scholarship.

- *Instructional and Research Facilities:* The departmental office provides access to several computers for research and coursework. The Classics Department sponsors numerous lectures by distinguished speakers visiting from universities in this country and abroad; undergraduates are always welcome to attend.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

- *Research, Internships, and Service Learning:* None offered.
- *Department Scholarships:*
 - *Jim Greenfield Undergraduate Scholarship* is intended for undergraduate majors in classics. The object of the Jim Greenfield scholarship is to enable exceptionally well-qualified students to devote the maximum time and energy to their study of the classics at the University of Washington. While the first criterion is academic promise, an applicant's current means of support is also taken into consideration; therefore, the amount of the award may vary from partial tuition to full tuition and some expenses. Successful candidates may reapply for the following year.
 - *Jim Greenfield Undergraduate Travel Bursaries:* Jim Greenfield Undergraduate Travel Bursaries may be used for the department's Rome program, for travel associated with participation in archaeological excavations, for independent travel to areas of classical interest, or for other kinds of study-related travel for which the applicant can make a cogent case. In some cases an award might allow a student to remain overseas for study travel in the wake of the department's Rome Program. Further information about applying for a Jim Greenfield Undergraduate Travel Bursary is available in the department office.
 - In addition to the above, undergraduates are eligible to apply or be nominated for:
 - *Classics Students Travel Fund:* provides financial support for students in the Classics Department who are intending to participate in the departmental Rome program or extramural programs, to attend conferences, or to travel to specific places in support of their studies.
 - *Harvey Bruce Densmore Memorial Fund:* rewards distinguished undergraduate students of Greek.
- *Student Organizations/Associations:* None

Of Special Note:

- CLAS 101, CLAS 102, CLAS 205, and HIST 111 may not be taken in fulfillment of major requirements for baccalaureate degrees in the Department of Classics.
- *Classical Seminar in Rome:* During spring quarter, the department offers instruction in classics for advanced undergraduate majors and graduate students at the University of Washington Rome Center, located in the Palazzo Pio on the Campo de Fiori.

Graduate Program

Graduate Program Coordinator
 218 Denny, Box 353110
 (206) 543-2266
clasdept@uw.edu

The Department of Classics offers programs of graduate study leading to the Master of Arts and Doctor of Philosophy degrees. The MA degree may be in Greek, Latin, or classics (a combination of Greek and Latin). The PhD degree requires both Greek and Latin.

The program of formal instruction ensures comprehensive and thorough training in the basic disciplines needed for teaching and research. The department offers courses in the major writers and periods of literature, philosophy, and history, in classical art and archaeology, and in Greek and Latin linguistics. The courses in Greek and Latin literature include many works on the PhD-degree reading list. Seminars introduce research techniques through the study of more specialized topics, which vary from quarter to

quarter. Students may include in their programs courses and seminars given by other departments in such subjects as ancient philosophy, ancient and medieval history, comparative literature, and linguistics.

Master of Arts

Admission Requirements

Strong preparation in Latin and Greek, preferably a full undergraduate major. Although the MA may be attained with work in only one of the languages, students who plan to work toward the PhD must be prepared to do graduate work in both Latin and Greek.

Degree Requirements

36 credits, as follows:

1. 27 credits in courses and seminars approved by the department as applicable toward an advanced degree and either a) 9 additional credits and a research paper or b) a thesis (9 credits). At least 18 of the total 36 credits must be at the 500 level or above.
2. Competence in reading German, French, or Italian, demonstrated by passing a departmental examination.

Doctor of Philosophy

Admission Requirements

Strong preparation in Latin and Greek, preferably a full undergraduate major. Admission to the PhD program is granted after completion of the MA degree.

Degree Requirements

90 credits, as follows:

1. Minimum three academic years of graduate study, of which at least two must be at the UW, and one in full-time residence at the University for three out of four consecutive quarters.
2. 90 credits in courses approved by the department. At least half (which include dissertation credits) must be at the 500 level or above.
3. Competence in reading German and French, or German and Italian, demonstrated by passing departmental examinations.
4. Graduate courses (or the equivalent) in Greek and Latin composition.
5. The classics proseminar (or equivalent).
6. Written preliminary examinations:
 - a. Translation exams on Greek and Latin literature. Reading lists guide the student's preparation for these exams.
 - b. A written examination on a special field of classical studies, e.g., a period of Greek or Roman history, Greek or Latin epigraphy, Athenian or Roman topography, Greek or Roman religion, classical linguistics, metrics, or palaeography, an area of intellectual history, a literary theme or cultural institution. Examination must be taken before doctoral orals but preferably earlier in the student's graduate program.

- c. Written examinations on two special authors, one Greek and one Latin, which assume a deep familiarity with the text, a knowledge of the textual history, and the important secondary works and trends in scholarship. A special author examination may be taken only after the translation examination in that language has been passed.
7. Oral general examination on Greek and Roman history, literature, philosophy, and related subjects.
8. Dissertation approved by the student's Supervisory Committee, and an oral examination on the dissertation.
9. Graduate students are expected to have teaching experience before completing their terminal degrees.

Research Facilities

The Suzzallo Library has an extensive classics collection. The department's seminar room in Denny Hall, which is available to graduate students for their study and research, contains an excellent non-circulating library with such reference works as Pauly-Wissowa, *L'Année Philologique*, the *Thesaurus Linguae Latinae*, the Müller Handbuch series, the Teubner and Oxford texts, commentaries on the classical authors, standard collections of inscriptions and fragments, and a number of important serials. The department also possesses a license for the *Thesaurus Linguae Graecae*, *Thesaurus Linguae Latinae*, and other databases.

Teaching Assistantships and Fellowships

The Department of Classics is able to provide substantial support at the graduate level. Jim Greenfield Graduate Fellowships are typically available to highly meritorious incoming graduate students; Jim Greenfield Dissertation Fellowships provide support at the dissertation stage; Phillip and Estelle DeLacy Fellowships and Nesholm Family Endowment Fellowships provide funding to graduate students for various needs; and the Classics Student Travel Fund provides travel funding (to academic conferences, programs abroad, etc.)

In addition, a number of teaching assistantships are available. Assistants teach sections of elementary Latin and Greek, courses in Latin and Greek derivatives, conduct discussion sections in classical literature in translation, or assist faculty members with other courses. The teaching load is four to six hours a week throughout the academic year.

Communication

Department Overview

102 Communications

Communication is a process that creates and reveals meanings, relationships, and cultural patterns.

Undergraduate Program

Advising Office/Communication Commons
118 Communications, Box 353740
(206) 543-8860

The Department of Communication offers the following programs of study:

- The Bachelor of Arts degree with a major in communication
- The Bachelor of Arts degree with a major in communication: journalism and public interest communication option

Bachelor of Arts

Suggested First- or Second-Year College Courses: COM 200 and one additional COM 200-level course

Department Admission Requirements

1. Minimum 10 200-level COM credits, including minimum 2.5 grade in both COM 200 and one additional 200-level COM course. (COM 201 and COM 202 may substitute for COM 200 to fulfill the 10-credit, 200-level requirement.)
2. Minimum 2.50 cumulative GPA in all COM coursework
3. Minimum 2.50 cumulative GPA for all college coursework, including transfer credits
4. Admission is capacity constrained, based on information in the application packet, cumulative GPA, and COM GPA. Completion of the above requirements does not guarantee admission.
5. Students are admitted quarterly: autumn, winter, and spring. Applications are due two weeks after the quarter begins, autumn, winter, and spring quarters. Applications and additional information are available on the [department website](#). Students are notified of acceptance by the end of the fifth week of the quarter. If accepted, they can register for the next quarter as majors.
6. Applications are available from the department website on the first day of the quarter. Applications should include application form, copies of transcripts and grade reports, and an essay explaining what led applicants to apply to the major.

Requirements for admission to the Journalism and Public Interest Communication Option:

1. Minimum 2.5 grade in COM 200. (COM 201 and COM 202 may substitute for COM 200 to fulfill the requirement)
2. Minimum 2.50 cumulative GPA in all COM coursework
3. Minimum 2.50 cumulative GPA for all college coursework, including transfer credits

4. Admission is capacity constrained, based on information in the application packet, cumulative GPA, and COM GPA. Completion of the above requirements does not guarantee admission.
5. Students are admitted quarterly: autumn, winter, and spring. Applications are due two weeks after the quarter begins, autumn, winter, and spring quarters. Applications and additional information are available on the [department website](#). Students are notified of acceptance by the end of the fifth week of the quarter. If accepted, they can register for the next quarter as majors.
6. Applications are available from the department website on the first day of the quarter. Applications should include application form, copies of transcripts and grade reports, selection of the journalism and public interest communication option, an essay explaining what led applicants to apply to the major, and a writing sample. See department adviser or website for approved types of writing samples.

Major Requirements

Communication: 50 credits

1. *Introductory Courses (10 credits):* COM 200 and one additional 200-level COM course.(COM 201 and COM 202 may substitute for COM 200 to fulfill the 10-credit, 200-level requirement.)
2. *Methods in Inquiry (5 credits):* See department adviser or website for list of approved courses.
3. *Theory in Communication (5 credits):* See department adviser or website for list of approved courses.
4. *Electives (30 credits)* from the Department of Communication and from selected courses outside the department. See advising office or website for electives list.

Of the 50 required credits specified above, at least 25 must be Communication courses at the 300 level or above, and of those 25, at least 10 must be Communication courses at the 400 level (excluding COM 498/COM 499). In addition, of the 50 required credits specified above, only 10 credits may be from courses offered outside the Department of Communication, unless approved by a departmental adviser.

Journalism and Public Interest Communication Option: Minimum 55 credits

1. *Introductory Courses (10 credits):* COM 200 and one additional 200-level COM course. (COM 201 and COM 202 may substitute for COM 200 to fulfill the 10-credit, 200-level requirement.)
2. *Methods of Inquiry (5 credits):* See department adviser or website for list of approved courses.
3. *Skills/Competencies Core (20 credits):* COM 360, COM 361, COM 362, COM 364, and COM 457.
4. *Law and Ethics Core (10 credits):* COM 440 and COM 468.
5. *Advanced Skills/Competencies (10 credits minimum):* See department adviser or website for list of approved courses.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The Department of Communication prepares students for the challenges of a society that is informed, entertained, persuaded, and shaped by communication. The department seeks out and appeals to students from a variety of backgrounds and perspectives. It nurtures socially responsible, literate citizens who can interpret and evaluate images and messages they create and receive. It teaches students to think critically, respect diversity, communicate effectively, and develop the skills needed for the life-long learning that is central to successful careers and rewarding lives. Undergraduate study in communication has four pedagogical emphases: communication literacy, communication inquiry, theory and concepts, and community engagement.

- *Instructional and Research Facilities:* The Department of Communication has the following laboratories: Media Lab. News Lab. Observation Labs. It also has an Instructional Resources Center and video-editing facilities. Additionally the department manages the following centers: The Dart Center, the Center for Communication and Civic Engagement, and the Center for Communication, Difference, and Equity. See the department website for further information.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors; With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* See adviser for details.
- *Department Scholarships:* See adviser for details.
- *Student Organizations/Associations:* Society of Professional Journalists, Public Relations Student Society of America, The Association for Women in Communication

Graduate Program

Graduate Program Coordinator
221 Communications, Box 353740
(206) 543-7269
cominfo@uw.edu

Engages students in the complexity of modern communication and its centrality to society and prepares them to become thoughtful scholars, teachers, practitioners, and leaders related to this field. The department offers graduate programs leading to the degrees of Master of Arts, Doctor of Philosophy, and Master of Communication (MC).

Graduate study is guided by four related principles: intellectual and cultural pluralism, interdisciplinary theorizing, collaboration, and public scholarship. Coursework brings together humanistic and social scientific intellectual traditions through a unified core curriculum and a wide selection of graduate seminars. Research and teaching focus on six interrelated areas: communication and culture; communication technology and society; international communication; social interaction; political communication; and rhetoric and critical studies.

The MA provides training in research and scholarship and can be either preparation for doctoral study or a terminal degree. The MA requires a minimum 45 credits of approved coursework and a research thesis. The PhD program develops conceptual and methodological capabilities in a substantive area of communication and requires a minimum 45 post-master credits, general examinations, and a dissertation demonstrating an original scholarly contribution to the field.

The department also offers three MC degrees, each of which has specific requirements tailored to that degree. The general MC degree is targeted for mid-career communication professionals who seek to develop an understanding of communication theory related to a special area of interest. The MC in digital media is a professional degree focused on digital media content creation, management, and policy. Native Voices is an MC degree offered in conjunction with American Indian Studies, designed for documentary filmmakers who focus their work on subjects relevant to the Native American community.

Master of Arts

Admission Requirements

- Minimum 3.00 or B GPA over the two most recent years guarantees consideration. However, average GPAs for students admitted have been higher.

- Bachelor's degree
- Full-time status strongly encouraged, although domestic U.S. residents who do not receive assistantships may enroll half-time.
- Students planning to continue directly into the UW PhD program after completing the UW MA should apply to the MA/PhD program.
- U.S. permanent residents/immigrants (green card holders): Applicants not native speakers of English must submit TOEFL scores taken within the past two years, unless exempt. Applicants not U.S. citizens must submit a TSE score to be considered for departmental funding.

Degree Requirements

Minimum 45 credits

- Two core courses (COM 500 and COM 501) during the first year of study.
- One additional methods course beyond COM 501
- Maximum 5 credits of COM 594 in five different topics may count toward total, although COM 594 credits are not required for master's students.
- Maximum 3 credits of COM 596. Required for students with assistantships; optional for others.
- Thesis (minimum 10 credits in COM 700) and oral defense.
- Specific courses selected in consultation with the Supervisory Committee.

Master of Communication

Admission Requirements

Same as for the Master of Arts program (above).

Degree Requirements

Minimum 45 credits

- Minimum 12 credits in communication courses at the 400 and 500 level.
- Minimum 15 credits outside the Department of Communication in a coherent substantive area of specialization.
- 10 credits in COM 600 in an area of specialization for broadcast or publication. Oral defense of the project.
- Remaining credits selected in consultation with the Supervisory Committee.
- Minimum 21 credits at the 500 or 600 level. .
- Maximum 5 credits of COM 594 may count toward total, although COM 594 credits are not required for MC students.
- Maximum 3 credits of COM 596. Required for students with assistantships; optional for others

Digital Media

A professional degree focused in three concentrations: digital media content creation, management, and policy.

Minimum 45 credits

1. Core courses: COM 529, COM 546, and COM 558
2. Students choose either 45 credits of coursework or 40 credits of coursework (including three core courses) and a final project worth 5 credits. Specific courses selected in consultation with the Supervisory Committee.

Native Voices

Minimum 45 credits

1. 20 credits in the Department of Communication:
 - a. 10 credits of 500-level communication courses, typically two 500-level seminars.
 - b. COM 600: 10 credits in documentary research and production, taken for completion of the final project.
2. 25 credits in American Indian Studies/Native Voices: GWSS 443, AIS 501, AIS 502, AIS 503, AIS 504

Doctor of Philosophy

Admission Requirements

1. Minimum 3.00 or B GPA over the two most recent years guarantees consideration; however, GPAs for students admitted have been higher.
2. Master's degree
3. Full-time status strongly encouraged, although domestic U.S. residents who do not receive assistantships may enroll half-time.
4. U.S. permanent residents/immigrants (green card holders): Applicants not native speakers of English must submit TOEFL scores taken within the past two years, unless exempt. Applicants not U.S. citizens must submit a TSE score to be considered for departmental funding.

Degree Requirements

Minimum 45 post-master credits

1. Two core courses (COM 500 and COM 501) during the first year of study.
2. Two additional methods courses beyond COM 501
3. 5 credits of COM 591 or COM 592
4. 3 credits of COM 594 in three different topics, taken before the general examinations (up to five credits in five different topics may be taken).
5. Maximum 3 credits of COM 596. Required for students with assistantships; optional for others.
6. General examination. COM 600 credits do not count toward the 45 required post-master credits (unless student is a UW Communication MA).
7. Dissertation (minimum 27 credits in COM 800 over at least three quarters) and final examination. These 27 credits do not count toward the 45 required post-master credits (or 30 required post-master credits for UW Communication MA students).
8. Specific courses selected in consultation with the Supervisory Committee.

Students who completed their MA in Communication at the UW do not repeat the core courses, and need only 30 post-master credits, which may include COM 600 credits, and 3 credits of COM 594 in three different topics. Such students take two methods courses beyond the minimum methods course requirements for the MA degree. COM 594 credits and additional methods courses beyond the minimum MA requirements taken during MA work may fulfill the COM 594 and methods requirements for the doctoral program, but may not be applied to the 30 post-master credits.

Research Facilities

In addition to the University's research facilities available to all students, the department houses a collection of specialized research laboratories, including the Digital Media Lab, Graduate Computer Lab, Observational Research Facility, Instructional Resources Center, and Video Editing Lab.

Comparative History of Ideas

Program Overview

B102 Padelford

Comparative History of Ideas is an interdisciplinary program that draws on a wide variety of disciplines within the College of Arts and Sciences to examine the interplay of ideas and their cultural, historical, and political contexts. The program encourages its students to engage thoughtfully in critical intellectual inquiry and reflection. Emphasis is on the significance of students being actively in the world; understanding the social, cultural, and political forces that shape lives and identities; and their role in transforming our world.

Undergraduate Program

Adviser

B102D Padelford, Box 354300

(206) 543-2097

chid@uw.edu

The Comparative History of Ideas program offers the following programs of study:

- The Bachelor of Arts degree with a major in comparative history of ideas
- A minor in comparative history of ideas

Bachelor of Arts

Suggested First- and Second-Year College Courses: Introductory courses in history, philosophy, English, comparative literature, ethnic and gender studies, American Indian studies, and other areas of the humanities and social sciences.

Department Admission Requirements

Students in good academic standing may declare this major after meeting with an adviser.

Major Requirements

60 credits as follows:

1. CHID 101 (2 credits)
2. Gateways to CHID (10 credits)
3. Cultural and historical engagements (5 to 10 credits). Students choose from three options: CHID study abroad program; local/global engagements; or encounters across cultures. Must be chosen with guidance of program adviser.
4. Ideas in the world (5 credits). Must be chosen with guidance of program adviser.

5. Power and difference (5 credits). Must be chosen with guidance of program adviser.
6. CHID 390 (5 credits)
7. Senior thesis/capstone project (CHID 491 and CHID 493) (10 credits)
8. Remaining 13-18 credits chosen from among approved electives (300 level or above).
9. At least half the credits presented for the major must be at the upper-division level.
10. Minimum 2.50 GPA in courses presented for the major.
11. Students may expand the senior project to 15 credits (CHID 492). The 5 optional senior project credits are in addition to the 60 credits required of all CHID majors.

Minor

Minor Requirements: 30-35 credits as follows:

1. Gateways to CHID (5 credits)
2. Cultural and historical engagements (5-10 credits). Students choose from three options: CHID study abroad program; local/global engagements; or encounters across cultures. Must be chosen with guidance of program adviser.
3. Ideas in the world (5 credits). Must be chosen with guidance of program adviser.
4. Power and difference (5 credits). Must be chosen with guidance of program adviser.
5. CHID 390 (5 credits)
6. One upper-division CHID course (5 credits)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The program encourages students to adopt nuanced perspectives on their position relative to texts, cultures, societies, and historical periods. Program graduates have gone on to postgraduate studies in the humanities and social sciences, as well as professional training and careers in a wide variety of fields including law, administration and public policy, medicine, education, journalism, new media, and film.
- *Instructional and Research Facilities:* Computer workstations for students in B102 Padelford and in C101 Padelford.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* CHID undergraduates participate in a variety of educational experiences outside the classroom. Students interested in the opportunity to integrate theory with practice while making connections to organizations outside the University may sign up for CHID 399. Additionally many CHID study abroad programs incorporate an "engaged community learning" project, which provides an opportunity for students to apply their analytical skills and understanding of the historical and cultural context to a close participation in the work of local organizations. The diversity of these community efforts allows students to engage their particular interests through participation in social welfare organizations, grassroots community groups, after-school programs, health clinics, theater and other performing arts groups, as well as video and other visual arts projects.
- *Department Scholarships:* See CHID website for information and deadlines
- *Of Special Note:* CHID also sponsors two undergraduate journals: *interSections*, which features senior theses, research papers, seminar papers, and essays addressing subjects within the arts,

humanities, and social sciences; and *The Anthology Project*, which is dedicated to providing a forum where students can discuss and reflect on experiences abroad.

Computer Science

Overview

AC101 Paul G. Allen Center for Computer Science and Engineering

The Paul G. Allen School of Computer Science and Engineering educates students to become leaders in the design and implementation of the computing systems that touch every aspect of modern society. The Allen School is widely recognized as one of the top programs in the world, with passionate faculty bringing the latest advances into the classroom and the lab.

The Allen School offers two undergraduate degrees: Computer Science (through the College of Arts & Sciences) and Computer Engineering (through the College of Engineering). While the degree requirements differ in some details, undergraduate majors working toward either degree have the same broad opportunities to take the wide array of courses that the Allen School offers. Many of our graduates go on to careers at the world's great technology companies, from the largest industry titans to the smallest start-ups. Others join innovative companies and non-profit organizations outside the traditional computing industry to use software, hardware, and data to solve the world's greatest challenges. Still others go on to challenging graduate programs in a variety of fields.

At the graduate level, the Allen School offers (1) an integrated Master's program for some of our undergraduate majors seeking a deeper education before leaving campus, (2) an evening Master's program for currently employed software professionals, and (3) a Ph.D. program for students seeking a research career.

The field of computing is broad and growing, and the Allen School's course catalog reflects this breadth. Beyond the popular introductory programming courses taken by thousands of students from every major on campus, our courses cover everything from the mathematical foundations of what computers can and cannot do; to hands-on experiences building software and hardware artifacts with a range of programming languages and tools; to advanced courses in software engineering, human-computer interaction, computer graphics and animation, artificial intelligence, machine learning, large-scale data management, natural language processing, computer networking, computational biology, robotics, computer security and privacy, and much more.

Computers are the most flexible and powerful machines ever created. While the applications of computing continue to grow and change, the core magic of the Allen School is timeless: computer scientists and engineers combine creative problem-solving, rigorous design, and the creation of algorithms, software, and hardware systems to build solutions that change the world.

Undergraduate Program

Adviser

Bill and Melinda Gates Center, Room 170, Box 352355
(206) 543-2656

ugrad-advisor@cs.washington.edu

The Paul G. Allen School of Computer Science and Engineering offers the following programs of study:

- The Bachelor of Science degree with a major in computer science

- The Bachelor of Science in computer engineering degree (see [Computer Engineering](#) section)

The core requirements of the two undergraduate majors are similar. The computer science major may be more appropriate for students who want to earn a double major with another College of Arts and Sciences program, who want the additional flexibility of the computer science requirements (the computer engineering major has more required courses and fewer electives), or who may be primarily interested in the design of software systems and applications.

The computer engineering major includes a general foundation in engineering fundamentals to enable interdisciplinary work with other departments in the College of Engineering and the University as a whole. It may be more appropriate for students who are interested in building systems that include both hardware and software components and that must be engineered to meet a variety of cost and performance constraints.

Bachelor of Science

Department Admission Requirements

Applicants are considered in three groups - Entering Freshmen, Currently Enrolled UW Students, and Entering Transfers. Admission is capacity constrained. Completion of minimum requirements does not guarantee admission.

1. *Entering Freshmen*: The largest pathway for admission to Computer Science is directly out of high school, prior to completion of university-level prerequisites. Freshman applicants listing Computer Science as their intended major are automatically considered. Competitive applicants have usually taken the equivalent of four years of high school mathematics and at least one year of high school laboratory science upon entering the University. Admission is for autumn only.
2. *Currently Enrolled UW Students*: A portion of each year's class is admitted after matriculating to UW. Admission is for autumn or spring quarter. Application deadlines: July 1 for autumn and January 15 for spring. To be considered, applicants must meet the following course requirements: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); minimum five credits of Natural World, including one of the following: PHYS 121, CHEM 142/CHEM 145, or BIOL 180 (or any approved science course that requires one of these courses as a prerequisite); CSE 142, CSE 143; at least five credits of English composition.
3. *Entering Transfers*: A portion of each year's class is admitted from students transferring from another college or university. Admission is for autumn or spring. Transfer applicants are considered based on their University transfer application; no additional departmental application is required. Applicants must identify Computer Science as their intended major, and indicate they will begin the major immediately upon transferring. Entering transfer applicants not admitted to Computer Science upon initial admission to the UW are eligible to apply as Currently Enrolled UW Students after completing one quarter of enrollment. Entering transfer applicants must meet the following requirements:
 - a. Minimum 30 graded college credits completed by the University transfer application deadline.
 - b. Completion of the following courses prior to matriculation to UW: MATH 124, MATH 125, MATH 126; PHYS 121, CHEM 142, or BIOL 180; CSE 142, CSE 143; and at least five credits of English composition.

Major Requirements

87-90 credits:

1. *Science (10 credits)*: 10 credits from the list of approved natural science courses in the CS&E handbook. Courses that meet the department's science requirement include PHYS 121, CHEM 142/CHEM 145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/CHEM 145 as a prerequisite.
2. *Mathematics (15-18 credits)*: MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH 390/STAT 390 or MATH 391/STAT 391
3. *Required Courses (29 credits)*: CSE 142, CSE 143, CSE 311, CSE 312, CSE 331, CSE 332, CSE 351
4. *Senior Electives*: 33 additional credits from courses on the approved CSE electives list in the CS&E handbook, of which at least 20 credits must be at the 400-level. The following must be included:
 - i. Six courses from the CSE core courses list in the CS&E handbook of which four courses must be 400-level CSE courses
 - ii. Either one additional course from the CSE core courses list or one course from the CSE capstone list in the CS&E handbook
 - iii. Minimum 2.0 grade for any course applied to the major. Transfer students must earn a minimum of 24 graded credits toward the major through the UW.

Data Science Option: Additional credits required for the Data Science Option increase total major requirements to 89-92 credits. All courses listed below may be completed as part of the Computer Science major shown above.

1. CSE 421, CSE 442, CSE 444, CSE 446 (15 credits)
2. SOC 225 (3/5 credits)
3. One additional course from the data science elective list (see the Allen School website for list.)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The computer science field has a broad base of private- and public-sector jobs suitable for the Bachelor of Science graduate: systems analyst, systems programmer, applications programmer, technical sales and marketing, and hardware or software engineering specialist. In addition, there are jobs for which graduate education may be appropriate: producers and developers of computer systems, and teachers and researchers. The field is also highly valued for practicing entrepreneurship.
- *Instructional and Research Facilities*: [Paul G. Allen Center for Computer Science and Engineering](#) includes more than 20,000 square feet of laboratories, nearly 1,000 computer systems, and more than 50 terabytes of storage. Gigabit connectivity is provided to every desktop by more than 60 miles of data cabling, and wireless access is available throughout the building.

The Allen School general-purpose laboratories support the diverse set of hardware and software platforms required for a cutting-edge education in the field. The special-purpose laboratories provide tailored support for activities such as mobile robotics, computer graphics, digital design, motion capture, embedded systems, laser scanning, educational technology, networking, and artificial intelligence.

The Allen Center and Gates Center are two of the finest computer science and computer engineering facilities in the nation. All Allen School students have access to these resources.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships and co-op opportunities are available for computer science undergraduates. See www.engr.washington.edu/coop and depts.washington.edu/careers for information.
- *Departmental Scholarships:* The Allen School has a limited number of scholarships available to current Allen School majors. Scholarship information is listed at www.cs.washington.edu/education/ugradscholars/scholarships.html
- *Student Organizations/Associations:* A student chapter of the Association for Computing Machinery (ACM) operates within the Allen School.

Dance

Program Overview

256 Meany

Dance is part of a liberal arts curriculum and provides students a foundation for future advanced work in dance pedagogy, performance, choreography, dance science, dance studies, or other movement-related fields. Faculty work closely with students to guide them on the educational track that best serves their career goals. Information about the dance major's creative studies and dance studies options, dance minor, dance endorsement, and Master of Fine Arts degree in dance can be found at dance.washington.edu

Undergraduate Program

Adviser
256 Meany, Box 351150
(206) 543-9843
danceadv@uw.edu

The Dance Program offers the following programs of study:

- The Bachelor of Arts degree with a major in dance, with options in either creative or dance studies.
- A minor in dance.
- OSPI approved Dance Endorsement

Bachelor of Arts

Program Admission Requirements

Applicants who meet the following requirements are accepted during autumn, winter, and spring quarters on a rolling basis.

1. Minimum 2.00 cumulative GPA.
2. Successful completion of 5 credits in any of the required core courses for the major.
3. Successful completion of or registration in at least one technique course.

Major Requirements

Minimum 56-65 credits in dance

1. *Core Courses (minimum 32 credits):* DANCE 166; DANCE 242; DANCE 250 (5 credits); DANCE 251; DANCE 271 (1 credit); and DANCE 493 (5 credits); one of DANCE 101, DANCE 344 (5 credits), or DANCE 345 (5 credits); DANCE 494 (3 credits) or DANCE 480 (strongly suggest both)

2. *Technique Courses*: Minimum 15 credits from approved 200-level or higher dance technique courses, representing at least four different movement idioms. See adviser for approved list.
3. One of the following:
 - a. Electives (minimum 9 credits): See adviser for approved list. A core course or technique course on the electives list may not be used for both an elective and technique/core requirement.
 - b. Dance Studies Option (18 credits)
 - i. Either DANCE 350 or DANCE 420; DANCE 415; DANCE 416
 - ii. Minimum 9 credits additional approved electives based on individual interests and agreed to in conjunction with Dance Program adviser or faculty member
 - c. Creative Studies Option (minimum 17 credits)
 - i. DANCE 266; DANCE 270; DANCE 480 or DANCE 494 (whichever not taken for core)
 - ii. Minimum 10 additional credits selected from approved, advanced 300-level or higher dance technique courses. See adviser for approved list.
4. Minimum 2.00 cumulative GPA for courses applied to the major.

Minor

Minor Requirements: Minimum 25 credits

Minimum 25 credits to include 10 credits from Dance academic courses, and 15 credits from Dance technique courses. See adviser for approved lists.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The Dance Program curriculum provides a balance between academic rigor and artistic development and serves as a basis for a broad range of career choices in dance related and other fields demanding strong communication skills, creativity, commitment, and the ability to work collaboratively and independently. Majors are encouraged to supplement their dance studies with coursework in other disciplines that provide a foundation for later specialization in dance ethnology, dance history and criticism, performance art, education, movement therapy, or movement science.
- *Instructional and Research Facilities*: Three spacious and well-equipped dance studios in Meany Hall. A video and sound editing facility. Use of Meany Hall and the Meany Studio Theatre for Dance Program performances.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Dance Endorsement*: dance.washington.edu/dance-program-endorsement.
- *Department Scholarships*: See adviser.
- *Research, Internships, and Service Learning*: See adviser.
- *Student Organizations/Associations*: Dance Student Association

Graduate Program

Graduate Program Coordinator
255 Meany, Box 351150
206-543-5594
uwdance@uw.edu

The program offers graduate study leading to an MFA that prepares dance artists (with a minimum eight years professional performance experience) for careers in higher education. The full two-year program begins mid June and includes summer quarter study. MFA candidates are supported in the development of a scholarly dimension to their creative work in dance, receive a tuition waiver, and earn a monthly stipend in exchange for working as a teaching assistant in the Dance Program. For more information visit: dance.washington.edu/graduate-programs

Master of Fine Arts

Admission Requirements

1. Letter of interest, resume, and writing sample
2. Undergraduate degree from an accredited institution
3. Minimum eight years of professional performing experience
4. Ability to demonstrate movement skills at a professional level in at least one idiom, performance or website demonstrating performance range and ability, in person interview for final candidates
5. Three letters of reference verifying accomplishments in the professional dance arena and readiness for graduate study in dance
6. Neither a foreign language nor the GRE is required.
7. Application deadline October 15; September 15 for foreign applicants.
8. Online application procedures available at www.grad.washington.edu/admissions/

Degree Requirements

Minimum 72 credits

During the full two-year program, students enroll full-time (minimum 10 credits/quarter, including 9 credits during summer quarter). Of the 72 credits, 40 are in required courses.

1. *Required Coursework:* DANCE 510 (12 total), DANCE 515, DANCE 516, DANCE 520, DANCE 521, DANCE 530 (4 total), DANCE 531 (6 total), DANCE 595
2. *Coursework or Competency:* Students must have taken the following courses as an undergraduate, or have mastered their content through practical experience, or complete them during the program: DANCE 493, DANCE 544, DANCE 545, DANCE 590.
3. *Coursework of Interest (not required):* DANCE 420, DANCE 535, DANCE 536, DANCE 550, PHIL 445 or PHIL 446

Financial Aid

All graduate students receive tuition waivers and teaching assistant stipends.

Digital Arts and Experimental Media

Program Overview

207 Raitt

The processes of inquiry encompassing imagination, exploration, discovery, and reflection are universal among artists, scholars, scientists, and engineers. All seek to uncover new knowledge through innovations that improve our lives and communicate new ways of understanding ourselves and the universe. The Center for Digital Arts and Experimental Media (DXARTS) is a creative research convergence zone for intrepid artists and scholars who are pioneers of an unfolding new era in the arts.

The DXARTS program embraces an expansive range of arts practice, theory, and research across multiple disciplines. The center is home to its own graduate degree program, but welcomes into its facilities and courses many who are not directly affiliated with this program. Faculty and students at DXARTS may focus their work in a particular area of experimental arts (digital video, digital media art, computer music and sound art, computer animation, design computing, mechatronics, and so on), or they may pursue areas of creative research that have no media allegiance overlapping with and drawing from several or many different areas. Whatever the case, artists and scholars working at DXARTS engage in teaching, learning, and research within the synergistic, multidisciplinary setting of the center's labs, studios, and classrooms.

A common thread running through all of the work at DXARTS is the implicit maxim that to discover new knowledge we must challenge all assumptions. DXARTS is a place where the ideas and outcomes of creative arts research are in an ongoing state of becoming.

Undergraduate Program

Adviser

207 Raitt Hall, Box 353414

(206) 221-6085

dxarts@uw.edu

The DXARTS program offers the following program of study:

- Bachelor of Fine Arts degree with a major in digital arts and experimental media
- Minor in digital arts and experimental media

Bachelor of Fine Arts

Program Admission Requirements

Not currently accepting new students.

Admission is once a year. Application, normally during the sophomore year, is made during winter quarter for admission in spring. Admission is competitive. A minimum 2.50 GPA guarantees consideration, but the GPA of accepted applicants is normally considerably higher.

All applicants, regardless of background and proposed course of study, are expected to show a significant level of computing skill and general technology literacy.

Students must enroll in DXARTS 200 autumn quarter. Based on performance in DXARTS 200, students are selected to continue in DXARTS 201 winter quarter. Students enrolled in DXARTS 201 are eligible to submit an application and supplemental materials to be considered for admission spring quarter. Supplemental materials include an electronic portfolio, a statement of interest in the program, and a proposed course-of-study plan. For details, see the program's [website](#). Students must complete the following prior to application:

1. CSE 142
2. PHYS 114 or PHYS 121
3. MUSIC 120
4. ART H 203
5. Mathematics proficiency through the pre-calculus level. Proficiency may be demonstrated by completion of MATH 120 or equivalent, a minimum score of 68% on the UW Advanced Mathematics placement test, a minimum score of 2 on the mathematics AP exam, or completion of a college-level calculus course.

Major Requirements

In addition to the courses required for admission as described above, major requirements include the following:

1. 64-74 credits of DXARTS courses, as follows:
 - a. DXARTS 202 (5 credits)
 - b. Three quarters of DXARTS 400 (9 credits total)
 - c. DXARTS 461, DXARTS 462, DXARTS 463 (15 credits)
 - d. Completion of one of the following four DXARTS sequences (15 credits): DXARTS 441, DXARTS 442, DXARTS 443 (3D Motion and Graphics); DXARTS 451, DXARTS 452, DXARTS 453 (Video); DXARTS 471, DXARTS 472, DXARTS 473 (Mechatronics).
 - e. Completion of a third core sequence as listed above or one of the following fundamentals courses dealing with a third content area (5 to 15 credits): DXARTS 440, DXARTS 450, DXARTS 460, or DXARTS 470.
 - f. Senior thesis in the form of 15 credits of DXARTS 491, DXARTS 492, and DXARTS 493, including the completion and exhibition of a B.F.A. thesis project that is a significant and original contribution both aesthetically and technically.

2. 20-30 credits in additional DXARTS courses, or courses from a list of approved electives in other areas, to bring total major credits to 94. See department website or advising office for a list of approved electives.
3. A minimum 2.0 grade in all DXARTS courses counted toward the major. A cumulative 2.50 GPA in all DXARTS courses and approved electives.
4. For complete information about the B.F.A. program visit the program's [website](#).

Minor

Minor Requirements

Minimum 30 credits of digital arts and experimental media courses (DXARTS) to include:

1. DXARTS 200 (5 credits)
2. 25 additional credits from DXARTS courses
3. Minimum cumulative 2.00 GPA for courses applied to the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The program goal is to create opportunities for entering artists to discover and document new knowledge and expertise. Unlike other BFA degrees, which offer initial professional studio art education, this BFA is primarily a pre-graduate, research-oriented degree, signifying that an individual is professionally qualified to investigate fundamental problems in the nature and practice of digital arts and experimental media. Graduates are prepared to pursue original creative and technical research in the field and contribute to the development of knowledge and its consequences in society and culture.
- *Instructional and Research Facilities:* DXARTS houses extensive laboratories and advanced research studios with state-of-the art computing, imaging, sound, networking, mechatronics, and electronics equipment to support a wide range of experimental art.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Some areas of research and professional opportunities within DXARTS include digital video art, computer music composition, website design and programming, 3D animation, motion graphics design, user interface design, sound design, interactive media production, multimedia art, electronic stage and set design, authoring of electronic online publications, special effects design, virtual environment design, sound art, and installations art (in galleries, public, and virtual spaces).
- *Department Scholarships:* Limited in number with competitive application processes. See adviser for details.
- *Student Organizations/Associations:* None.

Graduate Program

Graduate Program Coordinator
207 Raitt Hall, Box 353414
(206) 543-4218
dxarts@uw.edu

Doctor of Philosophy

Doctoral education in Digital Arts and Experimental Media creates opportunities for artists to discover and document new knowledge and expertise at advanced levels. Creating new art is at the center of all activities in the program; the PhD degree prepares artists to pursue original creative and technical research in digital arts and experimental media and to pioneer lasting innovations on which future artists and scholars can build.

Admission Requirements

1. Master's degree or equivalent in a discipline or field related to the proposed doctoral work
2. Portfolio of artistic work
3. Statement of purpose
4. Competence in computing, general technology literacy, and skill and imagination in the applicant's areas of interest
5. One copy of the Graduate School's Application Form
6. One sealed official transcript from each collegiate institution attended
7. A digitally-based portfolio of artistic work including any other documentation that can help the admissions committee make its evaluations. The portfolio should be thoughtfully organized in a digital format (CDROM, DVD, URL, etc.) that best represents the applicant's work. Non-digital supplemental materials should be included in the index on the digital portfolio.
8. A complete curriculum vitae and narrative biography
9. Three letters of recommendation from instructors or professors familiar with the applicant's academic qualifications
10. International applicants submit TOEFL and TSE scores

Degree Requirements

90 credits

1. Prior to the general examination, six quarters of full-time study (minimum 10 credits per quarter). DXARTS 500 required every quarter.

2. 60 credits of DXARTS approved courses (not including DXARTS 800 credits). At least 30 credits at the 500 level. At least 30 in graded 400- and 500-level courses.
3. Minimum 3.00 GPA in DXARTS courses
4. General examination
5. Final project - a substantial and original contribution in both artistic and technical domains. Minimum 27 credits of DXARTS 800 over a period of at least three quarters before taking the final doctoral examination
6. Two-part final examination. Registration as a doctoral student is required during the quarter the examination is taken.

Drama

School Overview

101 Hutchinson

Theatre reflects the most compelling and complex issues of the human experience. It invites innovative understanding, collaborations, and dialogue and in turn creates community through the unique shared social experience of live performance. For artists and scholars it demands curiosity, invention, the courage to take risks, as well as practical application and the discipline required to succeed in any field.

The School of Drama offers courses of study which transforms artists and scholars into innovative and courageous poised-to-become creative leaders and engaged global citizens.

Through mastering skills and techniques applicable to any group endeavor, and acquaintance with established and innovative performance traditions and theories, students of theatre employ intellectual and creative rigor and develop entrepreneurial skills. This approach enables them to develop their own authentic, original voices and visions and engage the complexities, gravity, and joys of our world.

Undergraduate Program

Adviser

129 Hutchinson Hall, Box 353950

(206) 543-4204

uwdrama@uw.edu

The School of Drama offers the following program of study:

- The Bachelor of Arts degree with a major in drama
- Minors in acting, in design for performance, and in theatre studies

Bachelor of Arts

The Bachelor of Arts in drama teaches the history, theory, methods, and techniques of the art of theatre. Students who study drama discover their individual creative voices that help make them unique and engaged global citizens.

At its core, the undergraduate program in drama instills creative and critical thinking skills, promotes collaboration and academic rigor, and provides practical experiences in creative enterprise.

Suggested First- and Second-Year College Courses: See department admission requirements below.

Department Admission Requirements

DRAMA 201

No audition is required to enter the program.

Major Requirements

60-65 credits as follows:

1. DRAMA 201, DRAMA 251, DRAMA 302, DRAMA 371, DRAMA 372, DRAMA 373 (30 credits)
2. Three courses from DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213, DRAMA 215 (12-13 credits)
3. Two courses from DRAMA 290, DRAMA 291, DRAMA 292 (2-4 credits)
4. One choice/special studies course from DRAMA 365, DRAMA 367, DRAMA 416, DRAMA 494, or other adviser-approved course (5 credits)
5. One of the options shown below (10-15 credits)
 - a. *General Drama*: 9-11 elective credits from approved list of 300- and 400-level courses on the department website
 - b. *History, Theory, and Criticism Option*: No longer accepting students - pending elimination
 - c. *Performance Option (15 credits)*
 - i. DRAMA 466 (2 credits)
 - ii. One course from DRAMA 351, DRAMA 352, DRAMA 353 (4 credits)
 - iii. One course from DRAMA 451, DRAMA 452, DRAMA 453, DRAMA 454, DRAMA 455, DRAMA 456, DRAMA 457 (3-4 credits)
 - iv. *Electives*: See department website for approved list of 300- and 400-level courses (to reach 15 credits)
 - d. *Design Option (15 credits)*
 - i. One additional course from DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213, DRAMA 215 (4-5 credits)
 - ii. DRAMA 466 (2 credits)
 - iii. One additional course from DRAMA 290, DRAMA 291, DRAMA 292 (1 credit)
 - iv. *Advanced design*: DRAMA 314, DRAMA 316, DRAMA 414, DRAMA 415, DRAMA 417, DRAMA 418, DRAMA 419, DRAMA 420, DRAMA 421 (3-4 credits)
 - v. *Electives*: See department website for approved list of 300- and 400-level courses (to reach 15 credits)
6. Minimum 2.00 cumulative GPA in courses applied to the major

Minors

Minor in Acting: 25 credits

1. DRAMA 251, DRAMA 252 (10 credits)
2. 15 credits from the following: DRAMA 351, DRAMA 352, DRAMA 353, DRAMA 451, DRAMA 452, DRAMA 453, DRAMA 454, DRAMA 455, DRAMA 456, DRAMA 457, DRAMA 460, DRAMA 461, DRAMA 490, DRAMA 498
3. Minimum 2.00 cumulative GPA for courses applied to the minor

Minor in Design for Performance: 25 credits

1. Two from DRAMA 210, DRAMA 211, DRAMA 212, DRAMA 213; and DRAMA 290 (2 credits). (10 credits)
2. 15 credits from the following: DRAMA 316, DRAMA 317, DRAMA 391, DRAMA 414, DRAMA 415, DRAMA 416, DRAMA 417, DRAMA 418, DRAMA 419, DRAMA 420, DRAMA 421, DRAMA 491, DRAMA 498
3. Minimum 2.00 cumulative GPA for courses applied to the minor

Minor in Theatre Studies: 25 credits

1. DRAMA 201 (5 credits)
2. 20 credits from the following: DRAMA 302, DRAMA 303, DRAMA 365, DRAMA 371, DRAMA 372, DRAMA 373, DRAMA 416, DRAMA 494, DRAMA 499
3. Minimum 2.00 cumulative GPA for courses applied to the minor

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The faculty of the School of Drama considers the optimum preparation for the theatre artist to be comprised of a liberal arts undergraduate major in drama and a graduate conservatory education.

Learning objectives include enriched artistic expression, a foundation for further study, and cultivation of essential life skills: teamwork, communication, critical thinking, and imagination.

Students earning the Bachelor of Arts in drama are prepared to seek employment in the theatre industry, apply for advanced degrees in a specific area of theatre (e.g., MFA in acting or design), or transfer the skills gained through the program to broader career opportunities. Recent graduates have pursued careers in acting, design, directing, technical direction, stage management, dramaturgy, playwriting, literary management, teaching, and in such non-theatre occupations as real estate agent, fund-raiser, public relations staff, politician, librarian, academic counselor, lawyer, nurse, translator of foreign films, admissions counselor, trade show/convention production assistant, talent agent, casting director, music promoter, special events coordinator, tour guide, human resources coordinator, wedding coordinator, aerobics instructor, music promoter.

- *Instructional and Research Facilities:* Rehearsal and performance spaces include the Glenn Hughes Penthouse Theatre (the first theatre-in-the-round built in the United States), the thrust-stage Floyd and Delores Jones Playhouse, the end-stage Meany Studio Theatre, and the proscenium in Meany Hall. Other spaces include the Cabaret, Studio 201, and Hutchinson 218. School of Drama facilities include a design studio, costume shop, scene shop, and computer labs.

The Drama Library houses reserve books, plays, sound effects, dialect tapes, local audition and job notices, and a special collection of acting editions. Also available are specialized indexes and theatre databases. The librarian assists in the use of reference materials and indexes,

bibliographic searches of on-line databases, and offers reference service and bibliographic instruction sessions for groups and individuals.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Student participation in all aspects of dramatic art is provided through student productions, and faculty- and student-directed plays drawn from the full range of world dramatic literature and produced throughout the year. The school also produces operas in association with the School of Music

To enhance employability and gain hands-on experience, students are encouraged to participate in internships with regional theatres, and related organizations or businesses. Academic credit may be earned for internships under the course number DRAMA 493. Internship credits count toward drama elective credits to graduate. A resource guide to drama-related internships is available at the drama undergraduate advising website.

Drama students are also encouraged to apply for undergraduate research, leadership, and/or fellowship grants available through the Mary Gates Endowment.

- *Department Scholarships:* School of Drama scholarships are awarded annually every spring for the following academic year to students who have demonstrated academic merit and contributed significantly to the School of Drama. Applications are distributed from the advising office.
- *Student Organizations/Associations:* The Undergraduate Theater Society (UTS) is a student organization that produces undergraduate theatre works in the Cabaret black-box performance space in Hutchinson Hall. Any UW student may audition for UTS productions. UTS members also participate in annual New Student Orientation and other school events on a volunteer basis.

A volunteer elected group of drama students, the BA Council, meets regularly with the School of Drama Executive Director and head of the Bachelor of Arts program to discuss issues relative to the undergraduate program.

Graduate Program

Graduate Program Coordinator
101 Hutchinson, Box 353950
(206) 543-0714
uwdrama@uw.edu

The school offers professional training and scholarly programs leading to the Master of Fine Arts (MFA) and Doctor of Philosophy (PhD) degrees. Areas of study for the MFA degree are acting, stage direction, scene design, lighting design, and costume design. Most students should expect to spend three intensive years completing requirements for the MFA degree.

The PhD program provides students training for scholarly research in theatre history, dramatic literature, theory, and criticism. It also hosts the UW's Center for Performance Studies and connects students with related classes on campus.

Master of Fine Arts -- Acting

Admission Requirements

Admission is based on a private audition and interview with the head of the Professional Actor Training Program (PATP).

Applicants prepare the following:

1. A two-minute monologue from a modern prose play
2. A two-minute Shakespearean verse monologue
3. Approximately 16 bars of a song, a cappella or with auditioner-provided accompaniment
4. Auditioners should be ready to detail their previous training.

Students who hold (or will hold by the time they enroll) a baccalaureate degree from an accredited institution may apply. Most applicants have undergraduate degrees in theatre, but that is not essential. All applicants must demonstrate outstanding talent. GRE not required. International applicants must meet minimum TOEFL and TSE scores.

Applicants submit the following to Graduate Programs, School of Drama, University of Washington, Box 353950, Seattle, WA 98195-3950:

1. School of Drama PATP application form (available from [the school's website](#)) with preferred audition date indicated
2. Non-refundable audition fee to the School of Drama. Applications postmarked after the deadline must include a late application fee of \$10, separate from the fee due to the Office of Graduate Admissions.
3. Headshot
4. Current résumé of training and experience in the applicant's field
5. One set of unofficial transcripts
6. Statement of purpose, including educational and professional goals
7. Two letters of recommendation

Degree Requirements

90 credits

PATP training provides actors the practical tools and sensibilities to become outstanding theatre actors comfortable and effective in all media. During the three years of study, every student appears in at least seven productions, two self-written solo shows, an in-depth dialect project, and extensive scene and technique classes.

The program immerses students in the traditional vocabulary and practices set down by Konstantin Stanislavski and increases the actors' expressiveness through "instrument classes" in voice, speech, dialects, coordination (Alexander Technique), Viewpoints, and Suzuki-based movement. PATP students become well versed in the established canon of Western dramatic literature and have opportunities to audition for summer theatre festivals from around the region and country. The program also maintains relationships with professional theatres in Seattle and the region such as the Seattle Repertory Theatre,

Intiman, Empty Space, ACT, Seattle Children's Theatre, The Guthrie Theatre, and the Oregon Shakespeare Festival.

At the end of the third year, students prepare a professional showcase for Seattle, Los Angeles, and New York, and each actor leaves with a professional quality audition reel.

Required coursework

1. 36 credits of DRAMA 557
2. 36 credits of DRAMA 558
3. DRAMA 551
4. DRAMA 552
5. DRAMA 553
6. 6 credits of DRAMA 559
7. 9 credits of DRAMA 700

Master of Fine Arts -- Directing

Admission Requirements

The program, which accepts only two candidates, chooses applicants who show evidence of accomplishment "out in the world," who may have successfully assisted seasoned directors, and who have at least the beginning of a professional and artistic record. It is extremely difficult to gain admission directly out of a BA program with no other credentials.

1. Applicants submit the following to Graduate Programs, School of Drama, Box 353950, Seattle WA 98195-3950:
 - a. Directing application form (available for download from the school's [website](#)) and fee, made payable to the School of Drama (separate from the fee due to the Office of Graduate Admissions)
 - b. Résumé of training and experience in the field
 - c. Statement of purpose including educational and professional goals
 - d. Three letters of recommendation
 - e. One set of unofficial transcripts
 - f. Directorial analysis of a play or opera chosen from a preselected list
 - g. GRE not required. International applicants must meet minimum TOEFL and TSE scores.
 - h. Application deadline: November 1
2. *Selected applicants:* Twelve to 16 applicants are invited to interview, either in person or via video conferencing. Candidates interview with the head of the program; present a monologue; and respond to a two-page questionnaire.
3. *Final step for short-listed applicants:* Four to eight candidates are invited to Seattle for in-person interviews. Each candidate conducts a rehearsal of one of three pre-selected scenes with actors provided by the School of Drama. Candidates receive scene options and any additional information when notified of their selection.

Degree Requirements

90 credits

The intensive, three-year, conservatory directing program prepares students for successful entry into the professional theatre. Classes and training include a range of types and styles of dramatic work, including realistic, nonrealistic, classical, and contemporary plays. Directing laboratory, seminar, Suzuki, and Viewpoints are taken every quarter. Acting process work includes Stanislavski, action theory, Shakespeare, Chekhov, and contemporary realism.

Every quarter each student directs in the classroom, studio, or both.

1. Coursework

- a. 14 credits of DRAMA 563
 - b. 12 credits of DRAMA 567
 - c. Electives chosen from DRAMA 419, DRAMA 510, DRAMA 560, DRAMA 561, DRAMA 562, and DRAMA 569
 - d. 9 credits of DRAMA 700
 - e. Faculty may advise additional coursework in areas such as Alexander technique, dialects, lighting design, combat, literature, or history of styles and costume.
2. **Internships:** One quarter is devoted to a professional internship experience. MFA directors may intern either locally, nationally, or internationally during winter or spring quarter of the third year.

Master of Fine Arts -- Design

Admission Requirements

The program generally accepts two students in each area (scenic design, costume design, and lighting design). It is extremely difficult to gain admission directly out of a BA/BFA program with no other credentials.

Interviews: Held in Seattle from mid-January to the beginning of March. Applicants indicate how and when they plan both to submit their portfolio and interview with faculty. Applications must be received before an interview is scheduled.

Portfolio: May include hand drafting, renderings, photographs of realized work or of models, costume sketches, and other graphic work or high-quality photocopies of same, blue lines and/or duplicate slides. Work should demonstrate strong graphic skills (including accurate rendering of the human figure) and the ability to devise effective design solutions to the problems posed by a script. Portfolio should include examples of drawing or painting not intended as theatre design projects: figure drawing, landscape, architectural sketching or lighting, lighting installations, etc. High quality photocopies are acceptable.

For lighting design applicants, the portfolio should include examples of hand or computer drafting, two or more complete projects including a one-page statement of conceptual approach, hook-up, plot, and cue ideas. Also, samples of set sketches and life drawing.

Application Requirements: For questions, contact the School of Drama's graduate program assistant at (206) 543-0714 or email uwdrama@uw.edu.

1. GRE not required. International applicants must meet minimum TOEFL and TSE scores.

2. Portfolio (or bring to the interview in Seattle)
3. Design application form and fee
4. Résumé of training and experience in the field
5. Three letters of recommendation
6. Statement of purpose, including goals
7. Unofficial transcripts

Degree Requirements

90 credits

First year devoted primarily to studio course and skill building; realized production designs become a focus of the second and third years. In the third year, students complete a ten-week professional internship before returning to the School of Drama for two quarters with a final thesis project occurring in either of those quarters.

Scenic Design: Students develop proficiency of expression via drawing and painting, drafting, model building, scene painting, and a working knowledge of scenic and property construction. Production work is emphasized in the second and third years of residency.

Costume Design: Encompasses design, construction, graphic skills, and history. Production work in costume design is emphasized in the second and third year.

Lighting Design: Emphasizes development of both theoretical/thinking and practical/compositional skills. Production work in lighting may occur in the first year, but is emphasized in the second and third years, and often includes dance.

Doctor of Philosophy

Admission Requirements

Preference given to applicants with MA/MFA degrees and theatre experience but those who hold a baccalaureate degree from an accredited college or university are eligible to apply. Applicants submit the following materials online at <https://www.grad.washington.edu/applForAdmiss/>

1. Essay or thesis chapter representative of the applicant's best scholarly work
2. GRE test scores
3. Current résumé of training and experience in the field
4. Statement of purpose including educational and professional goals
5. Three letters of recommendation.
6. One set of unofficial transcripts

International applicants must meet minimum TOEFL and TSE scores

Degree Requirements

Minimum 110 credits

1. Three years of coursework, including a sequence of 16 seminars and annual examinations. Drama courses include DRAMA 571, DRAMA 572, DRAMA 573, DRAMA 575, DRAMA 576, DRAMA 577, DRAMA 581, DRAMA 582, DRAMA 583, DRAMA 585, DRAMA 586, and DRAMA 587
2. Minimum three courses outside the School of Drama
3. Upper-level reading course in a foreign language
4. Dissertation: 30 credits of DRAMA 800

The PhD program hosts the UW's Center for Performance Studies and connects doctoral students with related classes on campus. Special topics in the history sequence have included Restoration theatre, drama in the Industrial Age, communism and capitalism, and ancient theatre history. Seminars in criticism have included reading, interpretation and performance; mimesis and theatrical representation; the semiotics of theatre; and drama and Marxist theatre theory. Students are encouraged to develop original research in these seminars and to present their work at professional meetings or publish it in academic journals.

Economics

Department Overview

305 Savery

Economics studies the institutions and arrangements that societies use to create and allocate productive resources and advances our understanding of the choices and behaviors of individuals, households, firms, and other organizations. Its deep intellectual roots, rigorous analytical methods, and powerful ability to explain social phenomena warrant the importance of economics within the social sciences.

Undergraduate Program

Advisers

305 Savery, Box 353330

(206) 543-5794

econadv@uw.edu

The Department of Economics offers the following programs of study:

- The Bachelor of Arts degree with a major in economics
- The Bachelor of Science degree with a major in economics

The Bachelor of Arts degree is designed to provide a general background in economics, and is the choice of most departmental majors.

The Bachelor of Science degree requires more mathematics for admission, and its graduation requirements have a more pronounced quantitative emphasis.

Applied fields of study available include money and banking, industrial organization, environmental and natural resource economics, labor economics, public finance, comparative systems and development, international trade, and econometrics.

Bachelor of Arts

Suggested First- and Second-Year College Courses: ECON 200, ECON 201; and MATH 120, MATH 124 or MATH 111, MATH 112. Courses that develop strong analytical and quantitative-reasoning skills.

Department Admission Requirements

1. Minimum 45 quarter credits, including ECON 200, ECON 201; STAT 311; one of the following: MATH 124, MATH 134, or MATH 145; and 5 credits of English composition
2. Minimum 2.50 cumulative GPA for all prior college work; minimum 2.50 GPA for all UW coursework, when applicable.
3. Minimum 2.50 cumulative GPA for the following four courses: ECON 200, ECON 201; STAT 311; one of the following: MATH 124, MATH 134, or MATH 145, with a minimum 2.0 grade for each of these courses and for English composition.

4. A one-page personal statement, typed and double-spaced, responding to the following questions: What are your personal/educational goals, and how do you expect those to be met through an economics major? What background do you bring to the program? Describe any special experiences that would contribute to your studies in the field.
5. Completion of reading comprehension, critical thinking, and writing assessment essay. See department website for details.
6. Application deadline is the second Friday of each quarter (autumn, winter, spring). Admission is competitive. Meeting above criteria does not guarantee admission to the major.

Major Requirements

60 credits

1. Admission to the major
2. STAT 311 (or equivalent) and MATH 112 or MATH 124 (or equivalent)
3. ECON 200 and ECON 201; minimum 2.0 grade
4. ECON 300 and ECON 301; minimum 2.0 grade
5. ECON 382
6. Five ECON courses (25 credits) at the 400 level (not including ECON 496, ECON 497, ECON 499)
7. Minimum 50 credits in ECON-prefix courses; minimum 2.00 GPA for these 50 credits
8. ECON 300, ECON 301, and ECON 382 taken in residence as a matriculated student through the UW, Seattle
9. Maximum 10 credits at the 400 level taken out of residence at the UW
10. Maximum 10 credits at the 400 level taken out of residence at the UW

Bachelor of Science

Suggested First- and Second-Year College Courses: ECON 200, ECON 201, and MATH 120, MATH 124 and STAT 311. Additional calculus preparation during the first year is strongly recommended as MATH 125 and MATH 126 are required for admission. Courses that develop strong analytical and quantitative-reasoning skills.

Department Admission Requirements

1. Minimum 45 quarter credits completed, including ECON 200, ECON 201; STAT 311, STAT 341, or STAT 390; MATH 124, MATH 125, and MATH 126 (or MATH 134, MATH 135, MATH 136); and 5 credits of English composition
2. Minimum 2.50 cumulative GPA for all prior college work; minimum 2.50 GPA for all UW coursework, when applicable.
3. Minimum 2.50 cumulative GPA for four of the seven courses required for entrance - ECON 200, ECON 201; STAT 311, STAT 341, or STAT 390; calculus at the level of MATH 124, or first calculus course taken, with a minimum 2.0 grade for each of the seven courses required for entrance.
4. A one-page personal statement, typed and double-spaced, responding to the following questions: What are your personal/educational goals, and how do you expect those to be met through an economics major? What background do you bring to the program? Describe any special experience that would contribute to your studies in the field.

5. Completion of reading comprehension, critical thinking, and writing assessment essay (RTW). See department website for details.
6. Application deadline is the second Friday of each quarter (autumn, winter, spring). Admission is competitive. Meeting the above criteria does not guarantee admission to the major.

Major Requirements

70 credits

1. Admission to the major
2. STAT 311 (or equivalent) and MATH 124, MATH 125, MATH 126 (or equivalent) (20 credits)
3. ECON 200 and ECON 201, minimum 2.0 grade (10 credits)
4. ECON 300 and ECON 301, minimum 2.0 grade. Must be taken in residence as a matriculated student at the UW, Seattle (10 credits).
5. Six ECON courses (30 credits) at the 400 level (not including ECON 496, ECON 497, ECON 499). Of these, minimum 15 credits of the following theory and methods courses: ECON 400 or ECON 401, ECON 404, ECON 405, ECON 424, ECON 482, ECON 483, ECON 484, ECON 485, ECON 486, ECON 487, ECON 488. Of these, 5 credits chosen from either ECON 400 or ECON 401; and another 5 credits from either ECON 424, or ECON 482, or ECON 483; 15 additional credits at the 400 level.
6. Minimum 50 credits in ECON-prefix courses; minimum 2.00 cumulative GPA in these 50 credits
7. Minimum 20 credits at the 400 level taken in residence at the UW, Seattle

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* For undergraduates, the role of the Department of Economics is to train students in a rigorous, analytical discipline that advances their problem-solving abilities and their understanding of important public issues.

The Bachelor of Arts program provides the flexibility and social science training to prepare students for employment in a variety of areas. Also, it is excellent preparation for many master's-level graduate programs in other disciplines and for professional schools such as law, business, and medicine.

The Bachelor of Science program is designed to provide undergraduates a rigorous background in economic analysis. This degree is designed for students who plan to do graduate study in economics or who plan to enter certain technically oriented professions, such as actuarial science, demography, financial analysis, or environmental consulting.

- *Honors Options Available:* College Honors (Completion of both Interdisciplinary Honors and Departmental Honors requirements). Departmental Honors. See adviser for requirements.
- *Internships, Research, and Service Learning:* Course credit available for internships and research. Visit www.econ.washington.edu/instruction/undergrad/beyond.html.

- *Department Scholarships:* Scholarship opportunities are available for application during spring quarter. See departmental advisers for details. Note: Students must have filed a FAFSA with the University of Washington's Financial Aid Office to be eligible.
- *Study Abroad Opportunities:* The department offers a variety of exchange programs. For more information, visit www.washington.edu/instruction/undergrad/studyabroad.htm.
- *Student Organizations/Associations:* The Economics Undergraduate Board (EUB) serves as a liaison between economics students, faculty, and alumni, and also provides services to the general economics undergraduate student body. The EUB provides free tutoring for ECON 200, ECON 201, ECON 300, and ECON 301; holds career seminars and faculty lectures; and publishes the quarterly newsletter, "The Economizer." For more information on these services, as well as others provided by the EUB, visit depts.washington.edu/ecnboard/.

Of Special Note:

- Courses accepted in transfer as ECON 1XX or ECON 2XX cannot be applied to major requirements unless courses equivalent to ECON 200 and ECON 201 were required as prerequisites. ECON X courses not having these prerequisites may be applied to electives for the degree, but not to the 50-credit economics-course requirement.
- Internship and independent study economics credits do not count toward the required economics credits for the BA or BS degree.

Graduate Program

Graduate Program Coordinator
306 Savery, Box 353330
(206) 685-1384
econadv@uw.edu

The department offers the doctor of philosophy degree. The program is designed to develop trained economists for careers in teaching, private industry, government, and international agencies. Frequent seminars led by U.S. and foreign visitors as well as by faculty and students are conducted as an integral element of the department's graduate program.

Doctor of Philosophy

Admission Requirements

1. Intermediate-level microeconomic and macroeconomic theory.
2. One year of calculus, one term of linear algebra, and one term of statistics.
3. Strongly recommended: differential equations, additional work in calculus, matrix algebra, and probability and statistics.
4. An undergraduate major in economics is not required provided the above prerequisites have been met.
5. General Test of the GRE.
6. International applicants (except those noted below) must submit a valid score from one of the following tests to demonstrate spoken English proficiency. Scores noted meet the UW language requirement for international teaching assistants: 26 on the speaking portion of the TOEFLiBT, or 7.0 on the speaking portion of the IELTS, or 70 on the Versant English Test. Applicants who achieve one of these scores are given priority for departmental funding, although students who achieve slightly lower scores may also be considered.

The following international applicants are not required to take a language test to demonstrate spoken English proficiency: (1) Those who have completed, or will complete before starting the graduate program, a bachelor's degree at a regionally accredited U.S. institution. (This exemption does not apply to applicants who have completed, or will complete, only a master's degree at a U.S. institution.) (2) Those who are native English speakers.

7. The department does not accept admission to a terminal master's (MA) degree. A sequential MA degree is offered for students already enrolled in the PhD program.

Degree Requirements

Minimum 90 credits

1. ECON 500, ECON 501, ECON 502, ECON 503, ECON 508, ECON 509, ECON 580, ECON 581, and ECON 582.
2. Core examinations in microeconomics and macroeconomics.
3. Eight other elective field courses in economics at the graduate level, including two fields of specialization. Fields of specialization include advanced macroeconomic theory, advanced microeconomic theory, comparative systems and development, econometrics, finance, health economics, industrial organization, international economics, labor economics, natural resource economics, and public finance
4. General examination
5. Doctoral dissertation

Financial Aid

The principal form is a teaching assistantship. Assistantships are available to entering graduate students with promising academic records. A small number of fellowships are also available.

Research and Computing Resources

The department houses a computer laboratory that provides hardware and software for economic modeling, economic estimation, word processing, and other faculty and graduate student research functions. Access is restricted to economics graduate students and faculty. In addition, the Center for Social Science Computation and Research (CSSCR) maintains an extensive library of computer software and data, and offers free consulting services to aid faculty and students with computing problems.

English

Department Overview

A101 Padelford

The Department of English offers courses in English, American, and related literatures. Courses in literature emphasize techniques of literary analysis; theoretical problems in the interpretation of texts; the social, historical, and political context of literary production and reception; and the pleasures of reading. Most require significant written work and stress critical thinking skills. Courses in language study examine the structural, historical, social, and aesthetic dimensions of English. The creative writing program offers workshops in verse, short story, novel, and expository writing. English majors are exposed to many critical perspectives, and pursue interests in literary history, critical theory, language studies, and creative writing.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of English offers the following program of study:

- The Bachelor of Arts degree with a major in English. A creative writing option is also available.
- Minors in English: English and Writing

Bachelor of Arts

Suggested First- and Second-Year College Courses: Foreign languages, classics, English history, American history, and philosophy.

Department Admission Requirements

1. Minimum cumulative 2.00 GPA
2. Minimum cumulative 2.50 English GPA
3. Enrolled students may declare the English major in the English Advising Office, A2B Padelford, during the first two weeks of autumn, winter, spring, and summer quarters.

Additional requirements for admission to the creative writing option:

1. Admission to the English major
2. Minimum 2.0 grade in ENGL 202.
3. ENGL 283 and ENGL 284 or transfer equivalents
4. Submission of an unofficial transcript and a writing sample of 3-5 poems and 5-10 pages of fiction (preferably a complete story)

5. Students interested in the creative writing option should apply to the Creative Writing Office, B-25 Padelford, during the first three weeks of autumn, winter, and spring quarters.
6. Admission is capacity constrained. Completion of the above requirements does not guarantee admission.

Major Requirements

Minimum 60 credits

1. Minimum 2.0 grade in ENGL 202, taken within one quarter of admission to the major. (5 credits)
2. Minimum 2.0 grade in ENGL 302, taken within two quarters of admission to the major. (5 credits)
3. *English Core (15 credits)*: Minimum 5 credits from each of the following: (1) theories/methodologies of language and literature; (2) forms/genres/media; (3) cultures in contexts. See list of approved courses, available from the department advising office or department website: depts.washington.edu/engl/.
4. *English Electives (30 credits)*: 200-level or above
5. *Historical breadth*: Minimum 10 credits of pre-1945 literature and 5 credits of pre-1700 literature. See list of approved courses at: depts.washington.edu/engl/.
6. Minimum 2.0 grade in approved 400-level senior capstone English course (5 credits). See list of approved senior capstone courses at depts.washington.edu/engl/ugrad/ugbareqs.php.
7. Maximum 20 credits of 200-level courses and maximum 5 credits of creative writing may apply towards the major.
8. Minimum 30 credits of English at the 200-level or above must be completed in residence through the UW.

The department strongly recommends, but does not require, 5 credits in one of the following English language courses: ENGL 370, ENGL 371, ENGL 373, ENGL 374, ENGL 478, ENGL 479, or LING 200.

Creative Writing Option

Minimum 60 credits

1. Minimum 2.0 grade in ENGL 202, taken within one quarter of admission to the major. (5 credits)
2. ENGL 283 and ENGL 284 (10 credits)
3. *English Core (25 credits)*: Minimum 5 credits from each of the following: (1) theories and methodologies of language and literature; (2) cultures in contexts. See list of approved courses, available from the department advising office or [department website](#).
4. *Historical breadth*: Minimum 10 credits of pre-1945 literature and 5 credits of pre-1700 literature. See list of approved courses at: depts.washington.edu/engl/.
5. ENGL 383 and ENGL 384 (10 credits)
6. Approved 400-level creative writing courses (10 credits)
7. Maximum 20 credits of 200-level courses may apply towards the major.
8. Minimum 30 credits of English at the 200-level or above must be completed in residence through the UW.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minors

Minor Requirements

English: 30 credits of English courses, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 20 credits must be completed in residence through the UW.

Writing: 25 credits, of which 15 must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. 15 credits from approved list of courses in academic, professional, and creative writing. 10 credits from approved list of courses in theory, history, and design. See adviser or department website for approved lists. No more than 5 credits from creative writing or courses outside the English Department. Minimum 15 credits must be completed in residence through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Good writing, analytical ability, research skills, and broadened perspectives are among the practical accomplishments majors acquire, all of which can be applied to a range of careers, including, but not limited to advertising, business and marketing, law, library science, the media, public administration, publishing, the social services, and teaching.

The undergraduate program of study in English concentrates on developing students' critical and interpretive abilities with regard to literatures written in English. Students become familiar with the critical developments in the study of language and literary forms, including especially understanding the cultural and historical contexts of various forms of literature. Students are, accordingly, asked to cultivate a habit of self-conscious and careful reading of written texts. Honing a successful habit of reading depends on acquiring an early awareness of the broad range of critical and interpretive methods available to readers of literature, as well as comprehending the basic purpose and effects at stake in different reading methods. Finally, students develop the ability to compose effective and persuasive written analyses of texts in a manner that demonstrates comprehension of the complexities or nuances of language, literature, and culture.

- *Instructional and Research Facilities:* Computer laboratories in Mary Gates Hall for computer-integrated sections.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The English internship program maintains an active list of over 200 local employers, including publishers, arts organizations, the media, advertising agencies, social service groups, schools, and businesses. Credit is available to declared English majors (ENGL 491).

- *Department Scholarships:*
 - English Department scholarships are available to declared English majors enrolled at the UW for at least two quarters with a 3.50 UW GPA and a 3.70 UW English GPA. Scholarship recipients must enroll for at least two quarters and carry at least 6 credits each quarter during the term of the scholarship. Applications, due in early March, are available in A11 and A2B Padelford.
 - Additional scholarships and prizes in creative writing are open to UW English majors only. Applications, due in early March, are available in B25 and A2B Padelford.
- *Student Organizations/Associations:* *Bricolage* is a student literary arts annual published entirely by UW undergraduates and features the works of University students, faculty, staff, and alumni. Students from all majors welcome. Contact: brico@uw.edu for details.

Of Special Note::

- Students considering teaching English at the secondary level should consult an English adviser regarding coursework for the English Language Arts endorsement required for entry into the Secondary Teacher Education Program (TEP).
- The Department of English offers study abroad opportunities in London and Rome. Students from all majors welcome. See department website for more information.

Graduate Program

Graduate Program Coordinator
A105 Padelford, Box 354330
(206) 543-6077
englgrad@uw.edu

The department offers a complete program of graduate courses and seminars designed to provide aspirants for the MA and PhD degrees with a knowledge of English literature and language and the necessary scholarship for training in literary criticism and theory, literary history, and English-language study, including rhetoric and composition. It is possible to pursue a literature- or language-study emphasis. The MFA in creative writing emphasizes projects in imaginative writing in fiction and poetry, supported by courses in criticism and literary periods and types. A special degree program, the Master of Arts for Teachers, is offered for English teachers in secondary schools and community colleges and a Master of Arts for Teachers (of English to speakers of other languages) for those interested in teaching English to speakers of other languages. The graduate program permits completion of master's degree requirements in four to six quarters and doctoral degree requirements in five years (including the master's degree). In a typical five-year PhD program, a student is encouraged to complete course requirements (75 credits) during the first three years, the general examination for the doctorate in the fourth year, and the dissertation in the fifth year. Those admitted with a master's degree from another university can complete the doctorate in four years: two years of coursework, examination year, and dissertation year.

Master of Arts

Admission Requirements

1. Bachelor of Arts degree: Major in English equivalent to that awarded by the UW preferred.
2. GRE general test; subject test (literature in English) recommended
3. Three letters of recommendation, statement of purpose, and a critical writing sample.

Degree Requirements

40 credits

1. Intermediate-level proficiency in a language other than English
2. 30 credits in graduate English seminars
3. For students continuing to the doctoral program, a 10-credit master's essay. For a terminal master's degree, students may substitute 10 additional credits in graduate English seminars for the master's essay.
4. Maximum 5 credits may be transferred from an accredited graduate program elsewhere.

Master of Fine Arts***Admission Requirements***

1. Bachelor of Arts degree
2. GRE general test
3. Three letters of recommendation, statement of purpose, a critical-writing sample, and a creative-writing sample

Degree Requirements

55 credits

1. 20 credits in creative writing
2. 15 credits in graduate English seminars (5 credits must be from an approved course in criticism)
3. 5 elective credits
4. 15 thesis credits (including a creative thesis, an MFA essay, and a final oral examination); demonstration of proficiency in a language other than English.

Master of Arts for Teachers***Admission Requirements***

Same as for the Master of Arts degree, but usually including prior teaching experience.

Degree Requirements

45 credits

1. 25 credits in courses numbered 500 or above; including at least one course each in English language or linguistics, rhetoric and/or composition, literary criticism or critical theory, and literature; three courses must have a stated orientation on teaching English.
2. 5 credits of MAT essay
3. 15 credits may be taken outside the department in courses related to the teaching of English, subject to approval.
4. In addition to the 45 credits, a student with no regular or formal teaching experience is required to complete at least 6 credits of ENGL 601 (Internship).

Master of Arts for Teachers (of English to Speakers of Other Languages)

Admission Requirements

1. Bachelor of Arts degree
2. GRE general test
3. Statement of purpose, three letters of recommendation
4. Students without training in linguistic method and theory must take LING 400 as a prerequisite for other 400-level linguistics courses.

Degree Requirements

45-54 credits

1. ENGL 571, ENGL 572, ENGL 574, ENGL 576; LING 446 or LING 450, ENGL 575 or LING 461; three courses from ENGL 471, ENGL 478, ENGL 479, ENGL 560, ENGL 561, ENGL 562, ENGL 563, ENGL 564, ENGL 567, ENGL 569, ENGL 575, LING 433/ANTH 464, LING 457/PSYCH 457, LING 451, LING 462; one elective course; 3-6 credits of ENGL 570
2. Intermediate-level proficiency in a language other than English

Doctor of Philosophy

Admission Requirements

By petition to the Graduate Studies Committee upon completion of the MA degree option in literature. Students with recent master's degrees from other institutions are admitted at the post-master's level following the guidelines for admission to the MA option and must complete two quarters before petitioning the Graduate Studies Committee for admission to the doctoral program. Students transferring with a master's degree from other institutions may be required to submit an equivalent to the master's essay. Students with MFA, MAT, or MAT (ESL) degrees from this University must complete coursework and language requirements for the MA degree option and submit an equivalent to the master's essay.

Graduation Requirements

Minimum 102 credits

1. 75 graded credits of electives in graduate English seminars. Students with a recent master's degree from another university may count up to 30 credits from their master's program, upon approval of the Director of Graduate Studies. Students with a master's degree from the UW may count up to 40 credits in courses taken before admission to the doctoral program.
2. Fluency in at least one language other than English, plus whatever additional language study the Supervisory Committee advises
3. Written examinations for literature emphasis: (1) historical period, (2) specialized field of study, (3) second period, genre, or topic. Written examinations for language emphasis: (1) major approach to English-language study, (2) second approach to language study, (3) textual focus (can be literary period)
4. Oral general examination
5. 27 credits of ENGL 800 (dissertation); and a final examination based on the dissertation

Financial Aid

The department annually awards 10 or more new teaching assistantships. To be considered, applicants must submit an assistantship application and supporting materials for admission to the graduate program by January 15. A statement of purpose, three recommendations, the GRE general test, and a critical-writing sample are required [except MAT (E.S.O.L.)]. Teaching assistantship applicants who are not native speakers of English must submit as part of their application a score of 290 or better on the Test of Spoken English (TSE) or UW-administered SPEAK test.

French and Italian Studies

Department Overview

French and Italian studies provide cultural literacy in dialogue with global contexts; and professionally relevant linguistic, research, interpretive, and expressive skills and tools. The aim is to understand our multilingual, multicultural world in historical perspective and to prepare students to convincingly convey this understanding to others in Italian or French as well as in English, thus preparing them to become leaders in an increasingly diverse society – to include the ability to articulate and implement career transferability of the skills and knowledge acquired in the course of study.

Undergraduate Program

C254 Padelford

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Division of French and Italian Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in French or Italian
- Minors in French Language, Sociolinguistics, and Translation; French Language, Literature, and Culture; and Italian Language and Culture

Bachelor of Arts

Suggested First- and Second-Year College Courses: Community college students should take as many lower-division language courses as possible before transferring to the UW.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

French (55 credits)

1. Core: 30 credits from FRENCH 301, FRENCH 302, FRENCH 304, FRENCH 305, FRENCH 306; one course at the FRENCH 370 level
2. Advanced: 10 credits at the 400 level. Transfer credits at the 400 level accepted only by petition.
3. Electives: 15 credits above FRENCH 203 from an approved list. See adviser for approved list
4. Minimum 2.00 cumulative GPA for courses applied to the major
5. Maximum 15 credits of approved study-abroad coursework may be petitioned to apply to the major

Italian (55 credits)

1. Core: 30 credits from ITAL 203, ITAL 301, ITAL 302, ITAL 304, and two courses at the ITAL 350-level
2. Electives: 25 credits above ITAL 203 from an approved list of electives. See adviser for approved list.
 - a. Must include 5 credits at the ITAL 400-level. Transfer credits at the 400 level accepted only by petition
3. Minimum 15 credits in courses taught in Italian
4. Minimum 2.00 cumulative GPA for courses applied to the major
5. Maximum 15 credits of approved study-abroad coursework may be petitioned to apply to the major

Minor***Minor Requirements*****French Language, Sociolinguistics, and Translation (30 credits)**

1. 20 credits from FRENCH 203, FRENCH 301, FRENCH 302, FRENCH 304
2. 10 credits from FRENCH 303, FRENCH 313, FRENCH 314, FRENCH 315, FRENCH 320, FRENCH 406, FRENCH 472
3. Minimum 2.00 cumulative GPA for courses applied to the minor
4. Maximum 10 credits of approved study-abroad coursework maybe petitioned to apply to the minor.
5. Students may not earn both the minor in French Language, Sociolinguistics, and Translation, and the minor in French Language, Literature, and Culture.

French Language, Literature, and Culture (30 credits)

1. FRENCH 203, FRENCH 301, FRENCH 302, FRENCH 304
2. One of FRENCH 305 or FRENCH 306
3. One course at the FRENCH 370 level
4. Minimum 2.00 cumulative GPA for courses applied to the minor
5. Maximum 10 credits of approved study-abroad coursework may be petitioned apply to the minor
6. Students may not earn both the minor in French Language, Literature, and Culture and the minor in French Language, Sociolinguistics, and Translation.

Italian Language and Culture (31 credits)

1. ITAL 201, ITAL 202, ITAL 203; or ITAL 234 (15 credits)
2. ITAL 301 (5 credits)
3. ITAL 351, ITAL 352, ITAL 353, ITAL 354, ITAL 355, ITAL 356, ITAL 357, one of which must be taken concurrently with ITAL 380 (6 credits)
4. Electives (see website or adviser for approved list of courses) (5 credits)

5. Minimum 2.00 cumulative GPA for courses applied to the minor
6. Maximum 10 credits of approved study-abroad coursework may be petitioned to apply to the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students achieve levels of linguistic and cultural competency that allow them to pursue professional opportunities in a wide variety of internationally oriented fields and to be effective citizens in a rapidly changing world.

Students with substantial foreign language fluency who combine language skills with a solid foundation in liberal education and adequate job preparation and internships find fulfilling occupations. . The combination of studies in foreign languages and international affairs is ideal for students seeking job opportunities in government (foreign service and diplomatic fields, intelligence agencies, immigration and customs, Department of Labor, law enforcement, armed forces, legal agencies, public aid, social and community work, and international agencies, such as the United Nations and UNICEF), business (airlines, marketing, banking/finance, multi-national corporations, shipping industry, travel and hotel industries, import/export firms, publishing houses, and consulting), and communication fields (journalism, radio and television, fashion enterprises, teaching/counseling, translation, bilingual office work, library/museum work, nursing, phone companies, art and cultural affairs, and film and theatrical industries).

Beyond the practical, the department's commitment is to impart to our students the skills and the genuine desire to learn throughout their lives, fostering the type of cultural and intellectual flexibility that lends itself to the multiple work and personal changes that most will face over the course of their lives.

- *Instructional and Research Facilities:* UW Rome Center in Rome, Italy.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The Rome Center offers one intern position per year, providing room and board and a modest stipend. Interns work in the administrative Rome/UW office and are required to follow an independent course of language and literature study or other proposed course of study.
- *Department Scholarships:* Scholarships for departmental study abroad programs are available. Program applicants are notified of opportunities by their program director.
- *Student Organizations/Associations:* French Club, Italian Club.

Of Special Note: The department sponsors study-abroad programs in France, Italy, and Martinique. See adviser for details.

Graduate Program

Graduate Adviser
C256 Padelford, Box 354361
(206) 616-5366

Graduate Program Coordinator
C259 Padelford

The department offers programs of study leading to the degrees of Master of Arts in French or Italian and Doctor of Philosophy in French. Students who wish to complete doctoral studies in Italian may apply through the Department of Comparative Literature, Cinema, and Media during their second year in the master's program.

Master of Arts in French Studies

Admission Requirements

Undergraduate major in French or related field. Proficiency in speaking and writing French.

1. Application for Graduate Admission, with supporting documents
2. Letter of intent
3. Writing sample
4. Three letters of recommendation
5. Digital file of applicant speaking in French
6. GRE scores
7. Applicants whose native language is not English must demonstrate English language proficiency. Students who wish to be appointed as teaching assistants (TAs) must meet conditions specified in [Graduate School Memorandum 15](#).

Degree Requirements

50 credits

1. Coursework (40 credits) taken at the 400 and 500 levels
 - a. Minimum 18 credits at the 500 level or above
 - b. Minimum 18 graded credits in approved 400-level courses accepted as part of the major, and in 500-level courses. Excludes FRENCH 499 and transfer credits.
 - c. Coursework to include:
 - i. Methodology of French language teaching course – FRENCH 510 and FRENCH 590 (5 credits total), or equivalent
 - ii. Designated methods course (FRENCH 550, FRENCH 551, or FRENCH 577), or other approved course
 - iii. Minimum two courses with content drawn largely from pre-1800 sources
2. Master's project (10 credits): FRENCH 600. Emphasizes independent research and creative projects.

Master of Arts in Italian Studies

Admission Requirements

Undergraduate major in Italian or a related field. Proficiency in speaking and writing Italian.

1. Application for Graduate Admission, with supporting documents
2. Letter of intent
3. Writing sample
4. Three letters of recommendation
5. Digital file of applicant speaking in Italian
6. GRE scores
7. Applicants whose native language is not English must demonstrate English language proficiency. Students who wish to be appointed as teaching assistants (TAs) must meet conditions specified in Graduate School [Graduate School Memorandum 15](#).

Degree Requirements

50 credits

1. Coursework (40 credits) taken at the 400 and 500 levels
 - a. At least 18 credits must be at the 500 level or above.
 - b. Minimum 18 graded credits in approved 400-level courses accepted as part of the major, and in 500-level courses, excluding ITAL 499 and transfer credits
 - c. Coursework to include:
 - i. Methodology of Italian language teaching course – ITAL 510 and ITAL 590 (5 credits total)
 - ii. Designated methods course (ITAL 550 or ITAL 551) or other approved course
 - iii. Minimum two courses with content drawn largely from pre-1800 sources
2. Master's Project (10 credits) ITAL 600. Emphasizes independent research and creative projects.

Doctor of Philosophy in French Studies

Admission Requirements

Students are rarely admitted directly into the PhD program; only those with an MA degree in French or a related field are considered. Incoming PhD students must have a well-defined project, a demonstrable and broad knowledge of French and Francophone literature, culture, and history, as well as extensive preparation in research methods. Some MA applicants who apply for the PhD program may instead be considered for admission to the MA in French Studies.

Degree Requirements

67 credits (beyond the MA)

1. Coursework (40 credits) to include:

- a. Minimum 18 credits at the 500 level before the general examination
 - b. Minimum 18 graded credits at the 400 and 500 levels (excluding FRENCH 499) before the general examination
 - c. 10 credits at the 600 level, taken concurrently with the general examination
2. General examination
 3. Dissertation prospectus
 4. Dissertation (27 credits)
 5. Final examination

Financial Aid

The department awards a number of teaching assistantships. Teaching assistants normally participate in teaching three classes during the academic year. Research assistantships are available on a limited and competitive basis.

Gender, Women, and Sexuality Studies

Department Overview

B110 Padelford

Gender, Women, and Sexuality Studies is an interdisciplinary field that offers students a cohesive framework for the study of women's and men's lives within historical and contemporary contexts, and from multi-disciplinary, multi-cultural, and international perspectives. As a field of inquiry, gender, women, and sexuality studies challenges traditional scholarship about human societies and fosters the construction of new theoretical and methodological approaches to understanding diverse experiences and realities.

Undergraduate Program

Adviser

B110S Padelford, Box 354345

(206) 543-6902

gwssadvs@uw.edu

The Department of Gender, Women, and Sexuality Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in gender, women, and sexuality studies
- A minor in gender, women, and sexuality studies

Bachelor of Arts

Suggested First- and Second-Year College Courses: GWSS 200, and any of the following: GWSS 206, GWSS 257, GWSS 283, GWSS 290.

Department Admission Requirements

Any student with a cumulative GPA of at least 2.00 can declare this major at any time.

Major Requirements

Minimum 58 credits

1. GWSS 200 or equivalent (5 credits)
2. GWSS 302 (5 credits)
3. One upper-division course focusing on transnational perspective. See adviser for list of eligible courses. (5 credits)
4. GWSS 497 (fieldwork) (minimum 3 credits)
5. One course in at least three of the four following overlapping focus points: Global Identity Formations; Decolonizing Empire; Feminist Knowledge Production and Radical Critique; Building Social, Cultural, and Political Movements for Change. See adviser for list of courses in each category (15 credits)

6. Additional gender, women, and sexuality studies upper-division credits. 10 credits must be graded. Maximum 10 credits from variable credit courses (GWSS 495, GWSS 496, GWSS 497, GWSS 499) can be applied toward this requirement. (20 credits)
7. Senior capstone, GWSS 494 (5 credits)
8. Minimum 20 credits applied toward the major must be completed in residence through the UW.
9. Minimum 2.00 cumulative GPA in courses applied to the major.

Minor

Minor Requirements: 30 credits

1. GWSS 200 or equivalent; and one additional GWSS 200-level course (10 credits)
2. GWSS 302 (5 credits)
3. Additional upper-division (300-400 level) credits in gender, women, and sexuality studies. Minimum 10 credits must be graded. Maximum 5 credits from variable credit courses (GWSS 495, GWSS 496, GWSS 497, and GWSS 499) may be applied toward this requirement. (15 credits)

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* A Bachelor of Arts in gender, women, and sexuality studies helps students prepare for careers in human, health, legal, or civil service, as well as in the private sector. Some gender, women, and sexuality studies graduates develop careers that focus directly or indirectly on women and women's issues. Many others move into careers that entail understanding the dynamics of gender, race, class, and sexuality. Such positions exist in politics, business, education, government, medicine, and the arts. Recent graduates of gender, women, and sexuality studies have found employment in public agencies, community services, health services, private businesses, and legal firms.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Students intern in local agencies or businesses to develop skills in an area of specialization appropriate to their area of interest. For lists of these opportunities, see adviser.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* Students can join the National Women's Studies Association (NWSA).

Graduate Program

Graduate Program Coordinator
B110 Padelford, Box 354345
(206) 543-6900
gwss@uw.edu

The department offers graduate training leading to the PhD in interdisciplinary women studies as well as in a chosen discipline. A master's degree may be awarded to students in the doctoral program, but the department does not offer a terminal master's degree. The core faculty represent the following disciplines: anthropology, American Indian studies, cultural studies, economics and development, English, history, international studies, psychology, queer/sexuality studies, and sociology. Although students work

primarily with a core faculty member in Gender, Women, and Sexuality Studies, they have the opportunity to study with more than 90 adjunct faculty members from a wide range of disciplines.

Doctor of Philosophy

Admission Requirements

Applicants are admitted for autumn quarter only and must complete application materials by the beginning of the prior January. A complete application file includes the Graduate School application, one copy of official transcripts, three recommendations, a statement of purpose, and scores from the GRE.

Degree Requirements

Minimum 90 credits

In addition to 15 credits of core seminars (GWSS 501, GWSS 502, and GWSS 503), students pursue an individual program of study. The program usually requires three years of study beyond the master's level, including independent field research and preparation of a dissertation. PhD students must exhibit proficiency in a language relevant to their theoretical and regional areas of specialization. Students are urged to establish foreign language competency as undergraduates before entering the graduate program or soon after.

Financial Aid

A limited number of teaching and research assistantships are offered to PhD students.

Geography

Department Overview

408A Smith

Geography is about the relationship between people and the environment. It provides important insights into the spatial transformations associated with globalization, environmental change, migration, health, development, and many other contemporary processes. The Department of Geography has a strong commitment to social justice and public scholarship, and provides a rich undergraduate experience for those who are passionate about exploring our world and understanding the social and spatial processes that shape it.

Geography seeks to understand the complex processes that result in the patterns, trends, and impacts of urbanization, migration, trade, and development. Geographers use ethnographies, statistical analysis, databases, scholarly research, and observation to construct models, maps, and other tools for understanding, and to address pressing social and environmental issues.

Undergraduate Program

Advisers

415 A & B Smith, Box 353550
(206) 543-3246

The Department of Geography offers the following programs of study:

- Bachelor of Arts degree with a major in geography
- A minor in geography

Students may choose from among four multifaceted tracks (Cities, Citizenship, and Migration; Environment, Economy, and Sustainability; Globalization, Health, and Development; and GIS, Mapping, and Society), or customize their own hybrid focus along more thematic or issue-driven lines, such as inequality, race/class/gender studies, etc. Lists of courses in each track may be found at depts.washington.edu/geog/program-details/.

For an overview of main faculty research themes and how they relate to these tracks, visit depts.washington.edu/geog/research-themes.html.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Any 100- or 200-level GEOG course. Courses that develop strong writing, analytical, and qualitative- and quantitative-reasoning skills. Geography is inherently interdisciplinary, so exposure to many social science fields of study in the first two years is ideal.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

60 credits:

1. *Foundations (30 credits)*: See departmental adviser for approved track courses.
 - a. GEOG 315
 - b. One methods course from the following: GEOG 317, GEOG 326, GEOG 425, GEOG 426, or faculty approved methods course
 - c. One Cities, Citizenship, and Migration Track course (5 credits)
 - d. One Environment, Economy, and Sustainability Track course (5 credits)
 - e. One Globalization, Health, and Development Track course (5 credits)
 - f. One GIS, Mapping, and Society Track course (5 credits)
2. *Track (20 credits)*: Students select one of the following four tracks:
 - a. Cities, Citizenship, and Migration
 - b. Environment, Economy, and Sustainability
 - c. Globalization, Health, and Development
 - d. GIS, Mapping, and Society

Four upper-division (300- and 400-level) geography courses are required for the track the student selects, at least two of which must be at the 400 level. As an alternative to one of the four defined tracks, students may also customize their own hybrid focus along more thematic or issue-driven lines, such as inequality, race/class/gender studies, etc. See depts.washington.edu/geog/program-details for approved track courses, and/or geography adviser for details.

3. *Electives (10 credits)*: GEOG electives at the 200 level or above; 300- and 400-level courses preferred.
4. *Additional Degree Conditions and Program Features*
 - a. Students must complete a minimum of 25 upper-division credits (300- and 400-level) in geography in residence through the UW.
 - b. Students are encouraged to take appropriate elective courses outside the Department of Geography in fields that support their track. Courses appropriate to various tracks are available on lists supplied by geography advisers, or may be recommended by the faculty adviser. Students should be aware that 300- and 400-level courses in other departments likely have prerequisites.
 - c. 5 credits of internship (GEOG 496) or independent study (GEOG 499) may apply toward the required 60 credits.
 - d. No single course may be counted toward more than one degree requirement.
5. Minimum 2.00 cumulative GPA in courses applied to the major.

Data Science Option

66 to 69 credits

1. *Foundations (30 credits)*: GEOG 258, GEOG 315, GEOG 317 or GEOG 326, GEOG 360, GEOG 381; one additional course from either the Environment, Economy, and Sustainability track or the Globalization, Health, and Development track
2. *Data Science Electives (36-39 credits)*:
 - a. *Programming*: CSE 142 or CSE 160; either CSE 143 or CSE 163
 - b. *Machine Learning*: either STAT 311 or STAT 390; one of CSE 416/STAT 416, STAT 435, or INFO 371
 - c. *GIS, Mapping, and Society*: GEOG 458, GEOG 461, GEOG 465, GEOG 482
3. *Additional Degree Conditions and Program Features*
 - a. Students must complete a minimum of 25 upper-division credits (300- and 400-level) in geography in residence through the UW
 - b. No single course may be counted toward more than one degree requirement
4. Minimum 2.00 cumulative GPA in courses applied to the major

Minor

Minor Requirements: 30 credits in geography, including 15 upper-division geography credits with at least 5 credits at the 400 level. No more than 5 credits applied to the minor may be from 100-level classes. Independent learning and internship credits (GEOG 494, GEOG 496, GEOG 497, GEOG 499) may not be counted as part of the 30 credits. A minimum 2.0 grade for each course counted toward the minor. At least 15 credits of upper-division geography courses must be taken through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Geographers address some of the world's most urgent challenges, including global and environmental change, economic and social inequality and poverty, world hunger, global health and healthcare, social justice in the city, migration and immigration, and what it means to be a global citizen in the twenty-first century. Responses to such questions are complex and partial, and these issues are not "fixable" by one-dimensional solutions. Geography's contribution to these public issues and solutions is through evidence-based, multi-scalar analyses and mapping of socio-spatial and environmental change. Social justice, community engagement and activism, and an accountability to place inform our inquiry and study.

In geography classes students learn how to design and conduct research, employing quantitative and qualitative methods; use statistical and demographic analysis; and interpret and analyze data, discourses, and texts and images in order to address significant topics and questions in human geography. Students combine classroom study with internships, community service, and independent research to develop integrated, rich, and relevant learning experiences. These experiences help develop and refine critical and analytical research and communication skills, offer hopeful and engaged responses to daunting problems, and emphasize that individuals can make a difference.

Typical questions or lines of inquiry in each track include:

1. **Cities, Citizenship, and Migration**: Why do people move, and where do they go? What are the constraints and opportunities for migrants as they settle and integrate in new

cities and new nations? How are cities formed and what are the forces that impact their economic and cultural development? The courses in this track focus on themes of urbanization and human movement, emphasizing the importance of labor and housing, as well as cultural processes and historical forms of discrimination that shape where people live and work. Students in this track develop an understanding of the intersections of power and place as they pertain to migration and immigrant life, citizenship and belonging, and the production of urban space.

2. **Environment, Economy, and Sustainability:** Courses in this track study the reciprocal and often contradictory forces of economic activity, environmental policy, and sustainability. Using such key geographic concepts as scale, place and location, they analyze relations between such complex processes as: land use, labor markets, corporate location, international trade, energy policy and consumption, environmental regulatory policy, resource use, and food systems.
3. **Globalization, Health, and Development** How does globalization shape life and death around the planet? How can development initiatives address global health disparities? Providing geographical answers to such questions, this track traces the extraordinarily uneven effects of global trade, global finance, and market-led development on food systems, health, and the geography of impoverishment. By putting global health challenges in a global socio-economic context, the track simultaneously highlights how social movements and social organizing can make a difference, including differences in formal policies affecting human well-being directly as well as innovations in the ethics of care. Courses in the track provide frequent opportunities for service learning as part of the goal of helping students engage with real world challenges. All classes also approach these themes through a geographical lens: charting global-local relations and the links between nature, society, and political-economy in particular places. This geographical approach in turn enables us to explore how nutrition, health, and development are intertwined with other processes ranging from the personal experiences of migrant farm workers, to urban and regional redevelopment, to global financial reforms. Specific questions that frame our classes include: What are the links between life and debt (GEOG 123)? How have sixty years of development increased in-country inequality (GEOG 230)? How do global disease etiologies reflect other global interconnections (GEOG 280)? How does agricultural modernization relate to hunger (GEOG 371)? And what are the implications for food security, health security, and developmental security when they are re-framed in terms of geopolitics and the global security challenges of international relations (GEOG 375)?
4. **GIS, Mapping, and Society** In courses that comprise the GIS, Mapping, and Society track, students learn to use GIS, web-based geospatial applications, and database management systems for problem solving in relation to a diverse range of societal concerns, such as those within the other geography tracks. Students learn a range of analytical and critical methods for cartographic representation, spatial analysis, geovisualization, and database management. Further, students learn about the politics, ethics, and values of mapping and geospatial technologies, and integrate their social and technical skills to undertake projects with research partners in the region.

Graduates have pursued careers as urban planners, environmental planners and land-use analysts, GIS analysts, economic analysts (marketing, location, geo-demographics), public health researchers, NGO specialists in developing nations, airline route analysts, import-export/international-trade specialists, real estate valuation specialists, lawyers, economic development specialists, social studies teachers, and college professors.

- *Instructional and Research Facilities:* A map center in Suzzallo Library houses atlases, sheet maps, and aerial photographs. Departmental facilities include the Edward L. Ullman Geography Collaboratory and the John C. Sherman Laboratory, which houses a variety of computer workstations connected to the campus computer network. The Ullman Collaboratory in 415 Smith

provides a unique collaborative classroom with networked computer work stations. The Geography Commons also provides computer work stations for students. The Department of Geography is a member of the Center for Social Science Computation and Research, which maintains an extensive data archive and offers many statistical and software consulting services.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* More than 125 geography students participate each year in internships. For lists of these opportunities, see the department's [career site](#).
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* The Undergraduate Geography Association (UGA) organizes field trips, alumni career panels, public-service projects, and social gatherings.

Of Special Note: Students interested in GIS are encouraged to learn a high-level programming language such as C, C++, Java, or Visual Basic.

Graduate Program

Graduate Program Coordinator
415B Smith, Box 353550
(206) 543-3246

The department has flexible programs leading to the master of arts and doctor of philosophy degrees. The aspirant to the master's degree completes all work in four to six quarters. The aspirant to the doctoral degree undertakes two years of post-master's study and must take a departmental diagnostic examination upon entry, pass the general examination, attain an appropriate level of competence in a foreign language or cognate field, and successfully complete a dissertation. Normally doctoral program students complete degree requirements in three to four years.

Master of Arts

Admission Requirements

1. Minimum undergraduate 3.00 GPA (on a 4.00 scale), or B. Higher minimum GPA in graduate work for students holding a master's degree.
2. GRE

Degree Requirements

Minimum 36 credits

Students may write either a thesis or two high-quality papers

Required Courses

1. GEOG 500
2. GEOG 511. One additional methods course, from the following: GEOG 471, GEOG 525, GEOG 526, GEOG 560, GEOG 561, GEOG 562, and GEOG 564.
3. Minimum three quarters of GEOG 598

4. Two departmental research seminars (designated “seminars” or “research seminars”). GEOG 500, GEOG 502, GEOG 511, and GEOG 513, and methods courses listed above do not count toward this requirement. In some cases, a directed readings course (GEOG 600) may count in lieu of this requirement. See department website for more information.

Additional Requirements

1. Minimum 18 graded credits. With thesis, students complete at least 9 credits of GEOG 700 as part of the minimum 36-credit requirement.
2. Minimum three full-time (at least 9 credits) quarters of residence credits. Part-time quarters may be accumulated to meet one quarter’s worth of this requirement.
3. Minimum 3.0 grade in all departmental courses, and minimum 2.7 grade in all related courses. Minimum 3.00 GPA maintained.
4. Final examination
5. All work completed within six years.

Master in Geographic Information Systems

The online master's program (M-GIS) helps working professionals enter or advance their careers in the field of geographic information science and sustainability management. Students combine geovisualization, data management, and geospatial analysis to develop, examine, and portray data in two- and three- dimensional maps. Specialized program courses explore sustainability and investigate the interconnection of social, environmental, and economic issues on a regional to global scale. www.gisonline.uw.edu

Students address complex geographic information problems with GIS technologies, and create solutions that balance economic, social, and environmental issues.

Admission Requirements

1. Bachelor's degree from an accredited U. S. college or university, or equivalent from a foreign institution, in a spatially-oriented discipline such as, but not limited to, geography, urban planning, geology, environmental science, civil engineering, environmental science/studies, and/or forest resources
2. Minimum 3.00 GPA in the last 60 graded semester hours or last 90 graded quarter hours of undergraduate and graduate study
3. Minimum one year of professional work experience in a field that emphasizes spatial relationships, wherein analyzing and synthesizing phenomena related across space are important
4. GRE scores
5. Personal statement describing educational goals and objectives
6. Three letters of recommendation
7. Previous coursework or work experience in GIS may offset any relative weaknesses in previous criteria.
8. *International applicants:* Demonstrated English language proficiency.

Degree Requirements

45 credits

1. GEOG 514, GEOG 517, GEOG 560, GEOG 562, GEOG 564, GEOG 565, GEOG 568, GEOG 569, GEOG 582
2. Primarily for part-time students. Most courses taught online; however, students attend three, three-day summer sessions in Seattle. Each course is 5 credits. A non-thesis program.
3. Core courses expose students to the fundamentals of GIS software technologies and advanced spatial thinking skills. Concentration courses in sustainability management consider how resources are being treated currently and how they will be treated for future generations.

Doctor of Philosophy

Admission Requirements

1. Minimum undergraduate 3.00 GPA (on a 4.00 scale), or B. Also, higher minimum GPA in graduate work for students holding a master's degree.
2. GRE

Degree Requirements

90 credits

1. GEOG 500
2. GEOG 511
3. One methods course from among: GEOG 471, GEOG 525, GEOG 526, GEOG 560, GEOG 561, GEOG 562, and GEOG 564
4. Minimum three quarters of GEOG 598

Additional Requirements*

1. Minimum 3.00 overall GPA. Minimum 3.0 grade in departmental courses. Minimum 2.7 grade in related courses.
2. Two departmental research seminars numbered 500 or above, not including GEOG 502 or GEOG 513
3. Scholarly article submitted to a professionally reviewed academic journal, or application for research support from an external agency, such as the National Science Foundation.
4. Reading competence in a foreign language or sound level of competence in a cognate field
5. Minimum 60 credits through UW (including 27 GEOG 800 credits). An approved master's degree may substitute for 30 credits.
6. Numerical grades in at least 18 quarter credits taken through UW
7. General examination
8. Dissertation (or three papers of publishable quality)
9. Final examination

* Students who earned an MA at the University of Washington have already met several of these requirements.

Financial Aid

The department awards approximately 15 to 20 teaching assistantships for the academic year. Most assistantships are for teaching quiz sections for a larger lecture class. A few advanced doctoral candidates may teach a class. Normally several research assistantships are also available. In recent years, all the department's graduate students have been funded by internal or external sources.

German Studies

Department Overview

340C Denny

The Department of German Studies focuses on the language, literature, and civilization of the German-speaking countries; on the role of their history, literature, and philosophy in Western civilization; and on linguistic analysis, especially historic, of the Germanic languages.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of German Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Germanics
- A minor in Germanics

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year German or equivalent. Courses in Central European history, literature and culture. Courses on broad cultural topics taught in English by Germanics.

Department Admission Requirements

Admission to the major status requires completion of GERMAN 202 or equivalent.

Major Requirements

51 credits:

1. GERMAN 203, GERMAN 311, GERMAN 401 (15 credits)
2. Two 400-level courses in literature and culture chosen from the following: GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 493, GERMAN 494, GERMAN 495, GERMAN 497 (10 credits)
3. Two 300-level courses in language, chosen from GERMAN 301, GERMAN 302, GERMAN 303 (6 credits)
4. 20 additional credits from any combination of the following courses, or additional courses from the list above. No more than 10 credits at the 200 level. Students who test out of language courses (GERMAN 203, GERMAN 301, GERMAN 302, GERMAN 303, GERMAN 401) because of prior competency in German must take additional courses from those listed below to bring the minimum German credits for the major to 51.

- a. *Language*: GERMAN 304, GERMAN 307, GERMAN 333, GERMAN 334, GERMAN 498
 - b. *Literature*: GERMAN 210, GERMAN 243, GERMAN 293, GERMAN 295, GERMAN 300, GERMAN 312, GERMAN 313, GERMAN 340, GERMAN 341, GERMAN 342, GERMAN 345, GERMAN 346, GERMAN 349, GERMAN 350, GERMAN 351, GERMAN 352, GERMAN 353, GERMAN 360, GERMAN 390, GERMAN 397, GERMAN 490, GERMAN 494, GERMAN 497
 - c. *Culture*: GERMAN 322, GERMAN 323, GERMAN 355, GERMAN 370, GERMAN 371, GERMAN 399, GERMAN 499
 - d. *Linguistics*: GERMAN 220, GERMAN 451, GERMAN 452, GERMAN 479
 - e. *Other*: GERMAN 395/GERMAN 396 (4 credits max.), GERMAN 398, GERMAN 446 (5 credits max.), GERMAN 447 (5 credits max.)
5. Minimum 2.0 grade in every upper-division German course counted toward the major. Overall 2.50 GPA for all German courses counted toward the major.

Minor

Germanics

35 credits

1. GERMAN 203, GERMAN 311 (10 credits)
2. 400-level coursework from either GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 493, GERMAN 494, GERMAN 495, GERMAN 497, GERMAN 498, GERMAN 499 (5 credits)
3. 20 additional credits from the following courses (no more than 10 credits may be taken from 200-level courses). Students who test out of GERMAN 203 because of prior competency in German must take additional courses from those listed below to bring the minimum German credits for the minor to 35.
 - a. *Language*: GERMAN 301, GERMAN 302, GERMAN 303, GERMAN 304, GERMAN 307, GERMAN 333, GERMAN 334, GERMAN 401, GERMAN 498
 - b. *Literature*: GERMAN 210, GERMAN 243, GERMAN 293, GERMAN 295, GERMAN 300, GERMAN 312, GERMAN 313, GERMAN 340, GERMAN 341, GERMAN 342, GERMAN 345, GERMAN 346, GERMAN 349, GERMAN 350, GERMAN 351, GERMAN 352, GERMAN 353, GERMAN 360, GERMAN 390, GERMAN 397, GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 494, GERMAN 495, GERMAN 497
 - c. *Culture*: GERMAN 285, GERMAN 322, GERMAN 323, GERMAN 355, GERMAN 370, GERMAN 371, GERMAN 385, GERMAN 399, GERMAN 493, GERMAN 499
 - d. *Linguistics*: GERMAN 220, GERMAN 451, GERMAN 452, GERMAN 479
 - e. *Other*: GERMAN 395/GERMAN 396 (4 credits max.), GERMAN 398, GERMAN 446 (5 credits max.), GERMAN 447 (5 credits max.)
 - f. 2.0 minimum grade for each course counted toward the minor

German Linguistics

As of winter quarter, 2018, admission to the German linguistics minor is suspended until further notice.

35 credits

1. GERMAN 203; either GERMAN 311 or GERMAN 322; GERMAN 401; GERMAN 451; GERMAN 452
2. Two additional courses (from any of the following):
 - a. *Language*: GERMAN 301, GERMAN 302, GERMAN 303, GERMAN 304, GERMAN 307, GERMAN 333, GERMAN 334, GERMAN 401, GERMAN 498
 - b. *Literature*: GERMAN 210, GERMAN 293, GERMAN 295, GERMAN 300, GERMAN 311 (if not used for requirement above), GERMAN 312, GERMAN 313, GERMAN 340, GERMAN 341, GERMAN 342, GERMAN 345, GERMAN 346, GERMAN 349, GERMAN 350, GERMAN 351, GERMAN 352, GERMAN 353, GERMAN 360, GERMAN 390, GERMAN 397, GERMAN 411, GERMAN 412, GERMAN 421, GERMAN 422, GERMAN 423, GERMAN 490, GERMAN 494, GERMAN 495, GERMAN 497
 - c. *Culture*: GERMAN 322 (if not used for requirement above), GERMAN 323, GERMAN 355, GERMAN 370, GERMAN 371, GERMAN 399, GERMAN 493, GERMAN 499
 - d. *Linguistics*: GERMAN 220, GERMAN 479, or courses from other departments offering linguistics
 - e. *Other*: GERMAN 395/GERMAN 396 (4 credits max.), GERMAN 398, GERMAN 446 (5 credits max.), GERMAN 447 (5 credits max.)
3. Minimum 2.0 grade is required for each course counted toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*:
 - a. To acquire linguistic fluency in German and broad knowledge of German/Austrian/Swiss language, literature, and culture;
 - b. To increase critical awareness and sensitivity to other languages and cultures as well as to one's own;
 - c. To develop skills of analytical and integrative thinking, critical reading, and writing;
 - d. To communicate clearly and concisely both in written and spoken form;
 - e. To understand how to do research in German literacy and cultural studies.
 - f. *Instructional and Research Facilities*: None
 - g. Honors Options Available: With College Honors (Completion of Honors Core and Departmental Honors requirements). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*:
 - a. Advanced undergraduate majors and minors can sign up for 1-5 credits of faculty-sponsored research (GERMAN 447) for one quarter with a maximum of 15 credits. Five credits can count towards the major as an elective. Regular grades are assigned for research results. To see examples of research projects currently being offered, see the departmental website.

- b. The internship in German (GERMAN 446) offers students the opportunity to do internships in public institutions or private businesses to apply their German language skills in practice. The internship experience provides a valuable tool to further increase students' communication skills in the German language, to explore and test potential career options, and to specify or expand study goals. Ideally an internship in German serves to enhance and further students' educational and professional objectives.
- *Study Abroad:* The Office of International Programs and Exchanges offers a number of different study abroad options for Austria and Germany. Students can consult their website at www.ipe.washington.edu. The Department of Germanics offers a program in Vienna, Austria. Qualified students are invited to take part in the "Spring in Vienna" program. Every spring quarter the department sends a group of approximately 20 students to Vienna to participate in a program of studies in German language and Austrian culture for which students are able to earn 16 credits. Program costs are commensurate with in-state tuition at the University of Washington. Consult the departmental website for more information.
- *Department Scholarships:* The department's German Express program consists of a series of intensive courses able to take a student from no knowledge of German to fluency in one year. The best five students are awarded stipends of \$1,000 each to be applied toward study during spring quarter at a German university. Additional scholarship opportunities can be found on the departmental website.
- *Student Organizations/Associations:* German Club.

Graduate Program

Graduate Program Coordinator
 333 Denny, Box 353130
 (206) 543-4580
uwgerman@uw.edu

The graduate program offers a background for different professional pursuits: careers as scholars and teachers in literature, cultural studies, the humanities, linguistics, and philology on the university level; the teaching of German language and civilization on the college and secondary school level; and professional writing, editing, and publishing.

The MA and PhD programs concentrate on German literature, civilization, cultural history, and philosophical traditions, with an option to include Germanic linguistics and courses outside the department.

Master of Arts, Literature and Culture

Admission Requirements

Undergraduate major in German, or equivalent. Superior German language skills.

Degree Requirements

40 credits

1. GERMAN 500, GERMAN 518/GERMAN 576, GERMAN 575 (15 credits)
2. GERMAN 590, GERMAN 591, or GERMAN 592 (5 credits)
3. Electives in consultation with the Graduate Program Coordinator (20 credits)

4. One critical MA paper
5. Text analysis in one MA area of expertise (see below)
6. Written comprehensive examination in one MA area

Areas of expertise for the MA are literary history; intellectual history; cultural studies; and linguistics or applied linguistics.

Students demonstrate foundational competency in three of the four areas of expertise. Evaluation is based on three procedures: one comprehensive examination (based on the MA reading list); one text analysis (text selected by the MA committee from the MA reading list); one critical MA paper (based on work in a graduate seminar). Students choose how these three evaluation procedures are distributed across their areas of expertise.

Master of Arts, Pedagogy and Culture

Admission Requirements

Undergraduate major in German, or equivalent. Superior German language skills.

Degree Requirements

60 credits

1. GERMAN 500, GERMAN 518/GERMAN 576, GERMAN 575 (15 credits)
2. GERMAN 580, GERMAN 591, or GERMAN 592 (5 credits)
3. Areas such as second language acquisition and language teaching offered through English, Linguistics, and other language departments (25 credits)
4. Electives in consultation with the Graduate Program Coordinator (15 credits)

Doctor of Philosophy

Admission Requirements

Undergraduate major in German, or equivalent. With approval of department, an appropriate master's degree from an accredited institution may substitute for 30 credits of enrollment. Superior German language skills. Reading knowledge of a second foreign language (in addition to German) required before the student is admitted to the PhD general examination. Languages subject to approval by the department.

Degree Requirements

90 credits, to include:

1. 60 credits at the 500 level or higher (GERMAN 411, GERMAN 451, GERMAN 452, GERMAN 497, GERMAN 498, GERMAN 499 may be counted if not already counted toward the MA)
2. Knowledge of a foreign language other than German
3. One PhD paper and a dissertation prospectus (or three PhD papers)
4. Three written doctoral examinations
5. Oral examination

6. Dissertation

Financial Aid

A limited number of teaching assistantships and fellowships are available. The teaching load consists of a five-hour course on the first- or second-year level. Teaching assistants are supervised by experienced faculty members.

History

Department Overview

315 Smith

History undertakes the study of human affairs in a manner that seeks to understand change and development rather than the state of things at a given moment, taking into account societies in diverse parts of the world from the earliest times for which written records exist to the present.

Undergraduate Program

Adviser

318 Smith, Box 353560

(206) 543-5691

histadv@uw.edu

The Department of History offers the following programs of study:

- The Bachelor of Arts degree with a major in history
- The Bachelor of Arts degree with a major in history, with options in history of empire and colonialism; history of race, gender, and power; history of religion and society; and history of war and society.
- The Bachelor of Arts degree with a major in the history and philosophy of science, offered jointly with the Department of [Philosophy](#)
- Minors in history; history of empire and colonialism; history of race, gender, and power; history of religion and society; history of science; and history of war and society.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that develop writing skills.

Department Admission Requirements

1. Minimum college/university GPA of 2.00
2. Completion of 10 credits of college history with a minimum cumulative GPA of 2.50
3. Completion of 10 credits of composition/writing courses with a minimum 2.0 grade for each course. The requirement may be met by a freshman English composition course or a "W" course.
4. Students may apply to the major at any time in the quarter. Transfer students must be enrolled at the UW before applying.

Major Requirements

60 credits, to include:

1. At least one 5-credit in four of the following six fields: Asia; Europe; Latin America and the Caribbean; Middle East and Africa; United States and Canada; and Comparative and Trans-Regional
2. At least 10 credits in pre-modern history and 10 credits in modern history (as designated by the department)
3. At least 30 upper-division history credits completed in residence at the UW
4. 5 credits of HSTRY 388, to be completed no later than within two quarters of declaring the major
5. 5 credits of undergraduate senior seminar (as designated by the department)
6. Approved electives to reach 60 credits
7. Students wishing to complete thematic options within the major may choose from the following four options. Credit requirements for the options all count toward the 60 total credits for the major. HSTRY 388, HSTRY 494, HSTRY 498 do not count for option requirements. See the Department of History for an approved course list for all four options.
 - a. Empire and Colonialism: 25 credits from approved course list, of which 15 credits must be upper division
 - b. Race, Gender, and Power: 25 credits from approved course list, of which 15 credits must be upper division
 - c. Religion and Society: 25 credits from approved course list, of which 15 credits must be upper division
 - d. War and Society: 25 credits from approved course list, of which 15 credits must be upper division.
8. Minimum 2.25 cumulative GPA in courses applied to the major.

Minor

Minor Requirements

History: 30 credits of history, of which 20 must be upper-division, with a minimum 2.0 grade in each course applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence through the UW.

History of Empire and Colonialism: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. A minimum 15 of the 20 upper-division credits must be completed in residence through the UW. Up to 5 credits may overlap with other minors.

History of Race, Gender, and Power: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence through the UW. Up to 5 credits may overlap with other minors.

History of Religion and Society: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence through the UW. Up to 5 credits may overlap with other minors.

History of Science: 25 credits, including HSTCMP 311, HSTCMP 312, HSTRY 390, and HSTRY 493; plus one course from an approved list of elective courses. A minimum 2.0 grade is required in each course.

History of War and Society: 30 credits from approved course list, of which 20 credits must be upper division, with a minimum 2.00 cumulative GPA in courses applied toward the minor. Minimum 15 of the 20 upper-division credits must be completed in residence through the UW. Up to 5 credits may overlap with other minors.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of history enhances critical thinking and writing skills. It is a creative process in which students learn to use arguments and evidence to communicate a sound historical thesis. It is a liberal arts degree that encourages students to become well rounded, educated people. Graduates are prepared for a variety of careers in many professions and businesses. In addition to teaching, research, and museum and archives work, recent graduates have pursued careers as political lobbyists, journalists, and law enforcement officers. Many history majors pursue, and are well prepared for, further education and professional programs such as medicine, law, library science, and museum curatorship.
- *Instructional and Research Facilities:* The department funds a writing center for students enrolled in history courses. The department also has a small computer laboratory available for history majors.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Distinction (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The department encourages students to participate in internships that include historical elements. Students work with a sponsoring organization and a history faculty member. See adviser for details.
- *Department Scholarships:*
 - *The Faye Wilson Scholarship* is awarded to students emphasizing U.S. history and *the Schwartz Fellowship* to students pursuing historical study of a non-western civilization. The *Freedman Remak Scholarship* is awarded to non-resident history majors based on academic merit.

- History majors may compete for two paper prizes: *the Thomas Power Prize* for papers written in a history course during the last year, and the *York/Mason Award* for history papers written on African Americans in the West.
 - The *Millican Fund* and the *Willstadter Snow-Smith Award* provide funding for travel in the course of historical research.
 - In addition, the department allows students to nominate their high school history teacher for the *Pressly Prize*, which honors excellence in education.
 - Scholarship and prize competitions run in February and March of each year. See adviser for details.
- *Student Organizations/Associations*: Phi Alpha Theta, a history honors society. See adviser for details.

Graduate Program

Graduate Program Coordinator
206C Smith, Box 353560
(206) 543-8291
histgrad@uw.edu

The department offers graduate training leading to the master of arts and doctor of philosophy degrees in a large number of fields within the discipline. Students in the programs prepare for careers as college teachers who combine teaching with scholarship and professional writing. A few graduates enter government service, college administration, or publishing. The MA program is normally completed in five or six full-time academic quarters or their equivalent.

Master of Arts

Admission Requirements

1. Strong undergraduate program in history, ordinarily as a history major
2. Usually a minimum 3.50 (A-) GPA, particularly in history and related subjects, and especially in the final two years of work, and in any graduate work completed prior to application
3. Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the GRE
4. Evidence of intellectual ability and interest beyond the routine performance of academic tasks
5. Reading knowledge of at least one language in addition to English is not required for admission, but qualified applicants with knowledge of at least one foreign language may be favored. Also, an applicant who proposes to work for a degree in Greek, Roman, European, Russian, Medieval, Modern European, Latin American, Middle Eastern, or Asian history should have begun study in foreign languages essential to research in the field.

Degree Requirements

36 credits minimum

1. Submission of a two-field MA form or proposed course of study no later than end of the second quarter
2. Establishment of an MA committee and submission of a request for establishing a master's Supervisory Committee form, no later than the end of the third quarter of study.
3. Language requirements satisfied no later than the quarter immediately preceding completion of the master's degree.
4. Written examination mastery of a substantial body of historical knowledge. Students construct their fields of study in consultation with their supervising faculty.
5. Completion of a graduate seminar which includes preparation of a research paper; or completion of an MA thesis. Most seminars are two- or three-quarter classes.
6. Submission of a degree application
7. All Graduate School requirements

Doctor of Philosophy***Admission Requirements***

1. Strong master's program in history, or closely related field
2. Usually a minimum 3.50 (A-) GPA, particularly in history and related subjects
3. Ordinarily a score in the 80th percentile or higher on the verbal portion of the General Aptitude Test of the GRE
4. Evidence of intellectual ability and interest beyond the routine performance of academic tasks
5. Reading knowledge of at least one language in addition to English is not required for admission, but qualified applicants with knowledge of at least one foreign language may be favored. Also, an applicant who proposes to work for a degree in Greek, Roman, European, Russian, Medieval, Modern European, Latin American, Middle Eastern, or Asian history should have begun study in the foreign languages essential to research in the field.

Degree Requirements

Minimum 90 credits

1. Submission of proposed course of study form no later than the end of the second quarter after entrance to the PhD program. Students continuing from the MA program complete this form by the end of the first quarter of doctoral study.
2. Establishment of the doctoral Supervisory Committee and submission of the request for establishing a doctoral Supervisory Committee no later than the end of the third quarter

after entrance to the program. Students continuing from the MA program complete this requirement by the end of the first quarter of doctoral study.

3. Language requirements completed no later than the quarter immediately preceding the PhD general examination.
4. PhD general examination, consisting of written examinations in four fields and an oral examination. Fields must be distributed among at least two divisions, such that at least one lies clearly outside the student's primary division of concentration. Students construct fields of study in consultation with supervising faculty. PhD students concentrating in U.S. history offer at least one of the following three chronological fields: Early America, Nineteenth Century, Twentieth Century. • "Honors" or "high pass" in a departmental field examination for the MA degree may exempt the student from the PhD examination in that field.
5. Completion of a seminar paper, while enrolled as a PhD student, before taking the PhD general examination. Students who did not complete a graduate seminar in this department for their MA ordinarily enroll in such a seminar as part of their coursework for the PhD, and write their research paper in the context of this seminar.
6. Establishment of the doctoral reading committee
7. Preparation of an acceptable doctoral dissertation
8. Final oral examination in defense of the dissertation

Financial Aid

Entering graduate students are considered for any departmental fellowships and other funding for which they are eligible. Students with, or who expect to receive, the MA degree by the time they begin their studies may apply for teaching assistantships and may, with continued satisfactory scholarly progress, hold a TA appointment for a total of nine quarters, provided adequate funds are available.

Human Rights

Program Overview

The issue of human rights has attracted increased attention around the world. The tri-campus Human Rights minor at the University of Washington provides students the opportunity to learn about the political, philosophical, economic, cultural, and legal aspects of this complex subject.

Undergraduate Program

Adviser

215 Smith, Box 353530

(206) 543-1824

polsadv@uw.edu

111 Thomson, Box 353650

(206) 543-6001

jsisadv@uw.edu

The human rights minor is offered at all three University campuses, allowing students to take advantage of the expertise available on the campuses where they are not regularly in residence, although the minor can be completed on any one campus.

Minor

Minor Requirements: 25 credits, to include the following:

1. 10 credits from an approved list of courses* concerned with human rights as a core concept
2. 5 credits from an approved list of courses* concerned with human rights in a broad context
3. 10 additional credits drawn from the above approved lists of courses* concerned with human rights
4. At least 3 credits of the required 25 credits must be in a human-rights-related internship, practicum, international study abroad, or demonstrated equivalent. Courses that satisfy this requirement include BIS 403, BIS 480; LSJ 310, LSJ 499, POL S 496, JSIS 387, and similar practicum and study-abroad courses in other programs (on the Seattle campus); and TIAS 496. See adviser for faculty-approved alternatives. Courses used to satisfy this requirement must be approved/supervised by the faculty offering courses appropriate to the minor. Credits for the minor may be completed across the three UW campuses, or on any single campus. If the minor is completed by a Seattle-major student, no more than 10 credits applied to the minor may be in the student's major department.

* The list of core courses and context courses is maintained by the Human Rights Advisory Committee. For the current list of such courses, see depts.washington.edu/hrights/hrminor.html. Note: From time to time, the advisory committee adds, subtracts, or reclassifies courses on the approved list. Students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified in that earlier list.

Humanities (Evening Degree)

Program Overview

103 Lewis Hall

This multidisciplinary major includes upper-division humanities courses selected by faculty of the College of Arts and Sciences. Students explore diverse perspectives in thematically related courses from classics, literature, intellectual history, comparative religion, communications, and art history. Focus is on the ways human beings from different cultures understand their world through communication, literature, and the arts. Students discuss literary and artistic works from a variety of perspectives and approaches, as well as theories of interpretation and practical communication. Analytical, research, and communication skills which can enhance a person's career opportunities are emphasized. Coursework encourages greater understanding of issues, ideas, and themes in history and the contemporary world.

Undergraduate Program

Adviser

103 Lewis Hall, Box 353921

(206) 543-6160

advisers@pce.uw.edu

Humanities offers the following program of study:

- The Bachelor of Arts degree with a major in humanities

Bachelor of Arts

Suggested First- and Second- Year College Courses: English composition and additional writing. Introductory courses in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S). First-year foreign language study.

Program Admission Requirements

Students are not being admitted to this program for the 2014-2015 academic year.

1. [Admission](#) to the Evening Degree program (separate from admission to the UW day program)
2. Minimum 75 college quarter credits completed. Most students admitted have completed two years of lower-division college work.
3. See adviser for evaluation of applicable courses and credits.

Major Requirements

60 credits from the approved list of humanities courses, as follows:

1. Not more than 15 credits in 200-level courses (some or all of which may have been completed prior to admission to the major)
2. At least 45 credits of 300- and 400-level courses, of which a minimum 15 credits must be at the 400 level

3. Minimum 15 credits of 300- and 400-level humanities courses that do not overlap with second-major requirements when double majoring in communication, English, and social sciences
4. Minimum 2.25 GPA for all courses counted toward the major
5. Minimum 25 credits completed in residence through the UW
6. For list of applicable courses, consult the adviser or go to www.evedegree.washington.edu/edp/majors/humanities_courses.asp.

Additional Degree Requirements

1. English composition and additional writing (15 credits)
2. Quantitative and Symbolic Reasoning (QSR) (4-5 credits)
3. Foreign language - through the third quarter of a single foreign language (0 to 15 credits, depending on placement)
4. Areas of Knowledge
 - a. Visual, Literary, & Performing Arts (VLPA) (20 credits)
 - b. Individuals & Societies (I&S) (20 credits)
 - c. Natural World (NW) (20 credits)
 - d. Some credits in VLPA and/or I&S may count also toward the major
5. Additional work to complete a minimum 180 credits overall

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students investigate the social, historical, ethical, and aesthetic meanings attached to and manifested in cultural texts and artifacts. These include visual, literary, performance, and philosophical works in different forms and genres, and in different historical periods and cultural contexts. Students gain a critical understanding of developments in and approaches to the study of literary and cultural forms, as well as the processes by which they are produced, received, and used. They develop an appreciation for the complexities and nuances of language, literature, and cultural expression and communication. In learning to interpret and contextualize texts, to pose questions, to construct arguments, and to conduct effective research, students become better critical thinkers, speakers, and writers, capable of engaging cultural debates and producing new cultural knowledge.

Specific skills developed include writing in various genres; critical, analytic, and integrative thinking; textual and archival research in different media; argumentation; and effective public speaking.

Humanities majors pursue widely varied careers, including education, editing, private enterprise, public administration, creative writing, management, arts administration, museology, development, and events planning.

- *Instructional and Research Facilities:* Students use all university library resources and facilities corresponding with their individual research needs. In addition, each of the contributing

humanities academic departments offers individual resources to majors. Check with advisers for options.

- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:* The program works collaboratively with students interested in pursuing independent study and research opportunities through academic departments that contribute to the major. Opportunities for work with the Carlson Center, Office of International Programs and Exchanges, and service learning are possible for all students.
- *Department Scholarships:* The Evening Degree program awards need-based financial aid assistance each year to students from a general fund. Two additional scholarship resources are the Rodney I. Straub Endowed Scholarship and the Nicole Snyder Dettmar Endowed Scholarship.
- *Student Organizations/Associations:* None at present.

Individualized Studies

Program Overview

171 Mary Gates Hall

Individualized Studies is an interdisciplinary major option for students who wish to create a program of study by combining selected courses from two or more departments. Students are required to identify a central organizing theme for their major and design it under the guidance and supervision of at least two faculty members and an Individualized Studies adviser.

Undergraduate Program

Adviser

171 Mary Gates Hall, Box 352805

(206) 543-2550

istudy@uw.edu

The Individualized Studies program offers the following programs of study:

- Bachelor of Arts with a major in Individualized Studies
- Bachelor of Science with a major in Individualized Studies
- Degree depends on the theme and curriculum of the approved major.

Bachelor of Arts, Bachelor of Science

Suggested First- and Second-Year College Courses: Varies, depending on student's area of concentration.

Program Admission Requirements

Before developing an Individualized Studies major, students should read "[Designing an Individualized Studies Major](#)," or obtain a copy from the UAA Advising, 141 Mary Gates Hall. Particular attention should be paid to the sections defining restrictions on themes and restricted access to courses. Individualized Studies majors are not possible in a number of subjects because the UW does not offer sufficient coursework. Upper-division courses in departments with competitive admission are generally not available to students not in that major and ordinarily cannot be included in Individualized Studies proposals.

After reading the guidelines, the student must go through the following steps to design a major:

1. Identify the unifying interdisciplinary theme of the program.
2. Make a list of courses taken or planned to be taken toward this goal. This list should comprise between 50 and 70 quarter credits, all of which are related to the area of concentration. These courses must come from at least two departments, but may come from any number of areas, so long as interrelationships are discernible. Most courses must be at the 300- or 400-level. At least half the 50-70 credits selected for the major must come from courses taught within the College of Arts and Sciences.

3. Draft a statement that describes the proposed major and discusses the interrelationships among the courses chosen. Propose a brief, descriptive title for the major.
4. Submit the proposal to the Individualized Studies Committee for initial approval. Prospective majors should submit proposals to the Individualized Studies Committee for review at least three quarters prior to graduation.
5. Identify at least two faculty sponsors for the major. The faculty sponsors attest to the intellectual soundness of the proposal and agree to provide whatever guidance is jointly decided upon. They may also suggest changes in the previously approved written proposal or list of courses.
6. Obtain final approval from an Individualized Studies adviser.
7. Transfer students must be enrolled at the UW before applying to the major.
8. For admission requirements for the technical writing option, see an adviser.

Major Requirements

55 to 70 credits, including completion of the approved curriculum and a 5-credit required senior study (minimum grade of 2.7 required for senior study). Awarding of the Bachelor of Arts or Bachelor of Science degree depends on the content of each student's program.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Varies, depending on student's area of concentration.
- *Instructional and Research Facilities:* None
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* None
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* None

Integrated Social Sciences

Program Overview

The Integrated Social Sciences program provides a broad interdisciplinary education in the social sciences for undergraduates. It emphasizes development of critical and integrative thinking for students interested in human society and social problems. ISS is an online degree-completion program aimed at students who have already completed a substantial amount of college coursework.

Undergraduate Program

Adviser

206 Cunningham Hall, Box 353070

(206) 685-9415

issadv@uw.edu

Integrated Social Sciences offers the following program of study:

- Bachelor of Arts degree with a major in integrated social sciences

Bachelor of Arts

Suggested First- and Second-Year College Courses: General coursework developing critical thinking, analytical, and writing skills. Coursework which satisfies general education requirements for the College of Arts and Sciences, including courses in English composition, foreign language, and quantitative and symbolic reasoning.

Department Admission Requirements

1. Minimum 75 transferable quarter credits
2. Minimum 2.00 GPA in all transferable college coursework
3. Minimum 2.50 GPA in all courses applied to ISS major requirements
4. Completion in high school or community college of College Academic Distribution Requirement (CADR).
5. Demonstrated progress toward University and College of Arts and Sciences general education requirements

ISS accepts only program-specific students. Admission is competitive. Completion of minimum admission requirements does not guarantee admission to the University. In addition, applicants are evaluated on the following criteria: (1) overall academic record; (2) a personal statement; (3) likelihood of success in an online-format program, based on a separate application question.

Major Requirements

60 credits as follows:

1. *ISS Core (20 credits):* ISS 301; ISS 302; ISS 350; ISS 355; ISS 401

2. Thematic areas courses (40 credits), to include at least one 5-credit course from each of five of the following seven areas of inquiry: (1) information and technology; (2) population movement; (3) conflict and cooperation; (4) diversity and global justice; (5) inequalities and power; (6) health and risk; (7) societies and environments. Three or more disciplinary prefixes must be included. The list of approved courses is available from the ISS advising office or the program website.
3. 30 of the 40 thematic areas course credits must be upper division.
4. Minimum 45 credits applied to major requirements must be taken through the UW ISS program.
5. Minimum 2.00 cumulative GPA in courses applied to major requirements
6. Completion of all Arts and Sciences general education requirements

International Studies

School Overview

401 Thomson

The Henry M. Jackson School of International Studies organizes and supports interdisciplinary teaching and research in international affairs. The school consists of a group of interdisciplinary area-studies programs on major world regions, as well as topical and comparative programs of study that transcend national and regional boundaries.

Undergraduate Program

Adviser

111 Thomson, Box 353650

(206) 543-6001

jsisadv@uw.edu

The School of International Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Asian studies; Canadian studies; comparative religion; European studies; international studies; Jewish studies; or Latin American and Caribbean studies
- Minors in Africa and the African diaspora; Canadian studies; China studies; comparative Islamic studies; comparative religion; European studies; Hellenic studies; international studies; Japan studies; Jewish studies; Korea studies; Latin America and Caribbean studies; Middle East studies; Portuguese Language and Luso-Brazilian Studies; Russian, Eastern European, and Central Asian studies; South Asian studies, and Southeast Asian studies.
- A minor in arctic studies (offered jointly between the [Jackson School of International Studies](#) and the [School of Oceanography](#))

African Studies

Daniel J. Hoffman, Chair

Adviser

326 Thomson, Box 353650

(206) 616-0998

africa1@uw.edu

African studies involves a multi-campus interdisciplinary group of faculty, staff, and students who share an interest in interdisciplinary questions relating to Africa and the African diaspora. Africa-focused courses are taught in a variety of scholarly disciplines and programs, including art, music, anthropology, forestry and fisheries, geography, history, international health, American ethnic studies, and the interdisciplinary arts and sciences programs at UW Bothell and UW Tacoma. The African studies program coordinates and disseminates information on Africa-related activities; facilitates research, internships, and study abroad opportunities; and administers the Africa and African diaspora minor.

Minor

Minor Requirements 30 credits from at least three departments whose approved courses are shown on the African studies website, jsis.washington.edu/africa/, including:

1. Minimum 15 credits at the 300 level or above
2. Minimum 5 credits from the approved list of courses on the African diaspora
3. Minimum 10 credits from the approved list of courses on Africa
4. Maximum 10 credits of language courses, which may include 5 credits at the third-year level or above from the Africa-relevant languages of Arabic, French, or Portuguese and 10 credits of Swahili at the second-year level or above
5. Other courses not on the website may be approved by the program office.
6. Minimum 15 credits completed through the UW
7. Minimum 2.0 grade in each course applied toward the minor

Asian Studies

The undergraduate program in Asian studies is directed by a committee consisting of the chairs of China studies, Korea studies, Japan studies, South Asian studies, and Southeast Asian studies (see below under Minors), and a designated faculty coordinator.

The Asian studies major combines language training with interdisciplinary study of an Asian region or single country. The program emphasizes social science approaches to the study of history, culture, and society, with provision for study of literature and the arts as well. Students may focus on China, Japan, Korea, South Asia (Bangladesh, India, Nepal, Pakistan, Sri Lanka, Tibet), Southeast Asia (Brunei, Burma [Myanmar], Cambodia, East Timor, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Vietnam), or Asia as a whole. Five interdisciplinary minors on individual countries or regions also are offered.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Either JSIS 203 or JSIS A 207, and two introductory Asian civilization courses (see major requirements, below). Progress toward two years of a relevant Asian language. Courses that develop writing skills, especially in the social sciences.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

80 credits as follows:

1. 30 credits or second-year equivalent language training in a language appropriate to student's concentration, plus 50 credits as follows:
2. Either JSIS 203 or JSIS A 207 (5 credits)
3. JSIS 201 (5 credits)

4. An Asian civilization course in student's concentration chosen from JSIS A 212/HSTAS 212, JSIS A 241/HSTAS 241, JSIS A 242, HSTAS 201, HSTAS 202, HSTAS 211, JSIS A 206, JSIS A 221/HSTAS 221 (5 credits)
5. 35 credits of approved coursework from one regional or country concentration, or from the general Asia concentration
6. Approved research paper required in one of the upper-division concentration courses
7. Minimum grade of 2.0 in all courses counted toward the major (except first- and second-year language courses, where grades must average 2.00)
8. 30 of the 35 credits required for the concentration requirement must be taken in residence through the UW.

Minor

China Studies

Madeleine Yue Dong, Chair

Minor Requirements: 30 credits, to include the following:

1. HSTAS 211 and either JSIS C 202 or one additional introductory Asian civilization course (10 credits)*
2. 10 credits of electives taken through the UW, chosen from the China history/social science electives list*
3. 5 credits of electives taken through the UW, chosen from the China history/social science list or the China arts/literature electives list*
4. 5 additional credits chosen from: the China history/social science electives list*, or upper-division transfer courses on China, or Chinese language beyond second-year level.
5. Minimum grade of 2.0 required in each course applied toward the minor

*The list of Asian civilization courses and China electives is maintained by the China studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Japan Studies

Minor Requirements: 30 credits, to include the following:

1. JSIS A 241/HSTAS 241 or JSIS A 242 and one course on a different Asian civilization (10 credits)*
2. 10 credits of electives taken through the UW, chosen from the Japan history/social science electives list*
3. 5 credits of electives taken through the UW, chosen from either the Japan history/social science list or from the Japan arts/literature elective list*
4. 5 additional credits chosen from: the Japan history/social science electives list*, or upper-division transfer courses on Japan, or Japanese language beyond second-year level.
5. Minimum grade of 2.0 required in each course applied toward the minor.

*The list of Asian civilization courses and Japan electives is maintained by the Japan studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Korea Studies

Clark W. Sorensen, Chair

Minor Requirements: 30 credits, to include the following:

1. JSIS A 212/HSTAS 212 and one additional introductory Asian civilization course (10 credits)*
2. 20 credits of electives, 15 of which must be taken through the UW, to include: (a) 10 credits chosen from the list of core courses*; (b) 5 credits chosen from the list of core courses or the list of electives*; (c) 5 additional credits chosen from: the Korea history/social science electives list*, or upper-division transfer courses on Korea, or Korean language beyond second-year level.
3. Minimum grade of 2.0 required in each course applied toward the minor.

*The lists of Asian civilization core and elective classes are maintained by the Korea studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

South Asian Studies

Priti Ramamurthy, Chair

Minor Requirements: 30 credits, to include the following:

1. HSTAS 202 or JSIS A 200 (5 credits)
2. One additional introductory Asian civilization course (5 credits)*
3. 15 credits of electives taken through the UW, chosen from the approved list*
4. 5 additional credits chosen from: the South Asia history/social science electives list*, or upper-division transfer courses on South Asia, or a South Asian language beyond second-year level
5. Minimum grade of 2.0 required in each course applied toward the minor.

*The list of Asian civilization courses and South Asia electives is maintained by the South Asian studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Southeast Asian Studies

Laurie J. Sears, Chair

Minor Requirements: 30 credits, to include the following:

1. JSIS A 221/HSTAS 221 (5 credits)
2. One introductory Asian civilization course (5 credits)*
3. 15 credits of electives taken through the UW, chosen from the approved list*
4. 5 additional credits chosen from: the Southeast Asia history/social science electives list*, or upper-division transfer courses on South Asia, or a Southeast Asian language beyond second-year level.

5. Minimum grade of 2.0 required in each course applied toward the minor.

*The list of Asian civilization courses and Southeast Asia electives is maintained by the Southeast Asia program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Canadian Studies

Daniel Hart, Chair

Canadian studies provides a broad understanding of Canadian society, culture and communications, historical development, and contemporary problems.

Bachelor of Arts

Suggested First- and Second-Year College Courses: ECON 200, ECON 201. Progress toward two years of French language. Canadian history courses. Courses that develop writing skills.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

30 credits or second-year-equivalent French language training, plus 53 credits as follows:

1. JSIS 200, JSIS 201, JSIS 202; ECON 200, ECON 201; JSIS A 356, JSIS A 498
2. Minimum 18 credits from approved Canadian Studies elective course list

Minors

Canadian Studies Minor Requirements: 25 credits as follows:

1. JSIS A 356 and JSIS A 498 (10 credits)
2. 15 credits of electives chosen from an approved list*
3. Minimum grade of 2.0 in each course applied to the minor
4. Minimum 15 credits toward the minor completed through the UW

*The list of Canada electives is maintained by the Canadian studies program. For the current list, see jsis.washington.edu/advise/undergraduate/minors.shtml. Since the program from time to time adds, subtracts, or reclassifies approved courses, students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified on that list.

Minor in Arctic Studies: See entry for [Arctic Studies](#) in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Comparative Islamic Studies

Comparative Islamic studies provides a broad understanding of Islamic society, culture and communications, historical development, and contemporary problems.

Minor

Minor Requirements: 30 credits as follows:

1. NEAR E 210/JSIS A 210 (5)
2. NEAR E 211/JSIS C 211 or NEAR E 212/JSIS C 212 (5)
3. 10 credits in Islamic religious traditions and texts, chosen from an approved list*
4. 10 credits in history, society, and culture of Islam, chosen from an approved list*
5. Minimum grade of 2.0 in each course counted toward the minor

*The approved list of Comparative Islamic studies electives is maintained by the School of International Studies. For the current list, see jsis.washington.edu/advise/undergraduate/minors.shtml. Since the school from time to time adds, subtracts, or reclassifies courses on the approved list, students who have planned their studies on the basis of an earlier list may fulfill the requirements as specified on that list.

Comparative Religion

James K. Wellman, Chair

The comparative religion major introduces students to broad theoretical issues in the academic study of religion, and encourages them to explore these issues through mastering details of the textual canons, historical traditions, social contexts, and cultural forms of religion.

Bachelor of Arts

Suggested First- and Second-Year College Courses: JSIS C 201, JSIS C 202. Courses that develop writing proficiency. Courses in particular religious traditions such as Christianity, Judaism, Islam, Hinduism, and Buddhism. Courses in the history of civilizations such as Chinese, South Asian, and Western.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

55 credits as follows:

1. JSIS C 201, JSIS C 202; JSIS B 380/CHID 380; JSIS 201
2. 35 additional credits in comparative religion courses, of which at least 15 must be at the 300 level or above, selected from the three rubrics of textual canons, historical traditions, and social contexts and cultural forms. The distribution must include at least 5 credits and no more than 20 credits in any particular rubric.

Minor

Minor Requirements: 30 credits as follows:

1. JSIS C 201, JSIS C 202
2. 15 additional credits in comparative religion courses or joint-listed equivalents
3. 5 additional credits chosen from comparative religion courses or from an approved list of electives*

*The list of approved comparative religion courses is maintained by the Comparative Religion program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

European Studies

Christine Ingebritsen, Chair

The curriculum in European studies prepares students to pursue careers requiring an understanding of all the forces, both material and cultural, contemporary and historical, that are shaping Europe today (North, South, East, and West), taking into account transitions involved in the post-Soviet era and the movement toward greater political, economic, and cultural integration among the various nations involved. Students also may concentrate, within the major, on Hellenic studies, European Union studies, or Russian, East European, and Central Asian studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Progress toward two years of a modern European language. A survey course on modern Europe.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

60 credits as follows:

1. 10 credits of a modern European language at the third-year level or beyond
2. 20 credits of core courses, including JSIS 201, JSIS A 301, JSIS A 302, and an approved survey course on modern Europe
3. One quarter (10 credits minimum, at least 9-10 weeks) of study in Europe
4. 15 credits from approved list of electives, including at least one course designated as a pre-modern elective and one course designated as a global elective.
5. Either JSIS A 494, Senior Seminar or JSIS A 495, Senior Thesis. The senior-thesis option (JSIS A 495) constitutes the major's research-intensive track. Criteria and admission procedures are described at jsis.washington.edu/advise/catalog/eur_ba.shtml.
6. See adviser for specific course options.

Minors

Minor in European Studies

Minor Requirements: 25 credits

1. JSIS A 301 (5 credits)
2. JSIS 201 (5 credits)
3. European Studies elective courses (15 credits from approved list)
4. Language proficiency through first-year (from approved list)
5. Minimum 15 credits at the 300-400 level

Minor in Russian, Eastern European, and Central Asian Studies

Minor Requirements: 30 credits from courses in at least three disciplines

1. JSIS A 301 (5 credits)
2. An approved modern REECAS survey course chosen from the approved list* (5 credits)
3. 20 credits of electives at the 300 level or above, chosen from the approved list*
4. Study of a regional language is encouraged, but not required. Maximum 10 credits of BCS, Czech, Estonian, Kazakh, Latvian, Lithuanian, Polish, Russian, Uighur, or Uzbek language beyond the first-year level may be applied toward the 30-credit total.
5. Minimum 15 credits completed in residence through the UW
6. Minimum 2.00 cumulative GPA in courses applied to the minor
7. Minimum 18 credits outside student's major
8. Participation in service learning and Study Abroad programs in completing minor requirements is encouraged.

*For list of approved REECAS courses, see: [REECAS Minor Approved Electives](#). Since the program from time to time adds, subtracts, or reclassifies approved courses, students who plan their studies on the basis of an earlier list may fulfill requirements as specified on that list.

Minor in Hellenic Studies

Minor Requirements: 25 credits

1. Minimum 5 credits from history and 10 credits from contemporary Greece (see department website for list of approved courses) (15 credits)
2. Electives (see department website for list of approved courses) (10 credits)
3. Minimum 15 credits at the 300-400 level

International Studies

Sara R. Curran, Chair

The general program in international studies gives students a comprehensive and interdisciplinary perspective on world problems and an ability to analyze the subtle interactions of politics, economics, and culture within the global system.

Bachelor of Arts

Suggested First- and Second-Year College Courses: 30 credits of a single foreign language. ECON 200, and either ECON 201 or JSIS 123/GEOG 123

Department Admission Requirements

1. Admission is competitive, based on overall GPA, grades in the social sciences, a written statement of goals, language background, and any international experience. Before applying, students must complete ECON 200, ECON 201, or JSIS 123/GEOG 123 *and* either JSIS 200 or JSIS 201. Grades in these courses are given special consideration.
2. Application deadline is the third Friday of autumn, winter, and spring quarter; students are notified by the sixth Friday of the quarter in which they apply. Transfer students must be enrolled through the UW before applying to the major.

Major Requirements

Foreign-language competency through the second-year college level, plus 70 credits as follows:

1. ECON 200 and either ECON 201 or JSIS 123/GEOG 123; JSIS 200, JSIS 201, JSIS 202, JSIS B 330, JSIS 495, JSIS 498
2. Three or four upper-division courses in an approved option
3. Three upper-division interdisciplinary courses in international studies from an approved core list
4. A research paper of approximately 25 pages to be completed in one of the courses in the student's approved option or in one of the approved interdisciplinary courses
5. Majors are required to maintain a GPA of at least 2.50, both overall and in the program, and to earn a minimum 2.0 grade in all required Jackson School prefix courses.

Minor

Minor Requirements 30 credits as follows:

1. 10 credits chosen from JSIS 200, JSIS 201, JSIS 202
2. 15 credits in JSIS B-prefix courses, including at least 10 credits at the 300 or 400 level (courses with other JSIS prefixes are not eligible, but JSIS 478 may be counted).
3. 5 additional credits chosen from courses in any of these prefixes: JSIS A, JSIS B, JSIS C, JSIS D
4. Minimum 2.0 grade required in each course applied toward the minor.

Jewish Studies

Noam Pianko, Chair

Jewish studies offers students from varied backgrounds and disciplines a comprehensive and interdisciplinary perspective on the study of Jews and Judaism. Students explore the geographic, temporal, philosophical, and cultural diversity of the Jewish experience and gain critical skills that complement and can be applied to myriad future aspirations.

Bachelor of Arts

Suggested First- and Second-Year College Courses: JSIS C 145; JSIS C 250/HSTCMP 250; JSIS C 201; JSIS 200, JSIS 201, or JSIS 202. Courses that develop critical analysis skills and writing proficiency. Courses in modern or biblical Hebrew.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

50 credits as follows:

1. Either proficiency in one Jewish language, completion of two years (or equivalent) in one Jewish language, or completion of one year each (or equivalent) in two different Jewish languages. See adviser for approved Jewish languages. Students who wish to satisfy language requirements by demonstrating sufficient knowledge may take a proficiency examination. See department adviser for information.
2. Introductory Courses (15 credits): JSIS C 145; JSIS C 250/HSTCMP 250; one of JSIS 200, JSIS 201, or JSIS 202
3. Minimum 35 credits of electives from an approved list. May include up to 10 credits from the second year of Jewish language courses. See adviser for approved list.
4. Minimum 25 credits at the 300-400 level
5. Maximum 15 credits from an approved UW Study Abroad program (exclusive of language)
6. Minimum 2.00 cumulative GPA for courses applied to the major

The list of Jewish studies courses is maintained by the Jewish studies program on the Jackson School website. For the current list of approved courses, see jsis.washington.edu/advise/catalog/jewish_b.shtml

Minor

Minor Requirements 30 credits as follows:

1. JSIS C 145; JSIS C 250/HSTCMP 250 (10 credits)
2. 20 credits of Jewish studies courses from an approved electives list. See adviser or jsis.washington.edu/advise/undergraduate/minors.shtml for approved list. May include up to 5 credits of Jewish language courses.

3. Minimum 15 credits at the 300-400 level
4. Minimum 15 credits taken in residence through the UW
5. Minimum 2.00 cumulative GPA for courses applied to the minor

*The list of Jewish studies electives is maintained by the Jewish studies program. For the current list of such courses, see jsis.washington.edu/advise/undergraduate/minors.shtml.

Latin American and Caribbean Studies

Jose Antonio Lucero, Chair

The Latin American and Caribbean studies major combines language study with work in history, the humanities, and the social sciences. It provides a comprehensive, interdisciplinary understanding of this major world region, emphasizing themes such as economic development, popular movements, cultural analysis, and hemispheric relations. At the same time, it gives students the option to develop their own particular disciplinary and thematic interests.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Substantial progress toward completing the language requirement described below. Courses in any of the following disciplines that deal with Latin America and the Caribbean: history, literature, economics, geography, sociology, political science.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

52 credits plus language training, as follows:

1. Training in two foreign languages of Latin America and the Caribbean, to include the sixth quarter (or equivalent) of one language chosen from Spanish, Portuguese, or French, and the third quarter (or equivalent) of a second of these languages
2. JSIS 201
3. Latin American History (10 credits): Courses to be selected from an approved list.*
4. Contemporary Latin America (15 credits): Courses drawn from a range of disciplines including anthropology, comparative literature, geography, international studies, and Spanish. See program website for a complete list of courses.
5. Electives (15 credits): Courses on Latin America, the Caribbean, and international studies selected from an approved list*
6. Interdisciplinary Seminar: JSIS A 486, JSIS A 492, or another course chosen from an approved list of research seminars
7. JSIS 493: Senior paper or project

*Lists of Latin American and Caribbean studies courses are maintained by the Latin American and Caribbean studies program as part of its website. For the current list of such courses, see jsis.washington.edu/advise/catalog/latam_ba.shtml.

Minor

Minor Requirements 30 credits as follows, plus foreign language:

1. One year of Spanish or Portuguese, or equivalent proficiency
2. At least 5 credits in history chosen from an approved list*
3. At least 15 credits chosen from an approved list of courses on contemporary Latin America*
4. At least 10 additional credits chosen from the history or contemporary Latin America lists, or from an approved list of electives*
5. At least 20 of the 30 credits must be completed through the UW (UW foreign study programs included).
6. Minimum 2.0 grade required in each course applied toward the minor.

*The list of Latin American and Caribbean studies courses is maintained by the Latin American and Caribbean studies program. For the current list, see <http://jsis.washington.edu/advise/undergraduate/minors.shtml>. Since the program from time to time adds, subtracts, or reclassifies approved courses, students who have planned their studies on the basis of an earlier list may fulfill the requirements of the minor as specified on that list.

Middle East Studies

Arzoo Osanloo, Chair

The undergraduate curriculum in Middle East studies provides a grounding in the modern Middle East and a view of how this region fits into the world community politically, historically, and economically. To achieve this understanding, students take courses in the social sciences and the humanities, and are strongly encouraged to study a Middle Eastern language.

Minor

Minor Requirements 28-30 credits as follows:

1. Two courses chosen from JSIS A 210/NEAR E 210, JSIS A 215/NEAR E 213, ANTH 318, HIST 161, or HIST 163
2. 20 credits of electives chosen from the approved list.*
3. Study of a Middle East language is encouraged, but not required. A maximum 5 credits in Arabic, modern Hebrew, Persian, or Turkish language beyond the first-year level may be applied toward the 20 credits of approved electives. No credits from any first-year language course may be counted.
4. No more than 12 credits counted in the minor may also be counted toward requirements of a major.
5. Minimum 15 credits of 300-/400-level courses
6. Minimum 15 credits completed in residence through the UW
7. Minimum 2.00 cumulative GPA in courses applied to the minor.

*The list of Middle East electives is maintained by the Middle East studies program. For the current list of such courses, see <http://jsis.washington.edu/advise/undergraduate/minors.shtml>.

Portuguese Language and Luso-Brazilian Studies

Minor

Minor Requirements: 25 credits

1. PORT 202, PORT 203, PORT 301 (PORT 299 may substitute for PORT 202 or PORT 203) (15 credits)
2. Two courses from the following: JSIS A 243, JSIS A 410, JSIS A 365/PORT 365, PORT 366, JSIS B 436/POL S 436, HSTLAC 482, JSIS A 355/SOC 355 (5 credits may be cross-listed with the student's major or from another minor/certificate) (10 credits)
3. Minimum 15 credits at the 300-400 level
4. Minimum 20 credits taken at the UW

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The majors offered in the School of International Studies emphasize development of critical thinking and provide a challenging framework for research and writing. Graduates attain competency in foreign language and an understanding of the political, economic, and cultural underpinnings of the global system and specific world regions. This background lays a foundation for advanced study in professional and academic disciplines, and for careers in the evolving global community. Graduates work in a wide range of jobs, depending on their interests and skills, including: Foreign Service officers, international trade specialists, political analysts, human rights associates, research assistants, social studies and language teachers, international student advisers, foreign study coordinators, program officers/managers for international non-profits and NGOs, foreign exchange specialists, international sales representatives/managers, import/export brokers, marketing analysts, associate editors/publicists, international news writers/journalists.
- *Instructional and Research Facilities:* More than 1.5 million volumes in the University library system are related to international studies. The library has a large current international and domestic newspaper collection, with an emphasis on Slavic, South, and Southeast Asian papers and a selection of European papers. Specialized facilities include the East Asia Library, with a comprehensive collection of manuscripts, books, and serials on China, Japan, and Korea. The University's library holds an extensive collection of books and serials relating to South Asia. The library participates in the U.S. Library of Congress Public Law 480 program, which supplies current publications from India, Pakistan, and Sri Lanka; and is a member of the South Asian Microfilm Program of the Center for Research Libraries, providing access to a large collection of microfilm newspapers, journals, and documents on South Asia.

Jackson School undergraduates can draw upon an extensive roster of more than 500 UW Study-Aboard programs and exchanges, in 70 countries, to enrich their studies.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The School's Office of Career Services provides resources for students exploring job and internship opportunities. The Jackson School has limited funds available for students who serve as unpaid interns in nonprofit and governmental agencies. The Leslie Shedd Memorial Internship Fund honors a Jackson School alumna killed while serving with the CIA. The Dorothy Fosdick Internship Fund is sponsored by the Henry M. Jackson Foundation in memory of the senator's foreign policy adviser. The George E. Taylor Internship Endowment supports students engaged in community-based internships. The Fathi-DiLuck Endowment supports unpaid internships with organizations in the greater Seattle area.

- *Department Scholarships:* Ivy Hovey Fitch Endowed Scholarship, Neal and Helen Fosseen Endowed Scholarship, David Hughes Endowed Scholarship (tuition); Vincent H. Gowen Scholarship (undergraduate-China); Margaret Mykut Scholarships; Ayako Betty Murakami Scholarship (Japan); I. Mervin and Georgiana Gorasht Scholarship, Arthur A. Jacobovitz Scholarship, Richard M. Willner Memorial Scholarship, and Jewish Studies Advisory Board Scholarship (Jewish Studies); Katherine M. Tyler Endowed Fellowships (Asia); Eugene and Marilyn Domoto Webb Scholarship and Marilyn Domoto Webb Fellowship (Comparative Religion); Margaret Mykut scholarships, Alice Wanamaker scholarships, and Jao scholarships (undergraduate study abroad). See also the funding opportunities described under Internships.
- *Student Organizations/Associations:* Jackson School Student Association

Graduate Program

Graduate Program Information

111 Thomson, Box 353650

(206) 543-6001

jsisinfo@uw.edu

In addition to the PhD, nine programs that lead to a Master of Arts in International Studies degree: seven world area-studies programs, a comparative religion program, and a comparative and thematic program in international studies that concentrates on the interaction of international, economic, political, and cultural processes with states and societies around the world. Area-studies programs include China studies; Japan studies; Korea studies; Middle East studies; Russian, East European, and Central Asian studies; South Asian studies; and Southeast Asian studies. The comparative and thematic international studies program can be taken as a concurrent degree program with several professional schools. Specific requirements vary, but all stress interdisciplinary study within the context of the historical cultures, contemporary situations, and languages either of world areas or comparatively.

Master of Arts in International Studies

Admission Requirements: For all MAIS programs shown below.

1. Baccalaureate degree from an accredited university
2. Minimum 3.00 GPA in last 90 quarter (60 semester) hours
3. GRE general scores
4. Other requirements as specified by individual Jackson School programs, including foreign language

Degree Requirements: See individual programs, below.

China Studies

Madeleine Yue Dong, Chair

Provides a broad understanding of the Chinese people and their culture, historical development, and contemporary problems. Curriculum emphasizes the attainment of facility in Chinese language, a grounding in history, and a familiarity with the approaches of the social sciences. Cultural aspects are covered through offerings of several departments, with special strengths in art history and literature.

Admission Requirements

See [above under](#) under Master of Arts in International Studies. Previous study of Chinese language highly recommended.

Degree Requirements

36 credits, plus language training.

1. JSIS A 521, JSIS 522 (10 credits)
2. China-related study from at least two different disciplines (26 credits)
3. Two seminar papers (or a thesis)
4. Comprehensive oral examination
5. Chinese language training through the third year

Comparative Religion

James K. Wellman, Chair

Required core seminars focus on methodology and comparative perspective in the study of religion. Primary and secondary curricular concentrations are available in Buddhism, Hinduism, Judaism, Islam, Christianity, Biblical and Near Eastern religion, and religion and culture; further secondary curricular concentrations are available in Greco-Roman religions, religions in America, East Asian indigenous traditions, African traditions, and Native American traditions.

Admission Requirements

See [above](#) under Master of Arts in International Studies. Sufficient language preparation and background in the study of religion.

Degree Requirements

1. Basic competency in the history of world religions
2. JSIS B 501, J SIS B 502, JSIS B 598
3. Additional courses: colloquium course each quarter; one course focused on historical relations between religious traditions; minimum four courses in a major concentration and two in a minor
4. Research paper(s); one or two
5. Comprehensive examination, both oral and written
6. Third year in language of primary sources in chosen concentration; first-year reading proficiency in a second foreign language

International Studies

Sara R. Curran, Chair

Students prepare to undertake sophisticated analyses of international affairs and typically hold positions after graduation with international divisions of federal and state governments, international divisions of banks, trading companies, policy-study institutes, corporations with international operations, and

international development and educational organizations. About half the students enroll in a concurrent graduate professional-degree program, which adds approximately one year to the course of study.

Admission Requirements

See [above](#) under Master of Arts in International Studies. Students applying concurrently to a professional program ([Foster School of Business](#), [Public Affairs](#), [Marine Affairs](#), [Environmental and Forest Sciences](#), [Law](#), or [Public Health](#)) must also be accepted by the professional school. For non-concurrent applicants, preference is given to those who have a professional interest, or previous professional experience or education. Prior study of a foreign language and preparation in intermediate-level microeconomics and macroeconomics are highly recommended.

Degree Requirements

1. JSIS 500, JSIS 501, JSIS 511 (15 credits)
2. Courses in two of the following: regional studies; professional; international studies (minimum 9 credits for each)
3. Two seminar papers, or a thesis
4. Oral examination
5. Foreign language: Japanese or Chinese through the third year; or other modern foreign language through the second year

Japan Studies

Marie Anchordoguy, Chair

Gives students in-depth knowledge of many facets of Japan, including history, political economy, society, and language. Designed (1) for students who need language and interdisciplinary training on Japan to pursue their career goals, or (2) as preparation for doctoral work in an academic discipline involving Japan for students with little or no training on Japan or in the language. A concurrent degree program with the Foster School of Business (MAIS/MBA) is offered; other combinations (e.g., with Public Affairs and Law) can be arranged.

Admission Requirements

See [above](#) under Master of Arts in International Studies. Minimum one year in Japanese language strongly recommended.

Degree Requirements

46 credits, plus language training.

1. JSIS A 555 (3-6 credits)
2. Discipline (non-language) coursework to include at least one history course and one social science course (46 credits)
3. Japanese through the third year. Maximum 15 credits from advanced Japanese language may be counted toward the 46 credits.

Korea Studies

Clark W. Sorensen, Chair

Offers courses in Korean language, history, and society. Emphasizes the study of Korea in the context of East Asian civilization and the modern world economy.

Admission Requirements

See [above](#) under Master of Arts in International Studies. Previous language training recommended.

Degree Requirements

36 credits, plus language training.

1. HSTAS 482, JSIS A 566, JSIS A 584, JSIS A 585 (20 credits)
2. Discipline study: East Asia or international studies (15 credits)
3. Two seminar papers/or essay
4. Oral examination
5. Korean language through third year

Middle East Studies

Arzoo Osanloo, Chair

Social, political, economic, and legal systems of the Middle East and/or Islamic Central Asia. Students take courses in the social sciences, humanities, and a Middle Eastern or Central Asian language.

Admission Requirements

See [above](#) under Master of Arts in International Studies. One year's study (or equivalent) of language in which the student plans to concentrate.

Degree Requirements

1. Modern Middle East: courses from minimum two social science or humanities disciplines (20 credits)
2. One Jackson School course
3. Two courses in one social science discipline (or in one professional school, other than courses taken for preceding requirements)
4. Thesis and oral examination, or two seminar papers and written examination
5. Language: three 3-credit or two 5-credit Middle Eastern language courses beyond second year.

Russian, East European, and Central Asian Studies

Scott Radnitz, Chair

Includes language training, a concentration of study in a chosen discipline, and a combination of courses in other disciplines. Students usually focus on one region (Russia, East Europe, the Baltic States, or Central Asia), although they may take courses on another region.

Admission Requirements

See [above](#) under Master of Arts in International Studies. Two years of college-level language courses or the equivalent: Russian for those focusing on Russia; for other regions of the former Soviet Union and East Europe, two years of a language of the region, or another relevant language.

Degree Requirements

48 credits, plus language training.

1. JSIS A 504; JSIS A 514; JSIS A 515 (9 credits)
2. Disciplines other than language: 15 to 20 credits in discipline of concentration; 5 credits in minor field; 10 to 15 credits in other REECAS-related courses
3. Thesis: JSIS 700 (9 credits)
4. Oral examination
5. Language: Including two years required for entry, four years of a language of the region; or two years each of two relevant languages (four years Russian required for Russian focus)

Research Facilities: In addition to extensive holdings in Russian, East European, and Baltic language materials, the library has a major Central Asian language collection and the largest collection of Latvian books outside Latvia.

Graduate Certificate in Russian, East European, and Central Asian Studies

Objectives:

- Provide a thorough grounding in REECA history and key economic, social and political issues affecting contemporary society in the region
- Improve oral and written communication skills
- Enhance understanding of the relationship between REECA and other areas of the world and provide answers to global questions of political, social, cultural, and environmental change.

Requirements (16 credits): JSIS A 504 (5 credits); two elective REECA focused courses (10 credits); certificate capstone (1 credit).

Maximum six credits may apply to a student's degree program (double counted credits must be elective coursework in the degree program).

South Asian Studies

Anand Yang, Chair

Encompasses India, Pakistan, Bangladesh, Sri Lanka, Tibet, and Nepal.

Admission Requirements

See [above](#) under Master of Arts in International Studies.

Degree Requirements

1. JSIS A 508, JSIS A 509, JSIS 510 (15 credits)
2. Coursework from at least two different departments, focused primarily on South Asia or courses taught by South Asia faculty on topics relevant to a student's specializations, to include maximum 10 credits not focused on South Asia, nor taught by South Asia faculty (21 credits)
3. Two seminar papers or a thesis
4. Oral examination
5. Language: Third year of a South Asian language, to include at least 7 credits at the 400 level or above

Research Facilities: The University of Washington library participates in the U.S. Library of Congress Public Law 480 program, which supplies current publications from India, Pakistan, and Sri Lanka; and is a member of the South Asian Microfilm Program of the Center for Research Libraries, providing access to a large collection of microfilm newspapers, journals, and documents on South Asia.

Graduate Certificate in South Asian Studies

Objectives include grounding in South Asian history and key economic, social, and political issues affecting contemporary South Asia; understanding the relationship between South Asia and other areas of the world, and considering global questions of political, social, cultural, and environmental change; improving oral and written communication skills; developing interdisciplinary analytical and thinking skills.

Requirements (16 credits): JSIS A 508; JSIS A 509; one elective South-Asia-focused course (5); JSIS A 513, capstone portfolio (1).

Southeast Asian Studies

Laurie J. Sears, Chair

Encompasses Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Timor Loro'sae, and Vietnam. The curriculum combines training in one or more Southeast Asian languages with study of various aspects of modern and classical Southeast Asian civilizations.

Admission Requirements

See [above](#) under Master of Arts in International Studies.

Degree Requirements

36 credits, plus language training.

1. JSIS A 506, JSIS A 580/HSTAS 530, JSIS A 582/HSTAS 532 (15 credits)
2. Coursework from at least two different departments focused primarily on Southeast Asia or courses taught by Southeast Asia faculty on topics relevant to a student's specializations, to include maximum 5 credits not focused on Southeast Asia, nor taught by Southeast Asia faculty (21 credits)
3. Thesis, or non-thesis project
4. Language: third year of a Southeast Asian language

Doctor of Philosophy

Saadia M. Pekkanen, Director

Framed around four foundational fields: (1) "Religions, Cultures, and Civilizations (RCC)," the diversity of cultural and religious life anchored in concrete studies of world areas, histories, cultural and political movements, as well as religious institutions and practices; (2) "States, Markets, and Societies (SMS)," theoretical and empirical debates about the engagement of states with their societies and with transnational actors in their historical, political, and social settings; (3) "Peace, Violence, and Security (PVS)," theoretical and foreign policy debates about global security challenges, conflicts, and violence, as well as issues of their prevention; and (4) "Law, Rights, and Governance (LRG)," theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of governance concerns in world affairs.

Offers two tracks for the dissertation. (1) Writing three thematically linked article-length research papers; (2) Writing one book-length monograph. Doctoral candidates situate their dissertations under an overarching theme/topic in one of the four foundational fields of the PhD Program, and also ground them in one of the existing area-based MAIS degrees in the Jackson School.

Admission Requirements

1. *Master's Degree*
2. *Statement of Purpose*: detailing research question/interests in at least one of the four foundational fields of the PhD program and at least one of the area-based MAIS programs; also identifying relevant JSIS faculty member(s) for research supervision
3. *Writing Sample*: published or unpublished sample/excerpt (not to exceed 40 pages) demonstrating ability to write critically and analytically
4. *Curriculum Vitae*
5. *Three Letters of Recommendation*
6. *All Undergraduate and Graduate Transcripts*
7. *Language*: stronger applicants normally have knowledge of relevant language sufficient for research
8. *All Test Scores*: GRE General Test Scores and TOEFL (for international students) sent directly by the Educational Testing Service

Degree Requirements

100 credits minimum, as follows:

1. 28 transfer credits corresponding to previous graduate-level work; completion of 45 JSIS PhD program credits including introduction to international and area studies course, research tutorial, two field seminars, two specialization courses, two methods courses
2. Capstone presentation
3. General examination, consisting of three written examinations (two in PhD program fields, one in area-based field)
4. Doctoral dissertation (either three thematically linked article-length research papers or one multi-chapter book-length monograph (27 credits)
5. Final examination, consisting of oral defense of the written dissertation

Research Facilities:

Along with entry to the UW library system, students have access to research resources, facilities, and networks of formal programs in the Jackson School, including those on Africa, Canada, China, Comparative Religion, Europe, Japan, Jewish Studies, Korea, Latin America and the Caribbean, Middle East, Russia, East European and Central Asia, South Asia, and Southeast Asia. Further, programs and resources of Title-VI National Resource Centers (NRCs) in the Jackson School, including the Canadian Studies Center, Center for Global Studies, Center for West European Studies, East Asia Center, The Ellison Center for Russian, East European and Central Asian Studies, Middle East Center, South Asia Center, and Southeast Asia Center. Also, resources of other centers at the Jackson School, including the Center for Human Rights, Center for Korea Studies, East Asia Resources Center, European Union Center of Excellence, and the Latin American and Caribbean Studies Center. Students also draw on the Jackson School's affiliation with the Center for Statistics and the Social Sciences (CSSS).

Research and training facilities for specific areas include the following: For East Asia, the East Asia Library, with a comprehensive collection of manuscripts, books, and serials on China, Japan, and Korea. In addition, the University is affiliated with the Inter-University Program for Chinese Language Studies in Beijing, language programs in Japan and the People's Republic of China sponsored by the Council on International Educational Exchange, the Inter-University Center for Japanese Language Studies in Yokohama, and other programs which provide intensive language training for advanced undergraduate and graduate students. For descriptions of research facilities in other areas, see Russia, East Europe, and Central Asia as well as South Asia under the appropriate headings above.

Financial Aid:

Financial awards are made at the time of admission and during the course of a student's time at JSIS. Funding guarantees for consecutive years is contingent upon satisfactory academic progress. All accepted doctoral candidates are automatically considered for fellowships, teaching assistantships, and research assistantships. Financial support is available on a competitive basis to U.S. citizens and permanent residents in the form of Title VI Foreign Language and Area Studies Fellowships. Additional funding comes from the master's-level programs as well as other sources in the Jackson School.

Labor Studies

Undergraduate Program

Adviser

101 Smith, Box 353530

(206) 543-7946

hbcls@uw.edu

Minor

The Labor Studies minor brings together a series of courses on labor in core social-science departments. It provides students an interdisciplinary program of study focusing on the importance of labor to the economic, social, political, and cultural evolution of modern societies.

Minor Requirements: 25 credits

1. HIST 249/POL S 249/SOC 266; or HSTAA 353 (5 credits)
2. 20 additional credits from courses related to labor studies, with no more than 10 credits from one department. See department website for current list: depts.washington.edu/pcls/resources-courses.html.
3. Minimum 2.0 grade for each course applied toward the minor.

Law, Societies, and Justice

Program Overview

42 Gowen

The program in Law, Societies, and Justice provides an interdisciplinary liberal arts education focusing on the roles of law and law-like systems in structuring social life. Courses challenge students to understand the multiple forms of law – criminal, civil, administrative, and constitutional – and the multiple roles law plays in the conduct of social action. Courses stress the importance of examining law in comparative perspective, and of recognizing the increasing significance of rights discourse in shaping how law is understood and practiced. Faculty are trained in several social science disciplines, and hence students learn to analyze law from multiple perspectives.

Undergraduate Program

Adviser

42 Gowen, Box 353530

(206) 543-2396

lsjadv@uw.edu

Law, Societies, and Justice offers the following programs of study:

- The Bachelor of Arts degree with a major in law, societies, and justice.
- A minor in law, societies, and justice
- A minor in disability studies

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that emphasize development of reading, writing, and especially analytical skills. Also, classes that provide background knowledge of modern world history, politics, institutions, and political theory.

Department Admission Requirements

1. Admission is capacity constrained, based on the following: GPA, with emphasis on grades in courses required for admission and for completion of major requirements (applicants accepted normally present cumulative UW GPAs above 2.50); personal statement representing the student's interest in and commitment to becoming a Law, Societies, and Justice major; other evidence of a commitment to the study of society, justice, and law. Admitted applicants often show evidence of success in social science courses. (See department website or academic adviser for recommended social science courses.)
2. Minimum 2.50 cumulative UW GPA
3. Two of the following courses: LSJ 200 or LSJ 363/POL S 363; LSJ 320/POL S 368, LSJ 321/ANTH 323, LSJ 322/JSIS A 324, or LSJ 329; LSJ 367/POLS S 367 or LSJ 366/JSIS B 366
4. One English composition course. (Further evidence of writing skills in the social sciences is encouraged.)

5. Students may apply autumn, winter, or spring quarters. Application deadline: second Friday of the quarter. Students are notified of admission decisions by the sixth week of the quarter in which they apply.
6. Satisfactory progress to degree may be considered when making admission decisions.

Major Requirements

Minimum 53-55 credits as follows:

1. Completion of four LSJ core courses (20 credits):
 - a. one of LSJ 200 or LSJ 363/POL S 363 (5 credits)
 - b. two of LSJ 320/POL S 368, LSJ 321/ANTH 323, LSJ 322/JSIS A 324, or LSJ 329 (10 credits)
 - c. one of LSJ 367/POLS S 367 or LSJ 366/JSIS B 366 (5 credits)
2. Three courses from one of the two designated subfields of study (comparative legal institutions; and rights) and two courses from the other subfield. See program website or advisers for list of approved courses. (23-25 credits)
3. One LSJ departmental seminar. Departmental seminar cannot count simultaneously towards the LSJ subfield requirements. (5 credits)
4. Completion of LSJ 401, which includes completion of 100 hours of volunteer experience or internship in a field related to LSJ. (5 credits)

Minor

Minor Requirements (Law, Societies, and Justice): 28-30 credits

1. Two courses from the following: LSJ 320/POL S 368, or LSJ 321/ANTH 323, or LSJ 322/JSIS A 324; LSJ 363/POL S 363 or LSJ 200; LSJ 367/POL S 367 or LSJ 366/JSIS B 366; LSJ 375 or SOC 372. (10 credits)
2. Two courses from each LSJ major subfield. (Major subfields are "comparative legal institutions" and "rights." Courses fulfilling subfield requirements are outlined on the departmental website and handouts. (18-20 credits).

Minor Requirements (Disability Studies): 30 credits

1. *Core Courses:* DIS ST 230/LSJ 230/CHID 230 (5 credits)
2. Completion of three DIS ST courses. See disability studies adviser or disability studies program website for list of approved courses (15 credits)
3. *Disability studies electives:* Courses from at least two of the following three subfields: Rights, Policy, and Inequality; Global and Historical Perspectives; Diversity, Representation, and Identity. See disability studies adviser or disability studies program website for list of approved courses (10 credits)
4. Minimum 15 credits at the 300- or 400-level

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The Law, Societies, and Justice curriculum emphasizes the development of a range of analytic and communicative skills. Courses challenge students to develop the capacities to: read and interpret texts, including theoretical, empirical, and legal documents; comprehend and contrast arguments; develop and defend arguments; contrast

theoretical arguments with empirical realities; assess contemporary practices of justice delivery against contemporary conceptions of justice. Students are required to express these skills in both verbal and written forms, through active class discussions and well-constructed writing assignments. Development of these skills assists students in a range of possible future endeavors, including a wide array of careers in law and justice.

- *Instructional and Research Facilities:* Students have access to the Political Science/Law, Societies, and Justice/School of International Studies writing center for most classes. Research opportunities are available on an individual and group basis with many professors.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* LSJ requires each of its majors to complete an internship for credit. Internship aims: (1) to provide students with insights into the workings of law in practice; (2) to scrutinize and 'test' some of the theories and concepts found in the literature against 'real world' practice; (3) to advance career development and goals, and (4) to provide 100 hours of local community service. Student assignments vary, and include government agencies, non-profit social service organizations, private law firms, rights-focused organizations, and other sites that focus on issues connected to LSJ coursework. It is the student's responsibility to find an internship, although the LSJ adviser can help find a suitable one. Students are required to write two papers according to specific guidelines for internship course credit.

Many LSJ faculty regularly invite majors to assist them in the development and execution of research endeavors. These provide students an unparalleled opportunity to understand the challenges and mechanics of high-level research.

- *Department Scholarships:* The Stromberg Study Abroad Fund provides financial assistance to LSJ majors who pursue Study Abroad opportunities in socio-legal studies.
- *Student Organizations/Associations:* The Law, Societies, and Justice Student Association sponsors regular events of interest to LSJ students, including career panels and service events.

Of Special Note: The required departmental seminar emphasizes close reading of texts, active class discussions, and well-reasoned analytic writing, providing an opportunity to establish a close connection to faculty and other students, and to hone analytic and communicative skills.

Linguistics

Department Overview

Guggenheim Hall, 4th Floor

Linguistics is the scientific study of language, which is one of the most characteristic human attributes. In contrast to other language-related disciplines, linguistics is concerned with describing the rule-governed structures of languages, determining the extent to which these structures are universal or language-particular, positing constraints on possible linguistic structures, and explaining why there is only a fairly narrow range of possible human languages.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Linguistics offers the following programs of study:

- The Bachelor of Arts degree with options in general linguistics and Romance linguistics
- A minor in linguistics
- A minor in American sign language

Bachelor of Arts

General Linguistics

Suggested First- and Second-Year College Courses: One year of a foreign language that belongs to a different family from the student's native language.

Department Admission Requirements

1. Completion of at least the third quarter, or equivalent, of a foreign language, with a minimum 2.0 grade
2. Completion of either LING 200, LING 400, or an approved introductory linguistics course; at least one writing (W) course; and one additional quantitative and symbolic reasoning (QSR) course. Minimum 2.0 grade in each course and a cumulative 2.50 GPA in the three courses
3. The department accepts students who meet the minimum requirements stated above, but recognizes that a 2.50 GPA or higher is indicative of the motivation and academic skills needed for a reasonable probability of success in the program.

Major Requirements

80 credits, as follows:

1. LING 400 or other introductory course in linguistics

2. LING 450, LING 451, LING 461, LING 462
3. Minimum one additional 400-level LING course, excluding LING 400, LING 419, LING 430, LING 480, LING 490, and LING 499
4. At least one year of each of two languages, one of which must belong to a language family different than the student's native language, with a minimum grade of 2.0 in the third quarter of each language
5. 20 additional credits of departmentally approved courses in linguistics.

Romance Linguistics

Suggested First- and Second-Year Courses: Two college years of study in a Romance language.

Department Admission Requirements

1. Completion of at least one year of college work in a single Romance language
2. Completion of either LING 200, LING 400, or an approved introductory linguistics course; at least one writing (W) course; and one additional quantitative and symbolic reasoning (QSR) course. Minimum 2.0 grade in each course and a cumulative 2.50 GPA in the three courses
3. The department accepts students who meet the minimum requirements stated above, but recognizes that a GPA of 2.50 or higher is indicative of the motivation and academic skills needed for a reasonable probability of success in the program.

Major Requirements

Minimum 63 credits, as follows:

1. LING 400 or another introductory course in linguistics
2. LING 450, LING 451, LING 461, and LING 462
3. 15 credits at the 300 level or higher of one Romance language
4. LING 419
5. 20 additional credits of departmentally approved courses in linguistics, with at least one course for which a research paper on a Romance language is written

Minors

Linguistics -- Minor Requirements: 32 credits to include LING 400 or another introductory course in linguistics; three courses from LING 432, LING 442, LING 450, LING 451, LING 461, LING 462, or LING 481; 12 additional credits from a list of departmentally approved courses in linguistics, 6 of which must be in upper-division courses

American Sign Language -- Minor Requirements: 33-35 credits as follows:

1. *Second-year American Sign Language (15 credits):* ASL 201; ASL 202; ASL 203
2. *Culture and History (3 credits):* ASL 305
3. *Theory and Structure (8-10 credits):* LING 400 or LING 461; either ASL 343 or LING 403
4. Approved 300- 400-level electives (minimum 7 credits). See adviser for approved list.
5. Minimum 2.00 cumulative GPA for all courses applied to the minor

6. Minimum 18 credits from outside student's major requirements

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of linguistics emphasizes formal reasoning and critical thinking skills. Linguists' skill sets include the ability to analyze sound, word, and sentence structures of individual languages; the ability to understand and account for how languages change in certain patterns; the ability to understand how social factors can affect language, how people learn their first or second languages; and the ability to find out and appreciate how apparently vastly different languages can be governed by the same set of rules. Linguistics is a valuable component of liberal education and vocationally can have applications wherever language itself becomes a matter of practical concern. Graduates have a good foundation for pursuing further training and careers in teaching languages, in areas of rehabilitative medicine such as audiology or speech therapy, in special education, in work with native peoples or with immigrant groups, in lexicographic work, in interpretation and translation, in work in computer science and artificial intelligence, or in academic disciplines such as psychology, philosophy, literature and language studies, where the contribution of linguistics is recognized. An undergraduate degree in linguistics from the UW also serves as preparation for graduate work in linguistics or language-related fields such as speech and hearing science or language teaching.
- *Instructional and Research Facilities:* The Language Learning Center located in Denny Hall provides audio and video services facilitating language learning. It also has a computer laboratory providing instructional software for linguistics and varieties of languages. Departmental facilities include a phonetics laboratory for students conducting phonetic experiments and doing digital acoustic analyses, a linguistics library that supplements the linguistics collection of the UW libraries and provides a quiet study place, and a computer laboratory for research in computational linguistics.
- *Honors Options Available:* With College Honors (Completion of both Honors Core Curriculum and Honors requirements in the major). With Honors (Completion of Departmental Honors requirements). See adviser for requirements.
- *Research, Internships, and Service Learning:* None offered
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* The Linguistics Undergraduate Association (LingUA)

Graduate Program

Graduate Program Coordinator
A210B Padelford, Box 354340
(206) 543-2046
phoneme@uw.edu

The department offers a program leading to the degrees of master of arts and doctor of philosophy. The major interest of the core faculty lies in syntax, semantics, phonetics, phonology, sociolinguistics, computational linguistics, and in theoretical aspects of second-language acquisition.

Some coursework is also available in various cooperating departments, including psycholinguistics, philosophy of language, speech synthesis, and the structure and history of a number of individual languages and language families.

Master of Arts

An MA is not required as a prerequisite to PhD study. Students are not admitted directly into the MA program.

Degree Requirements

Thesis Option

1. Minimum 35 credits - LING 507, LING 508, LING 532, LING 551, LING 552, either LING 550 or LING 553, either LING 542 or LING 579
2. Language Requirement: Satisfied by one of the following:
 1. One year of study at the university or community college level. Language instructors in other UW departments can use their language teaching experience to satisfy one language requirement.
 2. A major research project that involves significant primary data collection that includes substantial structural analysis and results in a major paper such as a generals paper
 3. Translation examination to demonstrate the ability to read linguistic literature in a foreign language
3. A thesis, written under the supervision of a Linguistics faculty member, and accepted by a second faculty reader. Normally 10 credits of LING 700.

Non-thesis Option: Students who pass the general examination automatically receive an MA degree in general linguistics; two research papers (referred to as “generals papers”) and the general examination constitute the capstone project necessary for a master’s degree (or the student may complete the thesis model shown above).

Master of Science in Computational Linguistics

Admission Requirements

1. Ability to program, including knowledge of data structures and algorithms (equivalent to CSE 373); broad familiarity with C++ and Java; expertise in C++ or Java; and Perl and/or Python.
2. College-level introductory course in linguistics or equivalent
3. Introduction to statistics and probability (equivalent to STAT 391)
4. Some knowledge of languages other than English is strongly encouraged.
5. One- or two-page statement of purpose.
6. Two or three letters of recommendation, preferably from people familiar with the applicant's academic work
7. Sample of the applicant's academic work (required for applicants who have completed their previous degree within the past two years. Other applicants who wish to send samples of academic work are encouraged to do so). Types of samples include coding projects (together with write-ups), theses and term papers.
8. One complete set of official transcripts
9. International applicants must meet UW English language proficiency requirements. For more information, refer to Memo 8: Graduate School English Language Proficiency Requirements.

Degree Requirements

43 credits

1. *Required Courses:* LING 450, LING 566
2. One additional 400- or 500-level course in phonetics, phonology, morphology, syntax, semantics, or pragmatics
3. *Computational Linguistics Courses:* LING 570, LING 571, LING 572, LING 573
4. One elective in computational linguistics and one elective in computational linguistics or a related area
5. Minimum 10 credits of LING 600 or LING 700

Doctor of Philosophy***General Linguistics Option******Admission Requirements***

1. Three letters of recommendation and Graduate Record Examination scores
2. Master's thesis or a paper of high quality, or both

Degree Requirements

Minimum 90 credits

1. Required courses (35 credits): LING 507, LING 508, LING 532, LING 551, LING 552, LING 550 or LING 553, LING 542 or LING 579
2. Additional courses for a minimum of 90 credits (27 of which are LING 800) to be determined by specialization and consultation with the Supervisory Committee
3. Language knowledge requirement: Non-computational linguistics graduate students satisfy two natural language requirements for the PhD through the following:
 - a. One year of study at the university or community college level. Language instructors in other UW departments may use their language teaching experience to satisfy one language requirement.
 - b. A major research project that involves significant primary data collection that includes substantial structural analysis and results in a major paper (such as a general's paper).
 - c. Translation examination to demonstrate the ability to read linguistic literature in a foreign language; only one of the two language requirements for the PhD can be satisfied through the translation examination.
4. Colloquium conference talks: Two papers delivered at a colloquium or conference
5. Constitution of the PhD committee by the end of the second year of study
6. Generals (research) papers: Two general's papers in different areas, at least one in grammatical theory. (normally 10 credits of LING 600)
7. General examination: An oral examination, in which the candidate is questioned on the two papers.

8. Dissertation prospectus: Within six months of the oral examination, the student presents a formal dissertation proposal to the subset of the PhD Supervisory Committee members who constitute the reading committee, along with a proposed calendar for completion of the dissertation.
9. Final examination
10. Dissertation
11. All-but-dissertation (ABD) requirement: All degree requirements except for the dissertation and the two colloquia completed before the general examination.

Computational Linguistics Option

Admission Requirements

Students who complete the Computational Linguistics Master of Science degree (CLMS) and who wish to be admitted to PhD study in linguistics must satisfy the following:

1. Completion of CLMS degree requirements
2. Completion of master's thesis option
3. Completion of three courses required for the linguistics PhD (computational linguistics option), subject to the following restrictions: (a) Courses must be taught by at least two non-computational linguistics faculty; (b) Courses may not include LING 570 through LING 573
4. The required general linguistics courses for the computational linguistics track PhD are shown below.

Degree Requirements

Requirements are the same as for the general linguistics option, except for the following:

1. Required courses: two from LING 507, LING 508, LING 566; two from LING 550, LING 551, LING 552, LING 553; one from LING 542, LING 579; one from LING 532, LING 533; three from LING 567, LING 570, LING 571, LING 572, LING 573
2. Language knowledge requirement: only one language requirement; excludes translation examination
3. Generals (research) papers: Same as for the general linguistics program except a master's thesis completed as part of the CLMS program may count as one of the two generals papers.
4. Transition from the CLMS to PhD program
 - a. Step 1: Entering the general linguistics graduate program registered as a post-master's program student: Students may apply for admission to the linguistics graduate program after receiving their CLMS degree; admission decision is made by the computational linguistics faculty; after admission, students pay regular UW tuition for courses.
 - b. Step 2: Entering the linguistics PhD program: Students may apply after completing all requirements listed above. If all requirements are completed upon receipt of the CLMS degree, Steps 1 and 2 may be completed simultaneously.

Mathematics

Department Overview

C138 Padelford

Mathematics is both a science and an art. Like any great art, mathematics has an intrinsic beauty and coherence that has attracted practitioners for centuries. Yet, unlike other arts, mathematics is a surprisingly effective tool for describing the natural world. Indeed, mathematics has come to serve as the foundation of modern science, through its language and results. Some mathematical results were initially developed in order to solve internally generated mathematical problems and only later found application in other disciplines; other mathematical results were inspired by the needs of these other disciplines. The two facets of mathematics -- tool of science and subject of inquiry for its own sake -- have come to be interwoven into a complex fabric.

Undergraduate Program

Adviser

C36 Padelford, Box 354350

(206) 543-6830

advising@math.washington.edu

The Department of Mathematics offers the following programs of study:

- The Bachelor of Arts degree with a major in mathematics - standard program
- The Bachelor of Arts degree with a major in mathematics - philosophy option
- The Bachelor of Arts degree with a major in mathematics, with an option designed specifically for students who plan to pursue secondary teaching careers
- The Bachelor of Science degree with a major in mathematics
- The Bachelor of Science degree with a major in applied and computational mathematical sciences (ACMS). The Department of Mathematics cooperates with the departments of Applied Mathematics, Computer Science and Engineering, and Statistics in offering this major. (See ACMS for requirements.)
- A minor in mathematics
- The Bachelor of Science degree with a major in mathematics - standard option (effective summer quarter 2018, admission suspended until further notice)
- The Bachelor of Science degree with a major in mathematics - comprehensive option (effective summer quarter 2018, admission suspended until further notice)

Bachelor of Arts

Department Admission Requirements

Admission to all programs is capacity constrained. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. The application and additional information are available online at www.math.washington.edu/Undergrad.

Admission Criteria

1. *Minimum Course Requirements:* MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136), with a minimum 2.0 grade in each of these calculus courses and an overall minimum 2.50 GPA in all mathematics courses.
2. *Determining Factors:* Factors considered include performance in all mathematics courses as measured by GPA, difficulty of all mathematics courses completed, frequency of incompletes or withdrawal grades, number of repeated courses, amount and type of AP credit (i.e., AB vs. BC), relevant work and life experience, and record of honors.
3. *When to Apply:* Applications are accepted via catalyst twice each year. Deadline is the end of the day on January 15 and September 15.

Major Requirements

Standard Option (51 credits)

Intended for students interested in a versatile degree in mathematics. Students should choose electives to gain more knowledge in a specific area of mathematics.

1. Core (27 credits): MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 324
2. Electives (24 credits): Eight mathematics courses numbered 301 or higher, including three at the 400 level, excluding MATH 398, MATH 399, MATH 497, MATH 498, MATH 499. No more than two courses numbered MATH 380 or MATH 480. MATH 420 cannot be applied toward the three required 400-level classes.
3. Minimum 2.0 grade in all courses presented to satisfy major requirements. Minimum 2.00 cumulative GPA in all mathematics courses at the University, including course repeats
4. Minimum 18 credits of graded mathematics courses numbered 300 or higher taken in residence through UW, Seattle.
5. Students may pursue either the general mathematics major or one of the two options shown below.

Philosophy Option (58 credits)

1. MATH 124, MATH 125, MATH 126, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 327; MATH 328; five additional mathematics courses at the 300 or 400 level, including at least one two-quarter sequence at the 400 level other than MATH 407, MATH 408, MATH 409, or MATH 421, MATH 422
2. PHIL 120 or an upper-level course in logic; PHIL 100, PHIL 160, or PHIL 240; one philosophy course at the 300 level; one philosophy course at the 400 level
3. Minimum 2.0 grade in all courses presented to satisfy mathematics major requirements. Minimum 2.00 cumulative GPA in all mathematics courses at the University, including course repeats.
4. Minimum 18 credits of graded mathematics courses numbered 300 or higher taken in residence through the UW.

Teacher Preparation Option (52-59 credits)

1. MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 134, MATH 135, and MATH 136); MATH 300; MATH 394, MATH 411, MATH 412, MATH 444, MATH 445; either STAT

311, MATH 390/STAT 390; or Q SCI 381; 15 credits of approved electives at the 300 level in MATH, AMATH, or STAT, or PHYS 407, PHYS 408, and PHYS 409. Minimum 6 credits of electives from the Mathematics Department.

2. Minimum 2.0 grade in all courses presented to satisfy the program requirements. Minimum 2.50 cumulative GPA in all mathematics courses at the University, including course repeats
3. Minimum 18 credits of graded mathematics courses numbered 300 or higher taken in residence through the UW

Bachelor of Science

Department Admission Requirements

Same as for bachelor of arts programs, shown above.

Major Requirements

69 credits

1. *Core (33 credits)*: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308 (or MATH 134, MATH 135, MATH 136); MATH 300; MATH 324; MATH 327; MATH 328
2. *Advanced Mathematics (18 credits)*: At least six courses from the following, either in two three-quarter sequences or three two-quarter sequences, with at least one sequence from items a. through d.
 - a. *Modern Algebra*: MATH 402, MATH 403, MATH 404
 - b. *Concepts of Analysis*: MATH 424, MATH 425, MATH 426
 - c. *Complex Analysis*: MATH 427, MATH 428
 - d. *Topology & Geometry*: MATH 441, MATH 442, MATH 443
 - e. *Optimization*: MATH 407, MATH 408, MATH 409
 - f. *Combinatorics*: MATH 461, MATH 462
 - g. *Numerical Analysis*: MATH 464, MATH 465
 - h. *Probability*: MATH 491, MATH 492

Proficiency in items a. and b. is generally expected for graduate study in mathematics. In addition, items c. and d. are recommended for PhD programs in pure mathematics. Alternative combinations may be preferred for graduate study in other areas of the mathematical sciences and for industry careers. Consult Mathematics Student Services for more information.

3. *Electives (18 credits)*: Six additional mathematics courses at the 300- or 400-level, excluding MATH 398, MATH 399, MATH 411, MATH 412, MATH 444, MATH 445, MATH 497, MATH 498, MATH 499. No more than two courses numbered MATH 380 or MATH 480 may be counted. With approval, two of the six courses may be chosen from appropriate courses offered by other departments. Courses from the Advanced Mathematics core sequences not used to fulfill that requirement may be used to fulfill the elective requirement.
4. Minimum 2.0 grade in all courses presented to satisfy mathematics major requirements. Minimum 2.00 cumulative GPA in all mathematics courses at the University, including course repeats.
5. Minimum 18 credits of graded mathematics courses numbered 300 or higher taken in residence through the UW Seattle campus.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minor

Minor requirements (minimum 30 credits)

1. *Core (24-25 credits)*: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 309; or MATH 134, MATH 135, and MATH 136 (25 credits, including 10 advanced-placement credits)
2. *Electives (6 credits)*: mathematics courses numbered 301 or higher
3. At least 9 credits of courses numbered 301 or higher taken in residence through the UW. Minimum 2.0 grade required for each course offered as part of the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The study of mathematics emphasizes exposure to the core foundational areas of analysis, modern algebra, and geometry. A mathematician's skill set includes the technical tools specific to each area as well as the development of critical thinking skills necessary for logical reasoning. Graduates have pursued careers in teaching, finance, science, engineering, and professional fields such as law and medicine.
- *Instructional and Research Facilities*: Mathematical Research Library and Math Sciences Computing Center
- *Honors Options Available*: With College Honors (Completion of Honors core curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: When available, internship opportunities are passed on to students.
- *Department Scholarships*: None offered.
- *Student Organizations/Associations*: MAA Student Chapter, Actuarial Club, Math Club.

Graduate Program

Graduate Program Coordinator
C36 Padelford, Box 354350
(206) 543-6830
grads@math.washington.edu

The department offers the master of arts, master of science, and doctor of philosophy. Opportunities are available for study of abstract and applied mathematics for each degree program. The MA is appropriate for students who need a broad background in advanced mathematics and who expect to continue working with mathematics of approximately the same level in their careers. The MS is appropriate for students who expect to be working with more specialized mathematics of increasing order of complexity in their careers. The PhD is appropriate for students who plan on a career of research and/or teaching of mathematics at the highest levels.

Of the master's degrees, the MS non-thesis program has the most demanding course requirements and most closely matches the early stages of the PhD program. Most students in the department begin their

studies with the PhD or MS non-thesis program in mind. The MS programs with options in numerical analysis or optimization provide more focused training in these directions, which can be useful for students seeking employment in certain industries; however, students intending to do research in these areas would normally follow the requirements of the PhD program. The department does not offer a master's degree in mathematics education.

Master of Arts

Admission Requirements

BA degree with major in mathematics or equivalent background (minimum 45 quarter credits or 30 semester credits of mathematics beyond college algebra)

Degree Requirements

Master of Arts, Non-Thesis (36 credits): Twelve approved one-quarter courses at the 400 or 500 level, including two courses each in algebra, analysis, and one other field. Must include six courses chosen from designated core graduate courses or, with prior approval, from other 500-level sequences. 500-level courses distributed over no more than three sequences. Transfer credits not accepted at the 400 level; other transfer credits and substitutions accepted at the discretion of the Graduate Program Coordinator.

Written examination. Oral examination may be substituted with prior approval.

Master of Science

Admission Requirements

BS degree with major in mathematics, BA degree with strong major in mathematics or equivalent background. At least one senior-level course in abstract algebra or real analysis.

Degree Requirements

1. *Master of Science, Thesis (36 credits):* Twelve numerically graded one-quarter courses from MATH 402, MATH 403, MATH 404; MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 441, MATH 442, MATH 443; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586; plus 9 thesis credits (MATH 700). Other courses may be included with prior approval. At least two quarters from each of two designated core graduate courses and one other 500-level sequence. Transfer credits not accepted at the 400 level; other transfer credits and substitutions accepted at the discretion of the Graduate Program Coordinator.

The thesis, defended in an oral examination, should demonstrate ability to do independent research.

2. *Master of Science, Non-Thesis (45 credits):* Fifteen numerically graded one-quarter courses from MATH 402, MATH 403, MATH 404; MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 441, MATH 442, MATH 443; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586. Other courses may be included with prior approval. At least two quarters from each of two designated core graduate courses, and one three-quarter sequence of 500-level mathematics courses in an approved area of specialization. Transfer credits not accepted at the 400 level; other transfer credits and substitutions accepted at the discretion of the Graduate Program Coordinator.

Oral examination in the area of specialization on a topic agreed upon by the student and the chair of the examining committee, or the general examination for the PhD degree.

3. *Master of Science, Numerical Analysis and Optimization Options, Non-thesis (45 credits)*: Fifteen one-quarter courses, at least six of which are at the 500 level, chosen from MATH 424, MATH 425, MATH 426; MATH 427, MATH 428, MATH 429; MATH 438, MATH 439; MATH 441, MATH 442, MATH 443; MATH 461, MATH 462; MATH 491, MATH 492; any 500-level mathematics course; AMATH 507; AMATH 584, AMATH 585, AMATH 586. Other approved courses may be included. Four from AMATH 584, AMATH 585, AMATH 586 and MATH 594, MATH 595, and MATH 596. Transfer credits not accepted at the 400 level; other transfer credits and substitutions accepted at the discretion of the Graduate Program Coordinator.

Oral examination in a special topic agreed upon by the student and the chair of the student's examining committee.

Doctor of Philosophy

Admission Requirements

Mathematical training equivalent to a bachelor's degree with strong major in mathematics, including rigorous coursework in real analysis and abstract algebra.

Degree Requirements

Minimum 90 credits

1. *Core Courses*: Two three-quarter sequences from MATH 504, MATH 505, MATH 506 ; MATH 524, MATH 525, MATH 526 ; MATH 534, MATH 535, MATH 536 ; MATH 544, MATH 545, MATH 546 ; A passing performance in a preliminary examination substitutes for satisfactory completion of the corresponding designated core course. Twelve quarters of 500-level numerically graded courses in mathematics, applied mathematics, or statistics. Approved courses from other departments may be included.
2. *Preliminary Examinations*: Two preliminary examinations. At least one must be in algebra or topology and geometry of manifolds.
3. *Foreign Language/Computer Requirement*: Either one foreign language examination or one computer programming examination, passed by the end of summer quarter after the third year.
4. *General Examination*: Given only after two years of graduate study. Normally taken by the middle of the fourth year.
5. *Thesis*: 27 credits of MATH 800
6. *Final Examination*

Doctor of Philosophy (Mathematics: Advanced Data Science)

Admission Requirements

For current doctoral students who wish to complete Advanced Data Science requirements. See department faculty to discuss admission.

Degree Requirements

109 credits

1. *Core (30 credits)*: Two, three-course sequences from the following:

- a. *Algebra*: MATH 504, MATH 505, MATH 506 (15 credits)
 - b. *Real Analysis*: MATH 524, MATH 525, MATH 526 (15 credits)
 - c. *Complex Analysis*: MATH 534, MATH 535, MATH 536 (15 credits)
 - d. *Manifolds*: MATH 544, MATH 545, MATH 546 (15 credits)
2. *Data Science Foundation (15-16 credits)*
 - a. Either STAT 509 or STAT 512. If STAT 512 taken, consider also taking STAT 513. (4 credits)
 - b. Either CSE 546 or STAT 535 (3 or 4 credits)
 - c. CSE 544 (4 credits)
 - d. CSE 512 (4 credits)
 3. *Data Science Seminar (4 credits)*: CHEM E 599. One credit for each of four quarters
 4. *Electives (33 credits)*: Any 500-level MATH courses except the following: MATH 510, MATH 530, MATH 550, MATH 570, MATH 580, MATH 590, MATH 597
 5. *Dissertation (27 credits)*: MATH 800
 6. *Additional Requirements*: preliminary examination; foreign language/computer requirement; 12 quarters of 500-level numerically graded courses in MATH, AMATH, or STAT

Financial Support

Most graduate students in mathematics are supported by fellowships, research assistantships, and teaching assistantships. The workload of teaching assistants allows ample time for graduate courses and thesis work.

Microbiology

Department Overview

K357A Health Sciences

Microbiology is a natural science that deals with microorganisms such as bacteria, fungi, protozoa, algae, and viruses. It is concerned with the nature and properties of these organisms, their effects on humans and the environment, and how they can be exploited to provide useful products.

Undergraduate Program

Adviser

K-357A Health Sciences, Box 357735

(206) 543-5824

micro@uw.edu

The Department of Microbiology offers the following programs of study:

- The Bachelor of Science degree with a major in microbiology
- A minor in microbiology

Bachelor of Science

Suggested First- and Second-Year Courses: PHYS 114, PHYS 115, or PHYS 121, PHYS 122; one of the following: MATH 112, MATH 124, Q SCI 381, or STAT 311.

MICROM 410, the first microbiology course for majors, is taken after completion of BIOL 200 and organic chemistry (CHEM 223 or CHEM 237). To graduate in four years, a student must complete introductory biology and organic chemistry before autumn quarter of the junior year.

MICROM 301, and MICROM 302, offered to non-majors, serve as introductory courses, but cannot be used to fulfill graduation requirements for a major in microbiology. MICROM 301 is a prerequisite for students applying to nursing, physical therapy, or dental school.

Department Admission Requirements

1. Minimum 75 credits applicable to graduation, with a minimum 2.00 overall cumulative GPA.
2. Completion of the following prerequisite courses with a minimum 2.50 cumulative GPA: BIOL 180; BIOL 200 (minimum 2.3 grade); BIOL 220; either CHEM 142, CHEM 152, CHEM 162; or CHEM 143 and CHEM 153; either CHEM 223, CHEM 237, or CHEM 335

Major Requirements

Minimum 90 credits (including microbiology courses) in the biological, physical, and mathematical sciences, as follows:

1. Minimum 2.50 cumulative GPA in courses required for admission: BIOL 180; BIOL 200 (minimum 2.3 grade), BIOL 220; either CHEM 142, CHEM 152, and CHEM 162, or CHEM 143 and CHEM 153; either CHEM 223, CHEM 237, or CHEM 335
2. *Core Courses (8 credits)*: MICROM 402; MICROM 410; MICROM 496
3. *Distribution Groups and Electives (28 credits)*: Minimum one course from each of the following four distribution groups; minimum two laboratory courses. Remaining credits from additional courses from the distribution groups or from an approved list of electives. See adviser for approved list
 - a. *Medical Microbiology*: IMMUN 441, MICROM 442 MICROM 443, MICROM 460, or both MICROM 460 and MICROM 461
 - b. *Virology*: MICROM 445 or MICROM 450
 - c. *Diversity and Ecology*: MICROM 412 or MICROM 435
 - d. *Genetics and Molecular Biology*: MICROM 411; or MICROM 431; and either GENOME 361 or GENOME 371
4. Either PHYS 114 and PHYS 115; or PHYS 121 and PHYS 122 (PHYS 116 or PHYS 123 recommended)
5. Either MATH 112, MATH 124, MATH 144, Q SCI 381, STAT 220, or STAT 311
6. Either BIOC 405 and BIOC 406, or BIOC 440, BIOC 441, and BIOC 442
7. All required courses taken for a numerical grade unless course is offered credit/no-credit only. Minimum 2.25 cumulative GPA; minimum 1.8 grade in all MICROM and IMMUN core and elective courses applied to the major
8. Transfer students must complete at least 20 required and elective microbiology credits through the UW.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minor

Minor Requirements: 29 credits as follows:

1. 14 credits to include BIOL 200; one of CHEM 152, CHEM 155, CHEM 162, or CHEM 165; one of CHEM 223, CHEM 237, or CHEM 355.
2. 15 credits from the following: MICROM 410; one from MICROM 302, MICROM 402, MICROM 431, or MICROM 443; and approved 400-level, graded microbiology courses to reach 29 credits. See adviser for approved list.
3. Minimum cumulative 2.00 GPA for all courses counted toward the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The department's objective is to provide a major with the best instruction possible in broad areas of microbiology so students qualify for a wide variety of positions with a terminal BS degree or qualify to pursue advanced degrees in graduate or professional schools.

Microbiology offers students an excellent education in the biology of microorganisms, namely bacteria, fungi, protozoa, and viruses. Through learning about the biology of these microorganisms and viruses, students more fully understand the pivotal position they occupy in establishing and maintaining our biosphere, their effects on human, animal, and plant life, and how the biological properties of certain microbes are exploited for certain purposes. Microorganisms are important in drinking water, wastewater and sewage treatment, production and spoilage of foods, production of antibiotics, bioremediation of toxic compounds, and genetic engineering of organisms having unique characteristics. Students gain insight into strategies used by microorganisms and viruses to cause disease and the mechanisms used by their host to defend themselves.

Graduates have found research positions in biotechnology and pharmaceutical companies, as well as in state and government positions hiring microbiologists. Students interested in a health profession or graduate program benefit from this program.

- *Instructional and Research Facilities:* Microbiology courses are taught using state-of-the-art facilities in the teaching wing of the Health Sciences building. Research labs are located in the Health Sciences, Fred Hutchinson Cancer Research Center, NW Regional Primate Research Center, and UW Rosen building.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* MICROM 499, undergraduate laboratory research, is offered for credit. See adviser for details.
- *Department Scholarships:* The department offers four awards each year. More information is available at the department's website.
- *Student Organizations/Associations:* The Microphiles Club is open to all students. The club sponsors field trips to local biotech companies, speakers on topics such as research and career opportunities, graduate school, and peer teaching.

Graduate Program

Graduate Program Coordinator
K357A Health Sciences, Box 357735
(206) 543-2572
microadv@uw.edu

The department offers a graduate program leading to the doctor of philosophy degree. Students interested in graduate work should obtain the necessary application forms from the department.

Doctor of Philosophy

Admission Requirements

Background in any biological science discipline. Selection based on evaluation of a student's undergraduate record for indications of ability to excel in independent, creative research. The department strongly recommends that undergraduate preparation include courses in biochemistry, physics, general and organic chemistry, microbiology, molecular biology and cell biology. Prospective students are strongly advised to seek opportunities to carry out undergraduate research.

Required background courses (generally satisfied prior to entry into the graduate program):

1. Biochemistry (equivalent to BIOC 440, BIOC 441, and BIOC 442)
2. Classical and molecular genetics (equivalent to GENOME 371 or GENOME 372)
3. General microbiology (equivalent to MICROM 410)
4. Medical microbiology and basic immunology recommended for those considering research in the area of medical microbiology or virology.

Degree Requirements

90 credits minimum, as follows:

1. **Conjoint (6 credits):** See department website for specific courses.
2. **Virology and Bacteriology (6-7 credits):** See department website for specific courses.
3. **Faculty Research Presentations for first-year students:** MICROM 599
4. **Laboratory Rotation:** MICROM 500, minimum three quarters
5. **Journal Club:** MICROM 522, continuous enrollment
6. **Seminar:** MICROM 520 seminar series or attendance at Fred Hutchinson seminars, where students are also encouraged to attend the Microbiology seminars. To be taken every quarter unless a conflict with teaching exists.
7. **Additional requirements:**
 - a. Teaching assistant in at least two laboratory courses for undergraduates (usually satisfied in the first and/or second year).
 - b. Minimum two formal lectures given in an undergraduate course (third or fourth year).
 - c. First author on multiple papers related to thesis research published or accepted for publication in refereed journals. Under some circumstances, one first-author publication satisfies this requirement.
8. General examination, dissertation, final examination

Music

School Overview

102 Music

The mission of the School of Music is creation, discovery, preservation, and transmission of a wide and diverse range of music from across time and place. Students, faculty, and staff of the School of Music work together to expand the frontiers of artistic knowledge through the creative processes of performance, composition, and scholarly research.

The school's faculty includes leading performers, composers, and scholars. Renowned guest artists and scholars regularly perform and teach. Through its instructional offerings, the School of Music provides opportunities for all UW students to explore the role of music in cultures of the world -- past, present, and future. The school teaches students to think creatively and critically. The faculty provides professional training to musical performers, composers, and academic scholars. The school's ultimate goal is to inspire students to reach the highest standards and ideals of excellence in both artistic and scholarly endeavors.

The school is a vital part of the artistic and scholarly life of the UW and plays a prominent role in Seattle and greater Pacific Northwest music and art communities. The school also offers each year over 100 public concerts of music spanning more than a millennium, with offerings that extend across many cultures.

Undergraduate Program

Adviser

116 Music, Box 353450

(206) 543-1239

musicadv@uw.edu

The School of Music offers the following programs of study:

- Bachelor of Arts degree with a major in music (plus music history option; voice option; instrumental track; early music option; music theory option)
- Bachelor of Arts degree with a major in American music studies
- Bachelor of Music degree with a major in composition, piano, string instruments, voice, organ, orchestral instruments, guitar, jazz studies, percussion (with options in orchestral percussion and in contemporary percussion and mallet keyboard), and music education; and an option in music history.
- Bachelor of Arts degree with a major in ethnomusicology.
- Minor in music

Information Applicable to All Music Majors

Department Admission Requirements

Admission is competitive to all music programs. All students must participate in an entrance audition or submit an application and satisfy the requirements of each degree program or track for admittance. Check department website for entrance audition dates. Major status in performance areas is accorded when, after admission to the College of Arts and Sciences is acknowledged and the required School of Music audition is successfully completed, the student commences applied-music study in a performance medium (e.g., voice) with an approved faculty member of the School of Music. In American music studies, music education, composition, and ethnomusicology, additional entrance requirements apply.

All music programs require instruction on an instrument. Auditions into freshman-level applied-music instruction (private lessons) are based on the assumption that a student's background includes four to eight years of private study on an instrument. Completion of a further two years of college-level private instruction does not automatically guarantee entry at the junior level of private instruction; placement is determined by an audition.

Most degree programs in the School of Music require one to two years of basic piano, to be completed during the course of study at the University.

Theory and Ear Training Preparation

In preparation for theory and ear training coursework, all students must be evaluated by placement test to determine their levels in music theory and music history. Students who have minimal background in these areas may be required to take MUSIC 113/MUSIC 119 and MUSIC 120.

Transfer students who have had at least two quarters of music theory or music history are evaluated by a faculty member the quarter they are admitted to their program.

Grade Requirements

Undergraduate music majors are required to earn a minimum 2.0 grade in each course (core and elective) counted toward music major requirements. An overall 2.50 minimum GPA in music coursework is required for graduation.

Bachelor of Arts

General Requirements

Minimum 180 credits, of which 90 must be taken in departments other than the School of Music. Piano proficiency at MUSAP 135 level. All College of Arts and Sciences graduation requirements must be met. Minimum cumulative 2.50 GPA for all music courses and a minimum 2.0 grade for each music course counted toward the major.

Major Requirements

1. *Music (63 credits):* MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/ MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 6 credits approved upper-level MUSIC or MUHST electives, 6 credits approved 300- or 400-level MUSAP, MUSEN, MUSIC, or MUHST courses, 10 credits MUSICP vocal or instrumental private applied instruction, 5 credits MUSEN (ensembles)

2. *Instrumental Track (69 credits)*: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 6 credits approved upper-level MUSIC or MUHST electives, 18 credits MUSICP instrumental private applied instruction, and 9 credits in ensembles
3. *Voice Option (75 credits)*: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course, plus 6 credits approved upper-level MUSIC or MUHST electives, 18 credits MUSICP vocal private applied instruction, 6 credits vocal diction, and 9 credits in ensembles. Proficiency through the third quarter college level in two languages from French, German, and Italian
4. *Early Music Option (66 credits)*: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 15 credits approved 300- and 400-level electives, selected from MUHST 400, MUHST 401, MUHST 406; MUSIC 418, MUSIC 421; MUSEN 369, MUSEN 383, and other approved 300- or 400-level courses. 10 credits MUSICP vocal or instrumental private applied instruction, 5 credits MUSEN (ensembles). Students are strongly encouraged to take 10 credits in pre-1700 literature, art history, and history courses as part to their VLPA requirement.
5. *Music History Option (69 credits)*: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 12 credits approved 400-level MUHST electives; 6 credits approved 300- or 400-level music theory or MUHST courses; 10 credits MUSICP vocal or instrumental private applied instruction; 5 credits MUSEN (ensembles). Students must earn a minimum 2.00 cumulative GPA for all required MUHST courses.
6. *Music Theory Option (63 credits)*: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; MUSIC 470, MUSIC 471, and minimum 6 credits selected from MUSIC 472, MUSIC 485, MUSIC 487, and/or MUSIC 489; 10 credits MUSICP vocal or instrumental private applied instruction; 5 credits MUSEN (ensembles)

Bachelor of Arts (with major in American music studies)

Study of the regional, racial, ethnic, sacred, secular, communal, and cultural diversities represented in the music of the Americas. Students are strongly encouraged to formulate individual programs under the guidance of faculty mentors. Interdisciplinary approaches, both within music or between music and other areas of study, serve as a primary focus of the program. In addition to major requirements, students must also complete general education requirements for the College of Arts and Sciences.

Admission Requirements

Admission is competitive. Meeting minimum grade and course requirements does not guarantee admission. Minimum 3.0 grade in two of the following courses: MUSIC 160, MUSIC 161, MUSIC 162, MUSIC 216, MUSIC 250, MUSIC 317, MUSIC 325, MUSIC 331, or MUHST 212. Minimum 2.50 cumulative GPA. Admission is based on student's transcripts, musical ability, and statement of purpose, which should explain the student's interest and intent, specifying the direction of study the students wishes to take and indicating the desired outcome(s) in terms of specialized knowledge and skills, and possible career directions(s).

74 credits

1. Core courses (30 credits): MUSIC 201, MUSIC 202, MUSIC 203, MUSIC 204, MUSIC 205, MUSIC 206, MUSIC 216, MUSIC 250, MUSIC 331, MUSIC 498, MUHST 212
2. Minimum 6 credits MUSEN ensembles
3. Minimum 23 credits approved American music studies electives with at least one course from each of the following lists: theory/music analysis; comparative perspective; and ethnomusicological/cultural. See adviser for approved lists.
4. Interdisciplinary electives (15 credits): upper-division non-music electives selected with faculty mentor, with permission of offering department
5. Minimum 2.50 cumulative GPA in music courses applied to the major
6. Minimum 2.0 grade in music courses applied to the major

Bachelor of Arts (with a major in ethnomusicology)

The BA degree with a major in ethnomusicology emphasizes the study of music as culture as well as art. Students may be admitted to the degree program on the basis of a written application. Course requirements include selected courses in the School of Music's core curriculum, ethnomusicology courses encompassing diverse repertoires and topics, several interdisciplinary courses including at least one in socio-cultural anthropology, world music performance study, and a capstone senior project. In addition to the ethnomusicology major requirements, students must also complete the general education requirements for the College of Arts and Sciences.

Admission Requirements

Admission is competitive. Minimum 3.0 grade in either MUSIC 251 or MUSIC 252, minimum 2.0 grade in each MUSIC course taken, and minimum 2.50 cumulative GPA. Admission is based on the student's transcript(s), musical interests, and statement of purpose, which should explain the student's interest in ethnomusicology and potential areas of specialization.

Major Requirements

51-67 credits

1. Core courses (33-39 credits): MUSIC 201, MUSIC 202, MUSIC 203, MUSIC 204, MUSIC 205, MUSIC 206, MUSIC 251, MUSIC 252, MUSIC 499 (5 credits), and minimum six quarters of MUSEN 389 and/or MUSAP 389 (6-12 credits)
2. Ethnomusicology electives (9-15 credits): minimum three 400-level ethnomusicology courses from approved list
3. Sociocultural anthropology elective (3 credits): minimum one sociocultural anthropology course from approved list
4. Interdisciplinary electives (6-10 credits): minimum two interdisciplinary electives from approved list
5. Minimum 2.00 cumulative GPA in courses applied to the major

Bachelor of Music

Admission Requirements

All students must participate in an entrance audition as described above. Students admitted into the BA program have the option to jury into the B.M. program at the end of the freshman and sophomore years. The composition and music education programs have additional application requirements as described below.

General Requirements

Minimum 180 credits, of which at least 60 must be taken in departments other than the School of Music. All College of Arts and Sciences degree requirements must be met (including Language Skills and Reasoning and Writing in Context), except that students need take only 60 credits in Areas of Knowledge, to include at least 20 credits each in two of the following three areas: Visual, Literary, & Performing Arts; Individuals & Societies; and the Natural World. Piano proficiency at MUSAP 235 level, a minimum 2.0 grade in each music course counted toward the major, and a minimum 2.50 GPA in music courses.

Major Requirements (and Additional Admission Requirements, as noted)

Composition (114-120 credits)

Additional Admission Requirements: MUSIC 302 and MUSIC 305; MUHST 212; and MUSIC 216, MUSIC 217, MUSIC 218. Prospective students must also submit a portfolio of recent compositions. See adviser for more information on the application process.

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus MUSIC 216, MUSIC 217, MUSIC 218; PHYS 207; 18 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 380, MUSIC 381, MUSIC 382; MUSIC 400 or MUSIC 401; MUSIC 471 or MUSIC 472; MUSIC 490; 18 credits of private instruction in composition (MUSIC 391/MUSIC 491); 12-18 credits of MUSICP applied instruction; 6 credits of MUSEN ensembles; and one 400-level course in ethnomusicology. See undergraduate adviser for more specific information.

Guitar (120 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; and at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 9 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487 or MUSIC 438; 36 credits of MUSICP applied instruction; 7 credits of electives; 2 credits of recitals; MUSIC 326, MUSIC 327, MUSIC 328; MUSIC 434, MUSIC 435, MUSIC 436; MUSIC 380, MUSIC 381, MUSIC 382; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Jazz Studies (120 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 9 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 319 or MUSIC 331; MUHST 425; MUSIC 336 and MUSIC 436; MUSIC 467, MUSIC 468, MUSIC 469; MUSIC 379, MUSIC

479; 6 credits of MUSIC 464; 10 credits of music electives; 30 credits of MUSICP applied instruction; 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Music Education (115-119 credits)

Additional Admission Requirements: Students must complete a separate music education audition and interview. See adviser for more information on the application process.

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus MUSIC 350, MUSIC 351, MUSIC 352 (or MUSIC 380, MUSIC 381, MUSIC 382); MUSED 301; MUSED 304, MUSED 305; MUSED 340; MUSED 403; MUSED 405 (or MUSEN 303); MUSED 440; MUSED 442 (or MUSED 443); MUSED 452; MUSED 465; 18 credits of MUSICP applied instruction; 6-7 credits of MUSEN ensembles; 12-14 credits of techniques courses; 3 credits of approved jazz coursework; EDC&I 494; and 3 credits of education electives. See undergraduate adviser for more specific information.

Orchestral Instruments (116 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 12 credits of division-approved upper-level MUSIC or MUHST electives; 36 credits of MUSICP applied instruction; 18 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Organ (120 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306, MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course, plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487; 36 credits of MUSICP applied instruction; MUSIC 454; MUSIC 473 and MUSIC 474; MUSIC 458 and MUSIC 459; MUSIC 350, MUSIC 351, MUSIC 352; 1 credit of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Piano (120 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course, plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 487; 36 credits of MUSICP applied instruction; MUSIC 434, MUSIC 435, MUSIC 436; MUSIC 326, MUSIC 327, MUSIC 328; 7 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Percussion (111 credits)

MUSIC 201, MUSIC 202, MUSIC 203, MUSIC 204, MUSIC 205, MUSIC 206, MUSIC 301, MUSIC 302, MUSIC 303; MUSIC 304, MUSIC 305, MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from MUSIC 250, MUSIC 251, MUSIC 252, or any 400-level ethnomusicology course; minimum 18 credits from MUSICP 337; MUSIC 379; MUSIC 479; minimum 18 credits from MUSICP 437; minimum 12 credits of MUSEN 304; minimum 12 credits from MUSEN 300, MUSEN 301, or MUSEN 302; minimum

1 credit from MUSEN 384, MUSEN 389, MUSEN 410, or MUSEN 411; 12 credits of approved upper-division MUSIC or MUHST electives.

Strings (105 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 15 credits of division-approved upper-level MUSIC or MUHST electives; 36 credits of MUSICP applied instruction; MUSIC 380; 3 credits of electives; 2 credits of recitals; and 12 credits of MUSEN ensembles. See undergraduate adviser for more specific information.

Voice (119 credits)

MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 12 credits of division-approved upper-level MUSIC or MUHST electives; MUSIC 307, MUSIC 308, MUSIC 309; MUSIC 326, MUSIC 327, MUSIC 328; MUSIC 434; MUSIC 460, MUSIC 461, and MUSIC 462; MUSIC 379 and MUSIC 479; 36 credits of MUSICP applied instruction; 10 credits of MUSEN ensembles; and 3 credits of music electives. Proficiency through the third quarter college level in two languages from French, German, and Italian. See undergraduate adviser for more specific information.

Academic Options

Music History

Admission Requirements: In addition to the admission requirements for all music majors, shown above, formal application to the music history division, to include verified completion of core courses, 3.00 GPA in core courses, 3.00 overall GPA, and a writing sample. Completion of minimum entrance requirements does not guarantee admission. The program of study and preparation of the senior thesis is developed in consultation with a music history faculty adviser. Students who intend to pursue graduate studies are strongly advised to establish proficiency in German or French and to acquire some acquaintance with one or two additional foreign languages.

Major Requirements: 135 credits as follows: MUSIC 201/MUSIC 204, MUSIC 202/MUSIC 205, MUSIC 203/MUSIC 206, MUSIC 301/MUSIC 304, MUSIC 302/MUSIC 305, MUSIC 303/MUSIC 306; MUHST 210, MUHST 211, MUHST 212; at least 3 credits from among MUSIC 250, MUSIC 316, MUSIC 317, or any 400-level ethnomusicology course; plus 6 credits of 300-level MUHST electives; 36 credits of 400-level MUSIC or MUHST electives; a 3-credit, 400-level course in ethnomusicology; 3 credits of MUSIC 498; 18 credits of MUSICP applied instruction (3 years); 9 credits of MUSEN ensembles; and 24 credits of music electives.

Minor

Minor Requirements: Minimum 25 credits of music courses (MUSIC, MUHST, MUSEN, MUSAP, or MUSED prefixes). Maximum 10 credits at the 100 level, minimum 15 credits at the 200 level or above including:

1. At least 4 credits from courses dealing with the elements of music (chosen from MUSIC 116, MUSIC 117, MUSIC 118, MUSIC 113/MUSIC 119, or MUSIC 120).

2. 5 credits from courses for non-majors that focus on a particular music area (MUSIC 121, MUSIC 122, MUSIC 160, MUSIC 162, MUSIC 316, MUSIC 317, MUSIC 318, MUSIC 319, MUSIC 331).
3. Maximum 10 transfer credits (including maximum 5 transfer credits in performance lessons and ensembles) may count toward the minor.

Student Outcomes and Opportunities

- *Instructional and Research Facilities:* None.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* None.
- *Department Scholarships:* None.
- *Student Organizations/Associations:*
 - *Music Student Association (MSA):* A group of undergraduate and graduate students from various divisions of the School of Music, working to foster a stronger sense of professional community, serve the larger cultural community, and build practical tools for encouraging and promoting student musicians' endeavors. For more information, contact sonare@uw.edu.
 - *Ethnomusicology Student Association:* A student association which deals with the concerns of the ethnomusicology division, as well as meeting socially. For further information, contact the division at 206-543-0949 or 64 Music Building.
 - *Music Educators National Conference (MENC):* A local chapter of this national scholarly organization of music educators is directly involved in annual state and regional meetings and events. Contact Professor Patricia Campbell (pcamp@uw.edu) for further details.

Of Special Note:

Continuation of Major Status

Performance studies should begin after audition and acceptance, and continue each subsequent quarter of registration until the minimum program requirements for applied-music lessons have been met. Applied-music study should continue as long as the student is registered and in residence until the final approved recital is given. In order to retain major standing, the student must make and demonstrate consistent and acceptable progress at the annual required jury. Concurrent enrollment or participation in at least one School of Music ensemble is required during each quarter in which a student receives MUSAP (applied-music) instruction, at the 300 level and above, except for MUSAP 389/589. Also, basic piano proficiency is required for all majors. Non-keyboard majors must enroll in the MUSAP 133/235 series until appropriate proficiency is attained. Any departure from the above requirements must have the recommendation of the appropriate program chair and the written consent of the Director of the School of Music.

Graduate Program

Graduate Adviser
116 Music, Box 353450
206-543-2726
musicadv@uw.edu

Graduate programs in the School of Music take into consideration the dual nature of music's subject matter. First, it is one of the creative arts, requiring constant renewal through the efforts of composers, performers, and teachers. Second, it is a branch of the humanities, subject to scholarly study and interpretation of its theoretical concepts and historical development. Each degree focuses on one of these areas.

Master of Music or Doctor of Musical Arts

- Choral conducting
- Composition
- Instrumental conducting
- Jazz studies and improvised music
- Opera production
- Performance piano, organ, harpsichord, voice, strings, brass, woodwinds, percussion, harp

Master of Arts or Doctor of Philosophy

- Ethnomusicology
- Music education
- Music history
- Music theory

Master of Arts

Admission Requirements

1. A baccalaureate degree from an accredited U.S. institution or its equivalent from a foreign institution. Performance programs expect that applicants have a bachelor's degree in music or the equivalent experience and training in the field.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.
3. Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution
4. International Applicants
 - International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum scores is 90.

Degree Requirements

45 credits minimum, as follows:

1. 45 credits as specified for the student's particular degree program; of these, 18 credits must be numerically graded and 18 credits must be at the 500-level
2. Proficiency in a foreign language as required by the degree program
3. Thesis, as required by the degree program
4. All work for the degree completed within six years, to include applicable work transferred from other institutions (max. 6 credits transferable) and time spent on leave.

Master of Music

Admission Requirements

1. A baccalaureate degree from an accredited U.S. institution or its equivalent from a foreign institution. Performance programs expect that applicants have a bachelor's degree in music or the equivalent experience and training in the field.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.
3. (Only if applying to Composition): Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution.
4. International Applicants
 - International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum scores is 90.

Entrance Auditions: Before acceptance into a performance-based School of Music graduate program, applicants need to pass an entrance audition in their major performance area.

Degree Requirements

All students in the performance degree programs (MM, DMA) are expected to enroll in music applied lessons (MUSICP courses at the 500-level) until all recital requirements are met. The School of Music requires that all students registered for music applied lessons must also be enrolled in an ensemble (MUSEN 5XX).

Minimum 45 credits, to include:

1. Minimum 45 credits as specified for the student's particular degree program; of these credits, 18 credits must be numerically graded and 18 credits must be at the 500-level
2. Oral master's examination
3. All work for the degree completed within six years, to include applicable work transferred from other institutions (max. 6 credits transferable) and time spent on leave.

Doctor of Music Arts

Admission Requirements

1. Generally a master's degree or equivalent in the same field of music or music performance from an accredited U.S. institution or its equivalent from a foreign institution.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.

3. (Only if applying to Composition): Scores from the Graduate Record Exam (GRE), unless the applicant holds an earned doctorate from an accredited institution.
4. International Applicants
 - International applicants must consult the online Preliminary Evaluation Process before proceeding with the application process. International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum score is 100.

Entrance Auditions: Before acceptance into a performance-based School of Music graduate program, applicants need to pass an entrance audition in their major performance area.

Degree Requirements

All students in the performance degree programs (MM, DMA) are expected to enroll in music applied lessons (MUSICP courses at the 500-level) until all recital requirements are met. The School of Music requires that all students registered for music applied lessons must also be enrolled in an ensemble (MUSEN 5XX).

Minimum 90 credits, to include:

1. Minimum 90 credits of resident study with at least 60 registered credits from the UW
2. Reading knowledge of one or more foreign languages as required by the particular degree program
3. Performance requirements as specified
4. General examination for admission to candidacy consisting of written and oral examinations.
5. Dissertation which is a significant contribution to knowledge in a specific field and which clearly indicates training and research
6. Final examination devoted to the dissertation in the field with which it is concerned
7. All work for the degree completed within ten years. Applicable work from the master's degree and work transferred from the other institutions must fall within the ten-year period, including time spent on leave and away from the program. Up to thirty credits from an approved master's degree may be counted toward the 90 credits required for the degree. (Master's degree credits are applied toward the general elective requirements of the degree plan.)

Doctor of Philosophy

Admission Requirements

1. Generally a master's degree or equivalent in the same field of music or music performance from an accredited U.S. institution or its equivalent from a foreign institution.
2. Minimum GPA of 3.00 or B average in the most recent two years of study.
3. Scores from the Graduate Record Exam (GRE), (except for Ethnomusicology), unless the applicant holds an earned doctorate from an accredited institution
4. International Applicants
 - International applicants whose native language is not English are required to submit scores from the Test of English as a Foreign Language (TOEFL). Scores must be less than two years old. Minimum score is 100.

Degree Requirements

Minimum 90 credits, to include:

1. Minimum 90 credits of resident study with at least 60 registered credits from the UW
2. Reading knowledge of one or more foreign languages as required by the particular degree program
3. Performance requirements as specified for the particular degree
4. General examination for admission to candidacy consisting of written and oral examinations. Dissertation which is a significant contribution to knowledge in a specific field and which clearly indicates training and research
5. Final examination devoted to the dissertation in the field with which it is concerned
6. All work for the degree completed within ten years. Applicable work from the master's degree and work transferred from other institutions must fall within the ten-year period, including time spent on leave and away from the program. Up to thirty credits from an approved master's degree may be counted toward the 90 credits required for the degree. (Master's degree credits are applied toward the general elective requirements of the degree plan.)

Financial Aid

A limited number of teaching and staff assistantships (including accompanying) are available. Competitive auditions for performance scholarships for new and returning students are held each year. See the school's Website (above) for more information about applications and audition dates.

Research Facilities

The Music Building contains the music library, an electronic composition laboratory, a listening center, and the ethnomusicology archives, as well as the studio, practice, and classroom facilities of a modern music department.

Ensembles available for student participation include University Symphony Orchestra, University Chorale, Opera Chorus, Contemporary Group, Wind Ensemble, University Symphonic Band, Studio Jazz Ensemble, Baroque Ensemble and Chamber Singers, as well as non-Western ensembles with visiting artists from around the globe.

Near Eastern Languages and Civilization

Department Overview

229 Denny

Near Eastern languages and civilization focuses on the languages and civilizations of the Near East with an emphasis on the ancient and medieval roots of these civilizations as well as more recent cultural developments. Each language offered represents a major literary tradition. Arabic, Persian, Turkish, and Central Asian Turkic are the languages of the most significant literary manifestations of Islamic civilization. Hebrew and Aramaic are the languages of the Bible and are central to Judaism and Jewish culture. Egyptian languages (Coptic, hieroglyphic) and other Mesopotamian and Mediterranean languages (Akkadian, Ugaritic, Phoenician) are important to the ancient and Christian cultures of the Near East. These languages are taught in conjunction with courses on the social, cultural, and religious history of the Near East, providing students with a broad understanding and solid foundation for more advanced studies or professional career development.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The department offers the following programs of study:

- The Bachelor of Arts degree with a major in Near Eastern studies with options in Near Eastern languages and cultures, Near Eastern comparative civilizations, comparative Islamic studies, and Biblical and ancient Near Eastern studies
- A minor in Near Eastern languages and civilization

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses in any discipline that deals with the Near East. Courses in writing, history, literature, comparative religion, French, and German are also recommended. Students should begin their studies of Near Eastern languages as soon as possible.

Department Admission Requirements

Students in good academic standing may declare this major at any time. Admission to the comparative Islamic studies option is suspended through spring, 2015.

Major Requirements

Near Eastern Studies -- Languages and Cultures

69 credits as follows:

1. Gateway Course (5 credits): NEAR E 101

2. One introductory (200 level) course on the Near East (5 credits)
3. Primary Language (30 credits): Two years of one Near Eastern language, or its equivalent as evidenced by examination
4. Advanced level coursework in primary language (10 credits): Advanced literature or text courses in primary language
5. Senior Seminar (2 credits): NEAR E 491
6. Near East Electives (20 credits): Supporting coursework from the following categories: advanced literature: 300- or 400-level courses from NEAR E or language prefixes; second Near Eastern language (must not exceed 15 credits); approved relevant exceptions from other departments (must not exceed 15 credits). NEAR E 498 may be used toward this requirement.
7. At least 22 of the 72 required credits must be taken in residence through the department.

Near Eastern Studies - Comparative Civilizations

72 credits as follows:

1. Gateway Course (5 credits): NEAR E 101
2. One introductory (200 level) course on the Near East (5 credits)
3. Primary Language (30 credits): Two years of one Near Eastern language, or its equivalent as evidenced by examination
4. Senior Seminar (2 credits): NEAR E 491
5. Senior essay on a topic of Near Eastern civilization (5 credits): NEAR E 498
6. Near East Electives (25 credits): Supporting coursework at the 300 level or above (maximum 15 credits of approved exceptions)
7. At least 22 of the 72 required credits must be taken in residence through the department.

Near Eastern Studies - Comparative Islamic Studies

Admission to this option is suspended through spring, 2015.

70 credits as follows:

1. Two years of one of the following languages or its equivalent as evidenced by examination: Arabic, Persian, Turkish, Uzbek, Kazakh, or other appropriate languages with approval of adviser
2. NEAR E 210
3. NEAR E 212 or NEAR E 240
4. An approved program of 10 credits in courses in Islamic religious traditions and texts, and 15 credits in history, society, and culture of Islam
5. A senior essay on a topic in comparative Islamic studies (5 credits).

Near Eastern Studies -- Biblical and Ancient Studies

72 credits as follows:

1. Gateway Course (5 credits): NEAR E 101

2. NEAR E 201 and NEAR E 202
3. Two years of Biblical Hebrew or its equivalent as evidenced by examination. Alternatively a student may satisfy this language requirement by combining a minimum four quarters of Biblical Hebrew with two quarters of other ancient Near Eastern languages, including Aramaic, Ge'ez, hieroglyphic Egyptian, Coptic, Akkadian, second-year Greek, or other appropriate languages as approved by adviser and/or faculty (30 credits)
4. Senior Seminar (2 credits): NEAR E 491
5. Near East Electives (25 credits): Supporting coursework from the following categories: advanced literature - 300- or 400-level courses from NEAR E or language prefixes; second ancient Near Eastern language (must not exceed 15 credits); approved relevant exceptions from other departments (must not exceed 15 credits). NEAR E 498 may be used toward this requirement.
6. A senior essay on a topic in Biblical and ancient Near Eastern studies (5 credits)
7. At least 22 of the 72 required credits must be taken in residence through the department.

Minor

Minor Requirements: 30 credits as follows:

1. NEAR E 101 (5 credits)
2. Two introductory courses (200-level) on the Near East (10 credits)
3. 15 additional credits from Near Eastern civilization or advanced-level language courses (may not include language courses at the beginning or intermediate level).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The NELC undergraduate degree offers a liberal arts education with a particular focus on the study of cultures and languages of the Near East and Central Asia. Educational outcomes from this degree serve a broad spectrum of undergraduates, ranging from those intending to begin the acquisition of specific linguistic and cultural proficiencies for the purpose of pursuing some career, academic or otherwise, related to these regions, to students for whom the Near East and/or Central Asia are regions with histories and cultures that are of special intellectual or personal interest. Students often combine Near Eastern studies as a double major with some other degree program that may be in a quite different discipline. For these students the NELC undergraduate major offers the important opportunity, as a core element in a broader liberal arts education, for expanding their cultural vision and understanding in ways made possible only through serious study of a language and literature other than one's own. Graduates from the BA degree have followed a wide range of post-baccalaureate paths, including further graduate study in the humanities or social sciences, professional degree programs in law or medicine, and employment with government or non-governmental organizations.
- *Instructional and Research Facilities:* The department draws on collections of books, serials, and other resources in the UW libraries that are unusually rich in the quantity and quality of items relating to Near Eastern and Central Asian languages and cultures. Students in the department's language classes make use of the University's well-equipped Language Learning Center.
- *Honors Options Available:* With College Honors (Completion of Honors core curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Undergraduate research is carried out under the supervision of faculty members. Students can also undertake research and internship opportunities while studying abroad.
- *Department Scholarships:* See departmental website for most current information.

- *Student Organizations/Associations:* There are no formal student organizations in the department, but the department frequently sponsors educational and cultural events organized by students and faculty involved in interest groups such as the Central Asian Circle or the Persian Circle.

Graduate Program

Graduate Program Coordinator
M25 Denny, Box 353120
(206) 543-6033
neareast@uw.edu

Master of Arts

The department offers a graduate program of studies leading to the master of arts degree, designed to provide students advanced training in at least one Near Eastern language and in a field of specialization. Students may concentrate in Arabic, Hebrew, Persian, Turkish, or Central Asian Turkic and may choose as their field of specialization a civilization or literature related to their language of concentration. The program is intended both for students who wish to continue their studies at the doctoral level and for students who wish to pursue careers in government or business.

Admission Requirements

1. Statement of purpose
2. Sample of written academic work
3. Three letters of recommendation, of which at least two must attest to scholarly ability
4. Official transcripts from all collegiate institutions attended
5. Although knowledge of a Near Eastern language is not a prerequisite for admission, applicants are generally expected to have had the equivalent of two years' study of the language in which they plan to concentrate.
6. Bachelor's degree from an accredited institution
7. Minimum 3.00 (or B) GPA for last 90 quarter (60 semester) credits
8. GRE scores
9. TOEFL scores for international students

Degree Requirements

36 credits

1. Reading knowledge of French or German; or, with prior approval of the student's MA committee, any other language pertinent to the student's research. To satisfy this requirement, the student normally passes a reading examination before beginning the second year of study.
2. A seminar paper representing the student's best work
3. Coursework determined in consultation with M.A. committee to prepare for written examinations.
4. A written examination consisting of four parts: (1) general culture of the Near East, (2) student's field of specialization, (3) student's language of concentration, (4) second Near Eastern language related to the language of concentration

Doctor of Philosophy

Some department faculty are part of an interdisciplinary faculty group which offers doctoral study in Near and Middle Eastern studies. See the Interdisciplinary Graduate Degree Programs section of this catalog.

Summer Programs

The department offers summer intensive language programs in Arabic, Hebrew, and Central Asian languages (Uzbek, Kazakh, Tajik, and others).

Research Facilities

UW libraries hold an extensive collection of books and materials in languages of the Near East, the Turkic regions of Central Asia, and in European languages on Near Eastern and Central Asian Turkic subjects. The library participated in the Library of Congress Middle East Cooperative program for the acquisition of Arabic serials, and the Library of Congress Cooperative program for Pakistan for the purchase of Persian books and serials. Library staff includes Near East and Central Asia specialists. The library maintains book exchanges with the Central Asian republics, handled through the Near East and Slavic sections of the University's Suzzallo Library. Staff include an exchange librarian and a specialist trained in Central Asian Turkic languages. A book exchange with Xinjiang is administered through the East Asia Library.

Financial Aid

A limited number of teaching assistantships are available for graduate students fluent in speaking and writing a Near Eastern language. A limited number of graduate fellowships are also available.

Exchange Agreements

The department participates in exchange programs, sending students abroad and training students from institutions overseas. Formal UW exchange agreements exist with several universities in North Africa and the Middle East, such as American University in Cairo; Al-Akawayn University in Ifrane, Morocco; Yarmouk University and Mu'tah University in Jordan; American University in Beirut; Hebrew University in Jerusalem; and Bogazici University in Istanbul. Department-level exchange agreements have also existed with Xinjiang University in Urumchi, China (for Uighur, Kazakh, Kirghiz), or institutions in Central Asia such as Tashkent State University, the Humanities University of Bishkek, Kyrgyzstan, or Kyrgyz State National University, Bishkek. NELC students also study at institutions in which there are not currently formal exchanges, such as the University of Damascus (for the study of Arabic and related subjects).

Neuroscience

Program Overview

318 Hitchcock

Neuroscience offers students an intense introduction to the study of nervous systems. Faculty in both the College of Arts and Sciences and the School of Medicine teach courses in the major. Students study the cellular and molecular properties of single nerve cells and the connections among them and learn how these properties determine animal behavior and human disease.

Undergraduate Program

Adviser
318 Hitchcock, Box 355320
(206) 616-3982

Neuroscience offers the following program of study:

- The Bachelor of Science degree with a major in neuroscience

Bachelor of Science

Program Admission Requirements

Applicants are considered in the following groups: Direct Freshman Admission and Regular Admission. Admission is capacity constrained; meeting minimum standards guarantees consideration but not acceptance. Application deadline is the second Friday in October each year except for Direct Freshman Admission.

Direct Freshman Admissions

The department enrolls up to 15 percent of its incoming class directly from high school. Students accepted to the UW who indicate neuroscience as their preferred major on their freshman application are considered. Strong applicants have completed chemistry, biology, and calculus in high school and generally have received a minimum 1400 on the SAT (mathematics and verbal sections) or a minimum 30 on the ACT. Admission is for autumn quarter only.

Regular Admission

1. BIOL 180, BIOL 200, BIOL 220, with minimum 2.0 grade in each
2. Completion of most supporting coursework in physics, math, and chemistry recommended (see specific course lists, below), with minimum 2.50 GPA in any such work completed at time of application

Major Requirements

Minimum 86 credits

1. *Supporting coursework (minimum 48 credits):*

- a. *Chemistry*: One of the following three sequences: CHEM 120, CHEM 220, CHEM 221; CHEM 142, CHEM 152 (or CHEM 143, CHEM 153), CHEM 223 CHEM 224; CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155, CHEM 165), CHEM 237, CHEM 238, CHEM 239 (or CHEM 335, CHEM 336, CHEM 337). Third sequence recommended. Organic chemistry laboratories not required. (15-27 credits)
 - b. *Physics*: Pathway 1 - PHYS 114, PHYS 115; Pathway 2 (recommended) - PHYS 121, PHYS 122. (8 to 10 credits)
 - c. *Mathematics*: Two quarters of calculus (MATH 124, MATH 125, or Q SCI 291, Q SCI 292) (10 credits)
 - d. *Introductory Biology (minimum 15 credits)*: BIOL 180, BIOL 200, BIOL 220 (15 credits)
2. *Introduction to Neuroscience (10 credits)*: NEUSCI 301, NEUSCI 302.
 3. *Advanced courses in neuroscience (12 credits)*: NEUSCI 401, NEUSCI 402, NEUSCI 403, NEUSCI 404.
 4. *Electives*: Minimum 16 credits from a wide variety of 400-level courses in the biological sciences. See adviser for list of courses. Courses not listed may be allowed with permission of program director. Students may apply up to 7 credits of undergraduate research toward the 16 elective credits.
 5. Minimum cumulative 2.00 GPA for courses applied to the major.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Throughout the core sequence of neuroscience, students gain a deep understanding of the basic concepts of nervous system function and learn many of the basic techniques used to study nerve cells. Students also learn how to analyze neurophysiological data, and compose and present results. Graduates pursue careers in medicine, public health, education, pharmaceutical sales, computing, and graduate study.
- *Instructional and Research Facilities*: Laboratories are required with introductory courses. (NEUSCI 301 and NEUSCI 302). The program offers state-of-the-art facilities and equipment for each course.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Most neuroscience students participate in undergraduate research with faculty from both the College of Arts and Sciences and the School of Medicine.
- *Program Scholarships*: None offered.
- *Student Organizations/Associations*: Neuroscience Student Club; Alpha Epsilon Delta, the national premedical honorary society.

Philosophy

Department Overview

361 Savery

Philosophy is the study of the most fundamental issues concerning reality, knowledge, and value, and of the basic concepts, principles, and arguments of the major intellectual disciplines. Its fields include metaphysics, epistemology, logic, ethics, history of philosophy, political philosophy, aesthetics, philosophy of science, philosophy of mind, philosophy of language, philosophy of law, and philosophy of religion.

Undergraduate Program

Adviser

361 Savery, Box 353350

(206) 543-5855

philadv@uw.edu

The department offers the following programs of study:

- Bachelor of Arts degree with a major in philosophy and an option in ethics
- Bachelor of Arts degree with a major in history and philosophy of science, offered jointly with the [Department of History](#)
- A minor in philosophy

The department also administers the interdisciplinary minor in [ethics](#).

Bachelor of Arts

Philosophy

Suggested First- and Second-Year College Courses: Introductory courses in symbolic logic, social philosophy, major problems of philosophy, and history of philosophy. Courses to develop writing, language, and analytic skills.

Department Admission Requirements

Minimum 2.00 cumulative GPA and completion of 10 credits of philosophy coursework

Major Requirements

50 credits

1. One course from PHIL 115, PHIL 120, or an upper-division course in logic
2. One course from PHIL 320, PHIL 330, PHIL 335, or PHIL 340 (undergraduate adviser must approve substitutions)

3. One course from PHIL 322, PHIL 332, PHIL 342, or 400-level courses in the same areas (undergraduate adviser must approve substitutions)
4. At least four UW philosophy courses at the 400 level, excluding PHIL 484
5. At least 25 credits through the UW
6. Minimum 2.00 cumulative GPA for all philosophy courses taken

Ethics Option

Minimum 50 credits

1. Minimum 25 credits from approved list of ethics and justice-related courses. See department for approved course list.
2. One from PHIL 115, PHIL 120, or upper-division course in logic (5 credits)
3. One from PHIL 320, PHIL 330, PHIL 335, or PHIL 340. Adviser must approve substitutions (5 credits)
4. One from PHIL 322, PHIL 332, PHIL 342, or 400-level course in the same areas. Adviser must approve substitutions (5 credits)
5. Minimum four UW 400-level philosophy courses, excluding PHIL 484, two of which must be from approved list of ethics and justice-related courses (12-20 credits)
6. Minimum 25 credits taken through UW
7. Minimum 2.00 cumulative GPA for all philosophy courses taken

History and Philosophy of Science

Suggested First- and Second-Year College Courses: PHIL 120, PHIL 160. Courses that develop writing skills. Introductory science courses and mathematics courses through calculus.

Department Admission Requirements

1. HSTCMP 311, HSTCMP 312; PHIL 160 or PHIL 460; PHIL 120, each with a minimum 2.0 grade
2. Completion of 10 credits toward the Natural World (science) requirement (see below), each course with a minimum 2.0 grade
3. Minimum UW 2.00 GPA
4. Completion of 10 credits of composition/writing courses with a minimum 2.0 grade for each course. This requirement may be met by freshman English composition courses, "W" courses, or any courses in which the student has written a graded paper (to be reviewed by HPS faculty) of at least 10 pages.

Major Requirements

85 credits

1. *Core Courses (25 credits):* HSTCMP 311, HSTCMP 312, HSTCMP 390; PHIL 160 or PHIL 460; PHIL 120. Minimum 2.0 grade in each course and overall minimum 2.50 GPA.
2. *Electives:* 25 credits from the following, of which at least 10 must be PHIL courses and at least 5 must be HIST courses (or others upon petition): ESS 404, HIST 211, HIST 215, HIST 310, HIST 313 (or ASTR 313), HIST 314, HIST 315, HIST 316, HIST 317 (also MHE 422), HIST 318 (also

MHE 424), HIST 412; PHIL 243, PHIL 350, PHIL 360, PHIL 406, PHIL 450, PHIL 460 (if PHIL 160 taken), PHIL 464, PHIL 466, PHIL 473, PHIL 481, PHIL 482, PHIL 483. Minimum 2.0 grade in each class.

3. *Capstone (5 credits)*: Completion of HPS 400, with a minimum 2.0 grade
4. *Science Component*: 30 credits Natural World (NW) courses from anthropology, astronomy, atmospheric sciences, biology, chemistry, computer science, earth and space sciences, economics, environmental studies, mathematics, physics, psychology, and sociology, with a minimum 2.50 GPA in these courses and a minimum 2.0 grade in each course. At least 15 of the credits must be outside mathematics.

Minor

Minor Requirements: 30 credits

1. PHIL 115 or PHIL 120, or an upper-division course in logic
2. At least 15 UW philosophy credits at the 300 level or above, excluding PHIL 484.
3. 10 philosophy elective credits at any level

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Graduates of the Department of Philosophy acquire considerable skills in abstract thinking, analysis, and critical writing (constructing and critiquing arguments). Because of these skills, philosophical training is invaluable in almost any area of life. Recent graduates have been successful in software development, financial planning, journalism, teaching, and law. A few go on to graduate school and become professional philosophers.

Students' work is subjected to careful critical scrutiny. As a result, students benefit from philosophy courses with an increased competence in expository clarity, logical rigor, and analytical skill.

Philosophy is an excellent undergraduate major for pre-professional students. It is perhaps ideal for those who aspire to work in the legal profession. The history and philosophy of science major is of particular interest to those planning careers in the sciences. Courses in ethics offer students in any field the opportunity to think clearly about the normative dimensions of their career choices. Because the skills of philosophical analysis can be applied widely, philosophy is always a good complementary second degree for any major, whether it is in the physical sciences, social sciences, arts, or humanities.

- *Instructional and Research Facilities*: The Philosophy Writing Center provides a free tutoring service to any student writing a philosophical paper.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: The department offers internship credits for students participating in the philosophy of children program. Students may also arrange for internship credit with individual faculty. See adviser for details.
- *Department Scholarships*: The Kenneth Clatterbaugh scholarship acknowledges a student with financial need who has outstanding academic merit and commitment to philosophy. The Kenneth R. Parker Award for Excellence in Community Service honors an undergraduate philosophy major or minor who has blended her or his studies in philosophy with a volunteer-based community project. The recipient receives a \$500 scholarship. A donation of \$250 is made on

behalf of the recipient to a community organization of the student's choice. See adviser for details.

- *Student Organizations/Associations:* The undergraduate student club, Lyceum, is dedicated to the informal discussion of philosophical issues.

Of Special Note: The department offers a new majors seminar for those wishing to explore the major.

Graduate Program

Graduate Program Adviser
361 Savery, Box 353350
(206) 543-5863
philinfo@uw.edu

The department offers programs of study leading to the master of arts and doctor of philosophy degrees, the MA program serving as the initial stage of the PhD program. The department's Program on Values in Society (POV) offers an interdisciplinary Graduate Certificate in Ethics.

Master of Arts

Admission Requirements

Fulfilling requirements below guarantees consideration but not acceptance.

1. Three letters of recommendation written on the recommender's departmental letterhead.
2. Writing sample of academic philosophical work (approximately 8-15 pages; 2500-5000 words) written for a course in philosophy. Applicants are allowed one writing sample only.
3. Official GRE scores (verbal, quantitative, and analytical writing).
4. Personal 300-500 word statement of the applicant's reasons for doing graduate work in philosophy at the UW and his or her professional objectives
5. Complete set of unofficial college transcripts (official transcripts required upon matriculation)
6. Undergraduate major in philosophy recommended although not required.
7. International applicants refer to UW Graduate School policies (including English proficiency required for employment as a teaching assistant).

Degree Requirements

All students, whether or not they have earned an MA at another institution, must complete the MA requirements before entering the PhD program.

A two-year, non-thesis program; no language requirement.

36 credits minimum

1. **Formal Methods Requirement:** Either a minimum 3.0 grade in a graduate-level logic or inductive reasoning course (PHIL 470, PHIL 471, PHIL 472, PHIL 474, PHIL 483, or PHIL 570); or a 400-level course in another department with suitable formal content. Part-time students must satisfy this requirement by the time they submit master's papers.

2. **Distribution Requirement:** At least three courses in each of the following three areas:
 - a. **Area One**
 - i. Greek Philosophy -- PHIL 430, PHIL 431, PHIL 433, PHIL 520
 - ii. Modern Philosophy -- PHIL 422, PHIL 436, PHIL 437, PHIL 438, PHIL 522
 - iii. Recent Philosophy -- PHIL 426, PHIL 526
 - b. **Area Two**
 - i. Logic and Philosophy of Mathematics -- PHIL 470, PHIL 471, PHIL 472, PHIL 473, PHIL 474, PHIL 570
 - ii. Philosophy of Science -- PHIL 459, PHIL 460, PHIL 466, PHIL 481, PHIL 482, PHIL 483, PHIL 560, PHIL 564, PHIL 566, PHIL 574
 - iii. Philosophy of Mind -- PHIL 463, PHIL 464, PHIL 563
 - iv. Philosophy of Language -- PHIL 453, PHIL 479
 - v. Epistemology -- PHIL 450, PHIL 490, PHIL 550
 - vi. Metaphysics -- PHIL 456, PHIL 556, PHIL 587
 - c. **Area Three**
 - i. Ethics -- PHIL 412, PHIL 413, PHIL 415, PHIL 416, PHIL 417, PHIL 418, PHIL 440, PHIL 538, PHIL 540
 - ii. Philosophy of Art -- PHIL 445, PHIL 446, PHIL 545
 - iii. Philosophy of History -- PHIL 465, PHIL 565
 - iv. Social and Political Philosophy -- PHIL 406, PHIL 407, PHIL 408, PHIL 409, PHIL 410, PHIL 411, PHIL 414, PHIL 461, PHIL 510, PHIL 514
 - v. Philosophy of Religion-- PHIL 467
3. **Course Requirement:** Students complete 11 courses (numbered 400 or above) in philosophy, with a minimum 3.0 grade in each course. At least four courses must be seminars. (12 courses including 6 seminars are required for the PhD. Students should if possible complete all course requirements during the master's portion of the program.)
4. **Master's Qualifying Papers:** Students submit a qualifying paper at the end of the second year. (Part-time students submit their paper for evaluation upon completion of 11 courses in philosophy.)
5. **Evaluation:** Students completing the above requirements are (a) awarded an MA and admitted to the PhD program; (b) awarded an MA and invited to revise and resubmit a qualifying paper a second time, or prepare a new qualifying paper; (c) awarded a terminal MA; or (d) dropped from the program without a degree.
6. **Satisfactory Progress:** Students not yet admitted to the PhD program must take at least two courses (10 credits) per quarter with a minimum 3.0 grade.
7. **Other Courses:** Students may use up to three approved courses outside philosophy. (Such courses do not automatically satisfy the twelve-course requirement.)

Doctor of Philosophy

Admission Requirements

Based on level of performance with the MA requirements. (See above.)

Degree Requirements

Minimum 90 credits (60 credits minimum beyond the master's degree)

1. **General Requirements:**

- a. General written examination (dissertation proposal, from master's qualifying papers)
- b. General oral examination (defense of the dissertation proposal)
- c. Dissertation
- d. Final examination

Master's papers constitute the written portion of the general examination.

2. **Course Requirement:** Minimum 12 graduate-level courses in philosophy (six of which are seminars) with a minimum 3.0 grade in each (courses and seminars taken to fulfill MA requirements may count toward this total).
3. **Proseminar and Literature Review:** PHIL500, proseminar, autumn and spring of third year; literature review, autumn quarter
4. **Language Requirement:** Determined by the student's Supervisory Committee. No departmental language requirement. However, in writing a dissertation a student must be able to deal with primary sources in the original language. Also, for particular areas of study, language courses or demonstration of proficiency may be required.
5. **Satisfactory Progress:** Determined by the student's Supervisory Committee.

Financial Aid

Graduate students are admitted only if they can be offered some financial support. Typically students receive teaching assistantships, and the Graduate School makes some research assistantships available on a competitive basis. Funding packages are typically for five years and require satisfactory academic progress.

Graduate Certificate in Ethics

Facilitates graduate research in ethics. Designed to provide non-philosophy graduate or professional students the knowledge and skills necessary for integrating ethics and ethics scholarship into their chosen field.

Open only to students already enrolled in other graduate degree programs at the University of Washington.

Certificate Requirements

15 credits

1. Selection of a faculty adviser from the Program on Values in Society (POV) core faculty
2. One core course
3. VALUES 511 or VALUES 512 (5 credits)

4. Two other approved graduate level values-laden courses specific to the student's field of study (6-8 credits). Elective courses from the student's home department may be eligible (maximum 6 credits of overlap, but no core courses overlapped).
5. VALUES 513 (2 credits)

Physics

Department Overview

C121 Physics-Astronomy Building

Physics is the study of the fundamental structure of matter and the interaction of its constituents, with the goal of providing a quantitative description of nature based on a limited number of physical principles.

Undergraduate Program

Adviser

C139A Physics-Astronomy, Box 351560
(206) 543-2772

The Department of Physics offers the following programs of study:

- The Bachelor of Science degree with a major in physics
- A minor in physics

Bachelor of Science

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 227. (Note: MATH 134, MATH 135, and MATH 136 can be used in place of MATH 124, MATH 125, MATH 126, and MATH 308.)

These physics and mathematics courses are required prerequisites for junior-level work in physics, not only at the UW, but also at most colleges and universities in the United States. Students who do not complete them during the first two years in college either need to take more than four years to earn a degree or be limited to a minimal course of study for graduation in four years.

Admission Requirements

1. Completion of PHYS 121, PHYS 122, PHYS 123 and either MATH 124, MATH 125, MATH 126 or MATH 134, MATH 135.
2. Enrollment in minimum one physics lecture course with course number higher than 220 during the application quarter. Completion of minimum one physics lecture course (any course number, either at UW or elsewhere) within the two quarters prior to application.
3. Standard admission is twice a year. Application deadlines: third Friday of autumn quarter and third Friday of spring quarter.

Winter quarter transfer admission: Students transferring to the UW in autumn or winter quarter may also apply the third Friday of winter quarter.

4. Meeting minimum requirements does not guarantee admission. Admission is capacity constrained, based on holistic review of a student's record as follows:
 - a. Personal statement which should discuss reasons for choosing a physics major and strategies for success in the major, including discussion of lessons learned from previous successes and difficulties and plans for accessing support in the major. The statement

should also address how the chosen degree option (applied, comprehensive, biophysics, teaching) and submitted graduation plan (see 4.c.) are suited to life and career goals. In cases of extenuating circumstances, a personal statement may also include a petition for waiver of one of the stated minimum requirements.

- b. Academic performance as measured by GPA; grades in courses required for admission; difficulty of other courses completed; frequency of incompletes, repeated courses, and withdrawals; relevant work and life experience.
- c. Graduation plan completed in MyPlan and printed to a pdf file, submitted with the application. Preapproval of graduation plan by Physics Student Services is recommended; incoming majors must have their Graduation Plan approved no later than six weeks after acceptance into the major to avoid having a hold placed on registration.

See department website for a description of degree requirements for the four physics degree options, sample graduation plans, and suggestions of topics to include in a personal statement. Successful applicants typically have over a minimum 2.60 cumulative GPA in physics and math courses, especially those taken recently.

Major Requirements

Minimum 89-106 credits, including the following:

1. *Physics core courses (37 credits)*: PHYS 121, PHYS 122, PHYS 123, PHYS 224, PHYS 225, PHYS 227, PHYS 294, PHYS 321, PHYS 322, PHYS 334
2. *Mathematics core courses (18-19 credits from one of the following options)*:
 - a. MATH 124, MATH 125, MATH 126, and one course from MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - b. MATH 134, MATH 135, MATH 136 and one course from MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
3. One of the four options shown below (34-56 credits): any course used to satisfy departmental degree requirements can be used only once in any option listed below.
 - a. *Comprehensive Physics Option (38-43 credits)*:
 - i. 20-22 credits from PHYS 226; PHYS 228; PHYS 324; minimum three courses from PHYS 323, PHYS 325, PHYS 328, PHYS 329, ASTR 321, or ASTR 322
 - ii. One additional mathematics course from the core list (3-4 credits): MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iii. *Advanced laboratory (6-8 credits)*: two courses from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481
 - iv. *Upper division lecture electives (6 credits)*: See adviser for approved list of electives.
 - v. *Undergraduate research*: 3 credits from any combination of PHYS 485, PHYS 486, PHYS 487, PHYS 494, PHYS 495, PHYS 496, PHYS 499, ASTR 481 or ASTR 499. (ASTR 481 may count as laboratory or research).
 - b. *Applied Physics Option (34-39 credits)*:
 - i. PHYS 231; one course from PHYS 226, PHYS 323, PHYS 324, PHYS 329; and AMATH 301 (10-11 credits)

- ii. Two additional mathematical courses (6-8 credits) from PHYS 228, MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iii. *Advanced laboratory (6-8 credits)*: two courses from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481
 - iv. *Electives (9 credits)*: See adviser for approved list of electives.
 - v. *Undergraduate research*: 3 credits from any combination of PHYS 485, PHYS 486, PHYS 487, PHYS 494, PHYS 495, PHYS 496, PHYS 499, ASTR 481 or ASTR 499. (ASTR 481 may count as laboratory or research).
- c. *Biophysics Option (51-56 credits)*:
- i. PHYS 228, PHYS 324, PHYS 328, PHYS 429; one course from PHYS 226, PHYS 323, PHYS 325, PHYS 329 (17-18 credits)
 - ii. *Chemistry (15 credits)*: CHEM 142, CHEM 144, or CHEM 145; CHEM 152, CHEM 154, or CHEM 155; and CHEM 162, CHEM 164, or CHEM 165
 - iii. *Biology (10 credits)*: BIOL 180 and BIOL 200
 - iv. *Additional chemistry and biology (6-10 credits)*: two courses from CHEM 223 or CHEM 237, CHEM 224 or CHEM 238, CHEM 428, CHEM 452 or CHEM 456, CHEM 453 or CHEM 457, BIOL 220, BIOL 340, BIOL 350, BIOL 355, BIOL 401, BIOL 427, BIOL 467, BIOC 405, or BIOC 440
 - v. *Undergraduate research*: 3 credits from any combination of PHYS 499, BIOC 499, BIOL 499, CHEM 499, GENOME 499, MICROM 499, N BIO 499, P BIO 499, or BIOEN 499
- d. *Teacher Preparation Option (38-42 credits)*:
- i. 14-15 credits from PHYS 226, PHYS 228, PHYS 324; one course from PHYS 323, PHYS 328, PHYS 329
 - ii. *Physics by inquiry (15 credits)*: PHYS 407, PHYS 408, and PHYS 409
 - iii. One additional mathematics course from the core list (3-4 credits): MATH 307/AMATH 351, MATH 308/AMATH 352, MATH 309/AMATH 353, MATH 324, MATH 326, or AMATH 401
 - iv. *Advanced laboratory (3-5 credits)*: One course from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, PHYS 434, and either ASTR 480 or ASTR 481
 - v. *Teaching practicum (3 credits)*: PHYS 499, working on a project that involves teaching

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Minor Requirements: 30-36 physics credits (in addition to 15 credits of MATH 124, MATH 125, and MATH 126) as follows:

1. *Core courses*: PHYS 121, PHYS 122, PHYS 123, PHYS 224, and PHYS 225
2. One of the following options:
 - a. *Physics Education*: PHYS 407, PHYS 408, PHYS 409 (total 36 physics credits)
 - b. *Experimental Physics*: PHYS 231, PHYS 334, and one course from PHYS 331, PHYS 335, PHYS 431, PHYS 432, PHYS 433, or PHYS 434 (total 30 physics credits)
 - c. *Mathematical Physics*: PHYS 227, PHYS 228 (MATH 308 required), and one course from PHYS 321 or PHYS 324 (MATH 324 required) (total 30 physics credits)
3. Minimum grade of 2.0 required for each physics course counted toward the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The program is one of the largest in the nation, with approximately 80-100 majors graduating every year. Graduates may join the work force in a variety of technical occupations where analytical, computational, and problem-solving skills are highly valued, both in government and the private sector. They may also continue with further studies in physics or in other fields (such as astronomy, medicine, law, business, biology, or engineering).
- *Instructional and Research Facilities*: The Physics and Astronomy Departments share a modern building which contains excellent instructional and research facilities. Undergraduate students are strongly encouraged to participate in ongoing research in the department.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Most undergraduate physics majors participate in a research experience, either on campus or off. Research internships in physics and related departments are available for both pay and course credit. Many students participate in national programs, typically the summer after their junior year. The department also maintains an exchange program with Universitat Justus-Leibig in Geissen, Germany.
- *Department Scholarships*: Select scholarships available every spring upon nomination by an instructor.
- *Student Organizations/Associations*: Society of Physics Students, www.uwsps.org; Career Development Organization for Physicists and Astronomers, students.washington.edu/cdophys/CAREER/

Of Special Note:

- One year of high school physics is strongly recommended before taking PHYS 121.

Graduate Program

Graduate Program Coordinator
C139 B Physics-Astronomy, Box 351560
(206) 543-2488

The department offers studies leading to the degrees of master of science and doctor of philosophy. The department awards an average of twenty PhD and thirty MS degrees annually.

Research Facilities

Areas of research include atomic physics, astrophysics, condensed-matter physics, biological physics, elementary-particle physics, nuclear physics, and physics education. Students may also do research in physics with appropriate faculty in other departments such as Aeronautics and Astronautics, Applied Mathematics, Astronomy, Biochemistry, Bioengineering, Chemistry, Earth and Space Sciences, Electrical Engineering, Materials Science and Engineering, or Physiology and Biophysics.

Experimental and theoretical research in atomic, biological, statistical, and condensed-matter physics is concentrated on nano-scale systems, topological phenomena, quantum matter, and fundamental symmetries. On-campus laboratories include laser, ion trap, and radio frequency techniques, low-temperature, scanning-probe microscopy, x-ray and light scattering, and surface-physics equipment. Off-campus facilities include synchrotron x-ray radiation and neutron sources in the United States and abroad. Research in the Center for Experimental Nuclear Physics and Astrophysics (CENPA) is concentrated on the measurement of fundamental physical properties, including experiments on neutrinos, axions, muons, light nuclei, and gravity. Facilities include the on-campus accelerator of CENPA, as well as major facilities in the United States, Canada, and Europe.

High-energy and particle astrophysics groups are engaged in quantum field theory, phenomenology, cosmology, and in experimental research at the European Center for Nuclear Research (CERN) in Geneva, Fermilab in Illinois, and LIGO.

The Institute for Nuclear Theory, a national facility closely associated with the department, offers a unique opportunity for students to pursue research.

Department facilities are housed in the Physics-Astronomy Building and the Center for Experimental Nuclear Physics and Astrophysics (CENPA).

Master of Science (Applications of Physics)

Admission Requirements

Designed for students currently employed and whose background is in physical science, engineering, mathematics, or computer science. Admission is based on course grades in physics and related fields, adequacy of preparation in physics, and interest in areas of instruction offered in the physics department. Entering students should have a BS degree in physical science, engineering, mathematics, or computer science. The program is part time and does not support student (F) visa applications. Classes are offered evenings; some classes may be attended online.

Degree Requirements

36 credits

1. Core courses: PHYS 441, PHYS 541, and PHYS 543, and appropriate electives.
2. Independent-study project, which may be carried out at the University or at the student's place of employment. A written report, as well as an oral presentation, is required.
3. PHYS 600 (at least 3 credits) taken while completing the project noted in 2, above.
4. 36 credits at the 400 level or above, with at least 18 credits at the 500 level or above. At least 18 credits must be from numerically graded courses. No thesis required.

Master of Science, Doctor of Philosophy

Admission Requirements

1. Undergraduate preparation to include upper-division courses in mechanics; electricity and magnetism; statistical physics and thermodynamics; modern physics, including an introduction to quantum mechanics; and advanced laboratory work. Preparation in mathematics to include vector analysis, complex variables, ordinary differential equations, Fourier analysis, boundary-value problems, and special functions.
2. Admission determined by the applicant's undergraduate program, undergraduate grades, GRE aptitude and advanced physics scores, letters of recommendation, and a statement of educational and professional objectives.

Master of Science

Degree Requirements

36 credits

1. Minimum 3 credits of PHYS 600
2. 36 credits of work at the 400 level or above, with at least 18 credits at the 500 level or above. At least 18 credits from numerically graded courses. A qualifying examination is required. No thesis is required.

Doctor of Philosophy

Minimum 90 credits

Degree Requirements

1. Master's degree, with a background in physics equivalent to that contained in the following courses: PHYS 505, PHYS 513, PHYS 514, PHYS 515, PHYS 517, PHYS 518, PHYS 519, PHYS 520, PHYS 525, and PHYS 528
2. Specialized courses appropriate to each student's interests; and two advanced elective Physics Department courses outside the student's area of research.
3. Written qualifying examination (typically completed before or during the second year), oral general examination for admission to candidacy, and oral final examination.
4. Teaching experience. Courses in teaching techniques in physics, PHYS 501 through PHYS 503, are required of students holding teaching assistantships.

Financial Aid

Most graduate students are supported by fellowships and assistantships. Applications for the PhD program are automatically considered for these fellowships and assistantships.

Political Science

Department Overview

101 Gowen

Political science, broadly conceived, is the study of governments and other political actors, including their origins and foundations, interactions with groups and individuals, and interactions with nations. Within this larger framework political scientists study power, authority, conflict, economic relationships, culture, laws, policy, values, ethics, justice, equality, rights, legitimacy, and representation, to list only a few. Using these and other concepts, they analyze the political impacts of social issues such as war, peace, poverty, crime, education, the environment, race, gender, and globalization. Modes of inquiry are highly interdisciplinary.

Undergraduate Program

Adviser

215 Smith, Box 353530

(206) 543-1824

polsadvc@uw.edu

The Department of Political Science offers the following programs of study:

- The Bachelor of Arts degree with a major in political science and options in political economy and in international security
- A minor in political science

Coursework in the discipline covers four major fields of political science: American politics, comparative politics, international relations, and political theory. In addition to major requirements, students may pursue faculty-supervised internships, research, independent study projects and an optional senior thesis.

Bachelor of Arts

Suggested First- and Second-Year College Courses: Courses that develop writing skills and breadth of knowledge. Introductory statistics.

Department Admission Requirements

1. Minimum 2.00 cumulative GPA
2. Three introductory political science courses (15 credits) with a minimum 2.0 grade in each from the following: POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, POL S 205
3. Students are admitted all quarters. Applications are due the second Friday of each quarter. Applications and additional information available from advisers in 215 Smith and on the Political Science Department website.
4. Applicants who meet the stated requirements are admitted in time to register for the following quarter as majors.

Major Requirements

50 credits in political science as follows:

1. *Introductory Requirement (15 credits)*: three courses from POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, POL S 205
2. *Field Requirement (15 credits)*: one course numbered POL S 210 or above in three different fields of political science chosen from political theory, comparative politics, international relations, American politics, and research methods, with a minimum grade of 2.0 in each
3. *Electives (20 credits)*: Four courses numbered POL S 210 or above with a minimum 2.0 grade in each
4. *GPA Requirement*: Minimum 2.25 cumulative GPA in political science courses at graduation and minimum 2.0 grade in each political science course taken to fulfill requirements for the major
5. Transfer and postbaccalaureate students must meet all the above requirements and complete a minimum of 10 political science credits numbered 210 or above through the UW.

Political Economy: This interdisciplinary option is a specialized program that combines study of political science and economics. Students who wish to pursue this option should consult a political science adviser. A list of recommended coursework is available.

International Security: Recommended to students interested in an in-depth study of international security. Concentrates on the relationship between politics and security, and specifically on the causes of war and the use and control of force, threats, promises, and the tactics, techniques, and ethics of violence. Teaches theories to address security issues and provides historical context for understanding contemporary security issues. Option coursework is completed in addition to the requirements of the major, however, up to 25 credits from the option may also fulfill requirements for the political science major. A list of recommended coursework is available.

45 credits as follows:

1. POL S 203, POL S 321, POL S 407 (15 credits)
2. 30 additional credits from an approved list of courses maintained in the department. At least 15 elective credits must be at the 300 or 400 level.

Minor

Minor Requirements: 30 political science credits as follows:

1. One introductory course chosen from POL S 101, POL S 201, POL S 202, POL S 203, POL S 204, or POL S 205
2. 25 elective credits numbered POL S 210 and above. (Internship and independent study courses such as POL S 496, POL S 498, POL S 499 do not count toward the minor)
3. Minimum 2.00 cumulative GPA for courses applied to the minor
4. Minimum 15 credits for the minor completed in residence through the UW

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The study of political science arms students with substantive knowledge of the discipline, including its concepts and theories. It also prepares them to be knowledgeable and active citizens. Through their study, students develop critical thinking, analytical, research, writing, interpersonal, and communication skills.

Graduates of political science pursue careers in many fields, including government (federal, state, and local), business, trade, public service (including non-governmental and international organizations), law, journalism, and teaching.

- *Instructional and Research Facilities:*

- *Political Science Laboratory:* This facility with 25 computer stations, functions as a computer classroom and also as a general laboratory.
- *Center for Social Science Computation and Research* maintains an extensive data archive and offers many statistical and software consulting services.
- *Political Science/Jackson School/Law, Societies, and Justice/Comparative History of Ideas Writing Center:* The Writing Center is staffed by peer tutors and provides free help to students seeking feedback about their writing. The Writing Center director works with instructors to design workshops to help students with assignments.

The Department of Political Science is affiliated with a number of research centers:

- *The Center for American Politics and Public Policy* is a focal point for the study of politics and policy processes in the United States. Research relates to public policy processes, including issues of agenda setting, decision making, implementation, quantitative and qualitative measures of policy change, and the role of ideas and dialogue in policy change. Policy arenas include education reform, health care, environmental regulation, and building code enforcement.
- *The Center for Communication and Civic Engagement* investigates how innovative communication can improve the quality of civic life. The center's primary focus is to understand how new information technologies can supplement more traditional forms of communication to facilitate civic engagement.
- *The University of Washington's Institute for the Study of Ethnicity, Race, and Sexuality* is an interdisciplinary research center dedicated to bringing the tools of contemporary social science inquiry to the careful examination of issues of social, economic, and political exclusion and disadvantage of marginalized minority populations in the United States, and their potential solutions.
- *Harry Bridges Center for Labor Studies* promotes the study of labor as a central concern in higher education and focuses on labor's contribution to society—locally, nationally, and worldwide. The center supports research, teaching, and community outreach.
- *The Comparative Law and Society Studies Center* is committed to promoting interdisciplinary research and teaching as well as community service regarding law, justice, and human rights throughout the world.
- *European Union Center* promotes the study of the European Union and trans-Atlantic relations.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The department offers three internship programs that range from part-time to full-time programs. Students may work in local agencies (POL S 496), in the state legislature (POL S 497), and in Washington, D.C. (POL S 498).

Listings of local internships and applications are available in 215 Smith.

[The Washington State Legislative Internship Program](#) is a winter-quarter program in Olympia and is open to students from all majors. Students earn 15 credits for the internship and attend a class taught by a political science faculty member. Applications are available from departmental advisers in 215 Smith and are due by the end of October.

Students in all majors may apply for The [Washington Center](#), a comprehensive internship program that places students in Washington, D.C. Students earn 15 credits for the internship. Additional information is available from departmental advisers in 215 Smith.

- *Department Scholarships:*
 - *Hugh Bone Scholarship:* The endowed Hugh A. Bone Scholarship was established by the Department of Political Science in 1986 to recognize Professor Bone, a former department chair, and to continue his commitment to a "participative citizenry." Professor Bone founded the Washington State Legislative Internship Program and many students who studied with him continue active political lives because of his stewardship and interest. The scholarship was established in his name to help students with financial need study and intern away from the UW-Seattle campus.
 - *Agnes C. Nelson Memorial Scholarship:* The departments of Political Science and Economics make annual full-tuition awards to students who demonstrate interest in the interrelationship of politics and economics and who meet financial eligibility requirements. To apply for the scholarship, students must have completed a minimum 25 credits in political science and economics with at least 10 credits in each discipline. Deadlines are posted early in spring quarter.
- *Department Awards*
 - *The Robert A. Dahl Award:* The Department of Political Science recognizes an outstanding graduating senior with the Robert A. Dahl Award. To be eligible for consideration, a student must demonstrate scholarship excellence as well as interest in political science as a discipline.
 - *Daniel C. Lev Award:* The Department of Political Science created this award to recognize the contribution of Professor Dan Lev to the department's Honors program. The award recognizes an exceptional senior Honors thesis.
 - *Sharon S. Redeker Award for Public Service:* The Department of Political Science created this award in honor of Sharon Redeker, who served for many years as the department's Director of Academic Services. This award recognizes the exceptional public service of a political science senior while at the UW.
- *Student Organizations/Associations:* Pi Sigma Alpha (Political Science Honor Society), Phi Alpha Delta (pre-law fraternity). See adviser for details.

Graduate Program

Graduate Program Coordinator
215 Smith, Box 353530
(206) 543-1898
polsgrad@uw.edu

Graduate study integrates traditional education in political science's primary fields with other fields in the social sciences.

Areas of study include comparative politics, international relations, American politics, political theory, political economy, race and ethnic politics, public policy, public law, political communication, and methodology.

Graduate work is primarily preparation for the doctor of philosophy degree. The master of arts requirement serves as the initial stage of the PhD program; the department does not offer a terminal master of arts degree and admits students for the PhD program only.

Doctor of Philosophy

Admission Requirements

1. **Statement of Purpose** academic background, including any research experience and methodological skills; plans and goals for study, including intellectual interests and areas of specialization; and reasons for interest in studying at the UW.
2. **Writing sample:** A paper (not to exceed 20 pages) or excerpts from a larger work (e.g., honors thesis) demonstrating ability to write critically and analytically.
3. **Resume**
4. **Letters of recommendation**
5. **Transcripts**
6. **Test scores:** GRE General Test scores sent directly by the Educational Testing Service (ETS). English proficiency scores for international students, sent directly by the Educational Testing Service (ETS)-

Degree Requirements

Minimum 92 credits

1. *General Fields:* One from American politics, comparative politics, international relations, and political theory. At least one additional core course in another general field. Either a second general field or a specialized field (public law, political communication, political economy, political methodology, public policy processes, or minority and race politics).
2. *Political Research Methods:* Minimum level of competence. (Foreign language is not required for the PhD, unless the student selects a field(s) where competence in a language is beneficial.)
3. *MA Degree (40 credits):* Usually completed within the first two years of study.
4. *Additional Field:* A third field which can be another general field and/or one or more of the specialized fields listed above, and/or at most one non-designated field (from either another academic discipline or individually defined by the student).
5. *PhD Degree:* Normally four years beyond the MA, including written and oral examinations in the three fields; general examination (dissertation prospectus); dissertation (minimum 27 credits).

Research Facilities

Access to computing facilities and extensive data holdings is available. The department is also affiliated with several research centers, including the Center for American Politics and Public Policy, the Center for Communication and Civic Engagement, the Center for Statistics and Social Sciences, the Comparative Law and Society Studies Center, the Harry Bridges Labor Studies Center, the Center for Comparative and Historical Analysis of Organizations and States, and the UW's Institute for the Study of Ethnicity, Race, and Sexuality. The University is also a member of the Inter-University Consortium for Political and Social Research.

Financial Aid

Fellowships, research assistantships, and teaching assistantships are available to qualified graduate students, including those in their first year of study. Provided they make satisfactory progress, students are eligible for departmental financial assistance for five consecutive years.

Psychology

Department Overview

119 Guthrie

Psychology involves the scientific study of behavior and its causes and the understanding of human and animal behavior in a variety of settings. Psychology is studied both as a natural science, which stresses physical and biological causes of behavior, and as a social science, which stresses the effects of the social setting on human and animal behavior. Major areas of emphasis are human cognition and perception, animal behavior, behavioral neuroscience, developmental, social and personality, and clinical psychology.

Undergraduate Program

Adviser

119 Guthrie, Box 351525

(206) 543-2698

psyadvis@uw.edu

The Department of Psychology offers the following programs of study:

- The Bachelor of Science degree with a major in psychology
- The Bachelor of Arts degree with a major in psychology

The Bachelor of Science program prepares students for doctoral programs in psychology, leading to careers in teaching, research, or clinical psychology. The program emphasizes laboratory/research experience and statistics.

The Bachelor of Arts program provides a general background in psychology for students preparing for master's-level graduate programs or professional schools, seeking employment at the baccalaureate level, or wanting to apply the principles of psychology in other disciplines.

The department does not have formal programs in educational, school, or counseling psychology; engineering psychology; or industrial psychology.

Bachelor of Science

Suggested First-Year College Courses: MATH 120 and MATH 124. PSYCH 101. Any sociology or anthropology course. Students are encouraged to begin completion of general education requirements.

Suggested Second-Year College Courses: PSYCH 202 and PSYCH 209 should be completed as soon as possible during this year; BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220. Students intending to take animal behavior courses in the Psychology Department should plan to fulfill the biology requirement with either BIOL 161-BIOL 162, BIOL 180, or BIOL 200. Continue working toward completion of general education requirements, including foreign language. The foreign language requirement should, ideally, be completed within the first two years of college.

Department Admission Requirements

Students apply to the Department of Psychology under the same admission requirements, regardless of the degree they wish to pursue.

1. Minimum 2.00 cumulative UW GPA
2. Completion of one of the following math courses with a minimum 2.0 grade: MATH 111, MATH 112, MATH 120, or MATH 124.
3. Completion of the following psychology courses with a minimum 2.0 grade in each course and a cumulative 2.50 GPA in the three courses: PSYCH 101, PSYCH 202, and PSYCH 209.
4. Admission is competitive based on the following criteria:
 - a. Preparation for a major in psychology as indicated by the grades earned in courses required for admission
 - b. GPA, with an emphasis on grades earned in psychology courses
 - c. Other evidence of a commitment to becoming a psychology major
 - d. Personal statement reflecting an interest in and commitment to becoming a psychology major
 - e. Copies of unofficial transcripts from all schools attended (UW and transfer).

Meeting the above criteria does not guarantee admission to the department.

5. The application deadline is the first Friday of autumn, winter, and spring quarters; no applications are accepted summer quarter. Applications and additional information are available in 119A Guthrie.

Major Requirements

84-86 credits as follows:

1. PSYCH 101, PSYCH 202, PSYCH 209 (with a grade of 2.5 or higher), PSYCH 317 and PSYCH 318
2. One laboratory course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
3. One course from PSYCH 300, PSYCH 302, PSYCH 333, or PSYCH 355
4. One course from PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 345, or PSYCH 357
5. One additional course from PSYCH 300, PSYCH 302, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, PSYCH 355, or PSYCH 357
6. Three additional graded upper-division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
7. PSYCH 499 (3 credits)
8. PSYCH 496, PSYCH 497, or PSYCH 498 (3 credits) or 3 additional credits of PSYCH 499
9. Up to 6 credits in 200- to 400-level electives to make a minimum total of 66 psychology credits
10. (Students may not use PSYCH 200 as an elective if PSYCH 300 is used to fulfill major requirements; or use PSYCH 203 as an elective if PSYCH 303 is used to fulfill major requirements; or use PSYCH 206 as an elective if PSYCH 306 is used to fulfill major requirements; or use PSYCH 245 as an elective if PSYCH 345 is used to fulfill major requirements.)
11. *Courses in related fields:*

- a. MATH 120 and MATH 124. Students may satisfy this requirement by testing out of MATH 124 or MATH 144
 - b. One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
 - c. One of the following philosophy courses: PHIL 120, PHIL 160
 - d. One social science course (3 to 5 credits) from anthropology or sociology
12. Cumulative minimum 2.50 GPA in all PSYCH courses applied toward the degree (UW and transfer), with a minimum 2.0 grade in each course presented for the major. Note that a grade of 2.5 or higher is required in PSYCH 209 in order for students to progress to the PSYCH 317/PSYCH 318 statistics series.
13. Transfer students must meet all of the above requirements and are required to complete at least 15 graded credits in psychology at the 300 and 400 level through the UW.

Bachelor of Arts

Suggested First-Year College Courses: MATH 111, MATH 112, MATH 120, or MATH 124. PSYCH 101. Any sociology or anthropology course. Students are encouraged to begin completion of general education requirements.

Suggested Second-Year College Courses: PSYCH 202 and 209 should be completed as soon as possible during this year. BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220. Students intending to take animal behavior courses in the Psychology Department should plan to fulfill the biology requirement with either BIOL 161-BIOL 162, BIOL 180, or BIOL 200. Continue working toward completion of general education requirements, including foreign language. The foreign language requirement should, ideally, be completed within the first two years of college.

Major Requirements

66 to 68 credits as follows:

1. PSYCH 101, PSYCH 202, PSYCH 209, PSYCH 315 (or PSYCH 317 and PSYCH 318)
2. One lab course from PSYCH 330, PSYCH 331, PSYCH 332, PSYCH 361, PSYCH 417, PSYCH 418, or PSYCH 419
3. One course from PSYCH 300, PSYCH 302, PSYCH 333, or PSYCH 355
4. One course from PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 345, or PSYCH 357
5. One additional course from PSYCH 300, PSYCH 302, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, PSYCH 355, or PSYCH 357
6. Two additional graded upper division classes with at least one at the 400 level (cannot include PSYCH 491 through PSYCH 499)
7. 3 credits from the following list: PSYCH 494, PSYCH 496, PSYCH 497, PSYCH 498, PSYCH 499; or credit from an approved Study Abroad program
8. Up to 4 credits of PSYCH 200- to 400-level electives to make a minimum total of 53 psychology credits
9. (Students may not use PSYCH 200 as an elective if PSYCH 300 is used to fulfill major requirements; or use PSYCH 203 as an elective if PSYCH 303 is used to fulfill major requirements; or use PSYCH 206 as an elective if PSYCH 306 is used to fulfill major requirements; or use PSYCH 245 as an elective if PSYCH 345 is used to fulfill major requirements.)
10. *Courses in related fields:*

- a. One MATH course from MATH 111, MATH 112, MATH 120, MATH 124, or MATH 144. Students may satisfy this requirement by testing out of any of the specified classes.
 - b. One biological science course from BIOL 118, BIOL 161-BIOL 162, BIOL 180, BIOL 200, or BIOL 220
 - c. One social science course (3 to 5 credits) from anthropology or sociology
11. Minimum 2.50 cumulative GPA in all psychology courses applied toward the degree (UW and transfer), with a minimum 2.0 grade in each course presented for the major
12. Transfer students must meet all the above requirements and must to complete at least 15 graded credits in psychology at the 300 and 400 level through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students understand and apply scientific methods and principles, receive an excellent preparation in the theoretical explanations of human and animal behavior, and understand the introductory concepts underlying the biological basis of behavior.
- *Instructional and Research Facilities:* The psychology faculty have extensive research facilities and research laboratories on the UW campus and nearby buildings.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The Department of Psychology offers academic credit for approved fieldwork experience. The advising office maintains internship listings which are updated regularly.
- *Department Scholarships:* none offered
- *Student Organizations/Associations:* Psi Chi (national honors society for undergraduate psychology students).

Of Special Note: A student may earn either a Bachelor of Science or a Bachelor of Arts degree in psychology, but not both.

Graduate Program

Graduate Program Adviser
 127 Guthrie, Box 351525
 (206) 543-8687
psygrad@uw.edu

Graduate work in psychology is organized primarily as preparation for the doctor of philosophy degree. The optional master of science degree is taken by some doctoral students in the course of their work toward the doctorate.

For graduate instruction, the department is organized into eight major areas of study: adult/general clinical, animal behavior, behavioral neuroscience, child clinical, cognition & perception, developmental, quantitative, and social psychology & personality. Specialization groups also exist in the sub-areas of diversity science and quantitative.

The programs in adult clinical and child clinical psychology are accredited by the American Psychological Association and provide scientific and professional training.

Master of Science (Optional)

A master's-degree-only program is not available. Doctoral students have the option of obtaining a master's degree while working toward the PhD.

Doctor of Philosophy

Admission Requirements

1. Undergraduate degree in psychology desirable, but not required
2. Some preparation in biological, social, or quantitative sciences strongly advised
3. Academic and research backgrounds
4. GRE scores
5. Written evaluations submitted by former professors or supervisors
6. Application deadline: December 1, for admission the following autumn quarter.

Degree Requirements

Minimum 90 credits

1. Coursework
 - a. Orientation: PSYCH 500A
 - b. Proseminar in psychology for the first three quarters: PSYCH 500B
 - c. Psychology colloquium for the first three quarters: PSYCH 550
 - d. Statistics and general methodology: PSYCH 522, PSYCH 523, PSYCH 524, PSYCH 525. Minimum 2.7 grade for each course.
 - e. Dissertation: PSYCH 800 (27 minimum)
 - f. Completion of individualized training program (section 2, below) or clinical area requirements (section 3, below)
2. Individualized Training Program in Non-Clinical Areas
 - a. One quantitative methods/statistics course beyond those indicated in 1.d., above, or one methodology course directly relevant to the student's research focus
 - b. Three core concepts courses
 - c. Three advanced or focused courses providing specialized research training
 - d. Three quarters of seminars, brown bags, or journal clubs. Requires attendance throughout training.

Courses may be taken outside the Department of Psychology, but students are strongly urged to utilize department-based options when available.

All coursework in these areas should be taken for a numerical grade, unless the course itself is offered on a credit/no-credit only (CR/NC-only) basis. At least half a student's program must be in courses numbered 500 or above.

3. Clinical Area Program Requirements

- a. Courses: PSYCH 517, PSYCH 531, PSYCH 560 (2-30), PSYCH 580, PSYCH 586, PSYCH 587, PSYCH 588, PSYCH 589 (8 - second-year students register A, W, Sp, and S); PSYCH 591 (1 - A, W, first year), PSYCH 593A (1-6 per quarter), PSYCH 593B (1-6 per quarter)
- b. One-year predoctoral internship
- c. Additional requirements for adult track students
 - i. PSYCH 511, PSYCH 518, PSYCH 519
 - ii. APA discipline - specific knowledge; one course each in biological, social, cognitive, developmental, and affective bases of behavior. History and systems satisfied by PSYCH 591
 - iii. PSYCH 571 or PSYCH 572
 - iv. Two courses in assessment: PSYCH 586 and either PSYCH 576 and PSYCH 590 or PSYCH 577
 - v. Minimum one internal (PSYCH 594) and one external (PSYCH 597) practicum
- d. Additional requirements for child track students
 - i. PSYCH 553, PSYCH 571, PSYCH 572, PSYCH 573, PSYCH 576, PSYCH 590
 - ii. PSYCH 594 (internal) or PSYCH 597 (external) - two practica
 - iii. Minimum one treatment seminar
 - iv. One additional quantitative methods course
 - v. APA discipline - specific knowledge: one course each in biological, social, cognitive, developmental, and affective bases of behavior. History and systems satisfied by PSYCH 591

Assistantships, Fellowships, or Traineeship Opportunities

Research and teaching assistantships are generally available. Traineeships and fellowships are also available.

Scandinavian Studies

Department Overview

318 Raitt

Scandinavian studies is concerned with the study of languages, literature, history, politics, and cultures of Denmark, Finland, Iceland, Norway, Sweden, and the Baltic States of Estonia, Latvia, and Lithuania. Emphasis is placed both on contemporary literature and culture and on historical development. Although most courses designed for majors are taught in the original languages, a broad spectrum of courses designed primarily for nonmajors is offered in English.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Scandinavian Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies.
- Minors in Danish, Finnish, Norwegian, Swedish, Baltic studies, and Scandinavian area studies.

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Danish, Estonian, Finnish, Latvian, Lithuanian, Norwegian, or Swedish.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

Danish, Finnish, Norwegian, or Swedish: 65 credits, of which 35 are in upper-division courses.

1. First- and second-year courses in target language (DAN/FINN/NORW/SWED) (30 credits)
2. Upper-division courses in target language (DAN/FINN/NORW/SWED). See department for list of approved courses. (10 credits)
3. Upper-division SCAND courses. See department for list of approved courses. (20 credits)
4. SCAND 498 (5 credits)

Scandinavian Area Studies: 65 credits, of which 35 are in upper-division courses.

1. First- and second-year courses in target Scandinavian or Baltic language (DAN/ESTO/FINN/LATV/LITH/NORW/SWED) (30 credits)
2. Upper-division SCAND courses. See department for list of approved courses. (30 credits)
3. SCAND 498 (5 credits)

Minor

Minor Requirements:

Baltic Studies: 35 credits

1. 15 credits of first year Estonian, Latvian, or Lithuanian
2. 20 credits of upper-division Scandinavian coursework, including at least one Baltic studies course from the following: SCAND 344, SCAND 345, SCAND 454, SCAND 455
3. Students entering the UW with language proficiency in Estonian, Latvian, or Lithuanian beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework

Danish, Finnish, Norwegian, or Swedish: 35 credits

1. 15 credits of first year Danish, Finnish, Norwegian, or Swedish
2. 15 credits of second year Danish, Finnish, Norwegian, or Swedish
3. 5 credits of upper-division Scandinavian coursework or 5 credits of an upper-division language course
4. Students entering the UW with language proficiency in Danish, Finnish, Norwegian, or Swedish beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Estonian, Latvian, Lithuanian: 35 credits

1. 15 credits of first year Estonian, Latvian, or Lithuanian
2. 15 credits of second year Estonian, Latvian, or Lithuanian
3. 5 credits of Baltic studies coursework (SCAND 344, SCAND 345, SCAND 454, or SCAND 455), or 5 credits of an upper-division language course.
4. Students entering the UW with language proficiency in Estonian, Latvian, or Lithuanian beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Scandinavian Area Studies: 35 credits

1. 15 credits of first year Danish, Finnish, Norwegian, or Swedish
2. 20 credits of upper-division Scandinavian coursework
3. Students entering the UW with language proficiency in Danish, Finnish, Norwegian, or Swedish beyond the first year of language training must take an additional 10 credits of upper-division language courses and must earn a minimum total of 25 credits in relevant coursework.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduates of the Department of Scandinavian Studies have an advanced level of proficiency in a Scandinavian, Fenno-Ugric, or Baltic language. They can talk about a wide range of concrete topics in a sustained conversation and have the ability to interpret and write about literary texts, non-fiction, and other media. Graduates also have knowledge of major figures, ideas, and institutions in Baltic or Nordic culture, history, literature, and politics that enriches a global perspective. They have the ability to research and synthesize source material in the target language and can produce a scholarly essay in English on a topic within their area of concentration.

Graduates of the Scandinavian studies program have the qualifications to embark on careers that require skills in the interpretation of information in various media, critical analysis, and effective communication and to continue in graduate programs and professional schools that value an international perspective.

- *Instructional and Research Facilities:* None
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships at museums or with Scandinavian businesses are possible. Exchange program opportunities with Aarhus, Copenhagen, Linköping, Stockholm, Uppsala, Bergen, Oslo, Åbo/Turku, and Helsinki also exist.
- *Department Scholarships:* The department offers several scholarships for students of Danish, Finnish, Norwegian, and Swedish.
- *Student Organizations/Associations:* the Danish Club, the Norwegian Club, the Swedish Club, and the Finnish Club.

Graduate Program

Graduate Program Coordinator
318 Raitt, Box 353420
(206) 543-0645
uwscand@uw.edu

The department offers graduate programs of study leading to the master of arts and doctor of philosophy degrees. For the MA degree, the emphasis may be on Old Icelandic (Old Norse), Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies. PhD degree aspirants must complete one quarter's study of Old Icelandic and concentrate their studies primarily within one of five areas: Danish language and literature, Finnish language and literature, Norwegian language and literature, Swedish language and literature, or Scandinavian area studies.

Programs in Scandinavian studies open several areas of inquiry: medieval, particularly Old Icelandic; modern, including the eighteenth century; Romanticism; the Modern Breakthrough; and the twentieth century. Attention is paid to the history of Scandinavian languages, prose, drama, and poetry. Opportunities for supervised study and specialization also exist in such areas as Scandinavian history, politics, mythology, folklore, and Baltic studies, as well as in comparative-literature study.

Master of Arts

Two options are available, each allowing the student to emphasize a target language while pursuing courses in Scandinavian languages, literature, or area studies.

1. Emphasis on Scandinavian languages and literature includes acquisition of a working knowledge of literary history, critical theory and text analysis, plus study of one secondary area.
2. Emphasis on Scandinavian area studies includes the study of Scandinavian folklore, mythology, history, politics, society, and Baltic studies, with an emphasis in one of these areas.

Admission Requirements

Bachelor of Arts degree with major in Danish, Finnish, Norwegian, Swedish, or Scandinavian area studies, or equivalent background, including advanced language proficiency in one Nordic language.

Degree Requirements

Minimum 40 credits

1. 40 credits in Scandinavian and related subjects approved by the department, including a minimum 20 credits in courses numbered 500 and above
2. Reading knowledge of French or German (or other non-Scandinavian language with faculty approval)
3. Written and oral examination
4. Thesis or non-thesis option
5. Candidates in Scandinavian languages and literature satisfy the department requirement in Old Icelandic

Doctor of Philosophy

Concentration primarily on one of two areas: Scandinavian languages and literature, or Scandinavian area studies, with emphasis on the student's target language. Major attention given to the history of Scandinavian languages, literary history and theory, and genre study. Opportunities for graduate work in such areas as Scandinavian history, politics, mythology, folklore, and Baltic studies exist.

Admission Requirements

Master of Arts degree with major in Scandinavian languages and literature or equivalent background.

Degree Requirements

Minimum 90 credits

1. 40 credits beyond the master's degree in Scandinavian languages and literature and related subjects approved by the department.
2. One quarter's study of Old Icelandic
3. Reading knowledge of French and German (other non-Scandinavian languages may be substituted with faculty approval)

4. General examination for admission to candidacy
5. 27 credits of SCAND 800 (dissertation) taken over at least three quarters
6. Final examination on the dissertation.

Financial Aid

Teaching assistantships in Danish, Finnish, Norwegian, Swedish, and Scandinavian area studies are usually available, as well as occasional research assistantships. If funding allows, a Baltic-language teaching assistantship may be available.

Slavic Languages and Literatures

Department Overview

Padelford A210

Slavic languages and literatures include the principal East European languages and literatures as well as Slavic linguistics. Languages include Bosnian/Croatian/Serbian, Bulgarian, Czech, Georgian, Polish, Romanian, Russian, Slovene, and Ukrainian.

Undergraduate Program

Adviser
Humanities Academic Services
A-002 Padelford, Box 354330
has-center@uw.edu

The Department of Slavic Languages and Literatures offers the following programs of study

- Bachelor of Arts degree with a major in Russian language, literature, and culture
- Bachelor of Arts degree with a major in Eastern European languages, literature, and culture
- Minors in Russian language, Russian literature/Slavic literatures, and Slavic languages

Bachelor of Arts

Suggested First- and Second-Year College Courses: First- and second-year Russian. Courses that develop writing skills.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

Russian Language, Literature, and Culture (Minimum 50 credits):

1. RUSS 322, RUSS 323
2. RUSS 301, RUSS 302, RUSS 303; or RUSS 350. Students may satisfy the language requirement with a placement test. A successful placement test does not count toward the 50-credit requirement.
3. RUSS 110
4. RUSS 340
5. Courses from an approved list of electives to reach 50 credits. See adviser for approved list. Maximum 5 credits at the 100-level.
6. Minimum 50% of credits applied to the major taken at the 300- or 400-level

7. Minimum 2.00 cumulative GPA for all courses presented for the major
8. Minimum 15 graded credits presented for this major must be completed through the UW

Eastern European Languages, Literature, and Culture (Minimum 50 credits):

1. Principal Eastern European language to include one of the following: BCMS 406, BCMS 410, BULGR 406, CZECH 406, POLSH 406, ROMN 406, SLVN 406, UKR 406
2. SLAVIC 101, SLAVIC 320, SLAVIC 370, SLAVIC 425 (20 credits)
3. Courses selected from preceding principal Eastern European language courses or from an approved list of electives to reach 50 credits. See adviser for approved list. Maximum 5 credits at the 100-level.
4. Minimum 50% of credits applied to the major taken at the 300- or 400-level
5. Minimum 2.0 grade in each course and minimum 2.50 cumulative GPA for all UW and transfer courses presented for this major.
6. Minimum 15 graded credits presented for this major must be completed through the UW.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Russian Language: Minimum 25 credits

1. RUSS 201, RUSS 202, RUSS 203. Students may satisfy the language requirement with a placement test. A successful placement test does not count toward the 25-credit requirement.
2. Courses from an approved list of electives to reach 25 credits. See adviser for approved list. Minimum 15 credits at the 300- or 400-level.
3. Minimum 2.00 cumulative GPA for all courses presented for the minor.
4. Minimum 15 graded credits presented for the minor must be completed through the UW.

Russian Literature/Slavic Literatures: Minimum 25 credits

1. RUSS 322, RUSS 323, and 15 credits from an approved list of electives. See adviser for approved list. Maximum 5 credits at the 100-level.
2. Minimum 2.0 grade in each course presented for the minor.
3. Minimum 15 graded credits presented for the minor must be completed through the UW.

Slavic Languages: Minimum 25 credits

1. Completion of second-year language of one of the principal Eastern European languages, chosen from the following: BCMS 404, BCMS 405, BCMS 406; BULGR 404, BULGR 405, BULGR 406; CZECH 404, CZECH 405, CZECH 406; POLSH 404, POLSH 405, POLSH 406; SLVN 404 and 406; or UKR 404, UKR 405, UKR 406. Students may satisfy the language requirement with a placement test. A successful placement test does not count toward the 25-credit requirement.

2. Courses from an approved list of electives to reach 25 credits. See adviser for approved list. Maximum 5 credits at the 100-level. Minimum 15 credits at the 300- or 400-level.
3. Minimum 2.00 cumulative GPA for all courses presented for the minor.
4. Minimum 15 graded credits presented for the minor must be completed through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduating majors in Slavic languages and literatures have a solid command of the Slavic language of focus, with speaking, listening, reading, writing, and translation skills at the intermediate high or advanced level. They have a broad knowledge of the history of the relevant country, and of its modern culture. Students have a general knowledge of major periods and literature and detailed knowledge of two or three particular authors or genres. Students have a good understanding of Slavic languages in general and the language of their specialization in particular, as well as knowledge of major issues in contemporary phonology, morphology, and syntax. All students develop good general analytical skills and the ability to explore and understand another culture through mastery of its language.
- *Instructional and Research Facilities:* UW Language Learning Center
- *Honors Options Available:* Dobro Slovo membership is available to qualifying students (see adviser for requirements). With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Undergraduates may present their current research at the annual Slavic Student Symposium each spring. Suzzallo Library holdings include some 400,000 titles in Slavic languages and in other languages on Slavic subjects. The library subscribes to all important periodicals and newspapers in Russian and other languages and has exceptionally strong holdings in rare and antiquarian Slavic titles on microfilm and microfiche.
- *Department Scholarships:* Vadim Pahn Scholarship for continued study of Russian in an intensive summer language program; Asante Outstanding Paper Prize for the best undergraduate paper written in a Slavic Department course; Polish Studies Scholarship awarded for study in Poland of the Polish language and culture.
- *Student Organizations/Associations:* Rodnoi Ugolok, the Russian student society; Ukrainian Students United, the Ukrainian student society.

Graduate Program

Graduate Program Coordinator
 A210C Padelford, Box 354335
 (206) 543-6848
slavadv@uw.edu

The department offers the master of arts and doctor of philosophy degrees in Russian and East European languages, literatures, and cultures. Languages include Czech, Old Church Slavonic, Polish, Russian, and Bosnian/Croatian/Serbian.

The master's degree takes four to six quarters and the doctoral degree three additional years. Duration of each program, however, depends on the student's preparation upon entrance to the program.

Master of Arts

Admission Requirements

1. Bachelor's degree in Russian or Slavic studies, to include four years of Slavic language.

2. Conditional admission may be granted to those with equivalent experience and basic coursework. Students with three years of language who enroll in fourth-year summer intensive Russian are considered.
3. Diagnostic language test to establish level of proficiency.

Degree Requirements

Minimum 54-55 credits

1. *Coursework*
 - a. Slavic core courses (9-10 credits): RUSS 501, RUSS 502, SLAVIC 501, and SLAVIC 518 or SLAVIC 519
 - b. One Slavic linguistics course from the following (5 credits): SLAVIC 425, SLAVIC 426, SLAVIC 481, SLAVIC 550, SLAVIC 551, SLAVIC 561, SLAVIC 562, SLAVIC 563, SLAVIC 570
 - c. One Slavic literature course from the following (5 credits): RUSS 520, RUSS 521, RUSS 522, RUSS 523, RUSS 526, RUSS 542, RUSS 543, RUSS 570, RUSS 577
 - d. Second Slavic language sequence from the following (15 credits):
 1. BCMS 401, BCMS 402, BCMS 403
 2. BULGR 401, BULGR 402, BULGR 403
 3. CZECH 401, CZECH 402, CZECH 403
 4. POLSH 401, POLSH 402, POLSH 403
 5. SLVN 401, SLVN 402, SLVN 404
 6. UKR 401, UKR 402, UKR 403
 - e. Electives (10 credits): See department website for list of approved courses
2. *Language Exam*: Language proficiency exam in Russian or another Slavic language.
3. *Cumulative Project*: Complete a cumulative project, chosen from the following options:
 - a. *Thesis Option*: 10 credits of MA Thesis (SLAVIC 700). Directed by a graduate faculty member.
 - b. *Exam Option*: Two comprehensive MA examinations, and 10 credits of Independent Study (SLAVIC 600).
 - c. *Project Option*: 10 credits of Independent Project (SLAVIC 600). Emphasizes research and creativity.

Doctor of Philosophy

Admission Requirements

MA or equivalent degree. Students are admitted on the basis of language skills (Slavic and English), general background in Slavic cultures, and a comprehensive statement of purpose.

Degree Requirements

Minimum 90 credits

1. Minimum 90 credits, including graduate credits taken toward the MA degree. See Supervisory Committee chair for course planning.
2. Minimum one full year residence through the UW
3. Comprehensive examinations to include language reading ability, written field examinations, and a general oral examination
4. Dissertation: three quarters of SLAVIC 800, followed by dissertation defense

Research Facilities

Suzzallo Library holdings include some 400,000 titles in Slavic languages and other languages on Slavic subjects. The library subscribes to important periodicals and newspapers in Russian and other languages and has exceptionally strong holdings in rare and antiquarian Slavic titles.

Assistantship Opportunities

The department offers teaching assistantships and several other types of fellowships.

Social Science (Evening Degree)

Program Overview

103 Lewis Hall

This multidisciplinary major includes upper-division social science courses selected by faculty of the College of Arts and Sciences. Students explore diverse political, social, environmental, gender, ethnic, and cultural perspectives in pursuit of their degrees. Coursework encourages greater understanding of issues, ideas, and themes in history and in the contemporary world. Analytical, research, and communication skills which can enhance a person's career opportunities are emphasized.

The coursework in social science is organized into three tracks:

- Social and Environmental Issues
- Law, Politics, and the Economy
- Gender, Ethnicity, and Culture

Social and Environmental Issues addresses key ecological, environmental, and social issues of tribal, peasant, industrial, and post-industrial societies from around the world. This track includes assessments of how technological, ecological, environmental, economic, cultural, and sociopolitical factors interact to affect the form and function of social, cultural, and political systems and institutions. It also features courses which explain classical and contemporary theories of anthropology, economics, geography, history, political science, and sociology bearing on these issues.

Law, Politics, and the Economy deals with the role and function of government, legal institutions, and economic and political processes, focusing on the complex interaction of political and economic forces which shape social life. Important areas of study include the character of political power and inequality, law and other sources of state legitimacy, international relations and the economic interdependence of nation-states, and the role of the state in maintaining social order and ameliorating conflict within and between societies.

Gender, Ethnicity, and Culture studies the cultural, geographic, historical, political, psychological, and social factors which define, shape, and change the various peoples of the United States. Racism, age and sex discrimination, the status and role of women, the treatment of immigrants, the emergence of classes and sociocultural interest groups, and aspects of religious movements and religious conflict are core topics. Courses assessing theories that examine and explain these issues are also essential.

Undergraduate Program

Adviser
103 Lewis Hall, Box 353921
(206) 543-6160
advisers@pce.uw.edu

Social Science offers the following program of study:

- The Bachelor of Arts degree with a major in social science

Bachelor of Arts

Suggested First- and Second-Year College Courses: English composition and additional writing. Introductory courses in Individuals & Societies (I&S); Visual, Literary, & Performing Arts (VLPA); and Natural World (NW). First-year foreign language study.

Program Admission Requirements

Students are not being admitted to this program for the 2014-2015 academic year.

1. [Admission](#) to the Evening Degree program (separate from admission to the UW day program)
2. 75 college quarter credits. Most students admitted have completed two years of lower-division college work.
3. See adviser for evaluation of applicable courses and credits.

Major Requirements

60 credits from the approved list of social science survey and track courses, as follows:

1. Survey courses (15 credits maximum). Normally at the 200 level
2. Primary track (25-35 credits from one track)
3. Track electives (10-20 credits). From courses in other than the primary track
4. Minimum 45 credits in 300- and 400-level courses, including at least 15 credits in 400-level courses.
5. Minimum 15 credits of 300- and 400-level social science courses that do not overlap with second-major requirements when double majoring in communication, English, and humanities
6. Minimum 25 credits completed in residence through the UW. For list of applicable courses, consult the adviser or go to www.evedegree.washington.edu/edp/majors/social_courses.asp

Additional Degree Requirements

1. English composition and additional writing (15 credits)
2. Quantitative and Symbolic Reasoning (Q/SR) (4-5 credits)
3. Foreign language -- through the third quarter of a single foreign language (0 to 15 credits, depending on placement)
4. Areas of Knowledge
 - a. Visual, Literary, & Performing Arts (VLPA) (20 credits)
 - b. Individuals & Societies (I&S) (20 credits)
 - c. Natural World (NW) (20 credits)
 - d. Some credits in I&S and/or VLPA may count also toward the major
5. Additional work to complete a minimum 180 credits overall.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Social science graduates are prepared to think critically and communicate effectively about the interplay among political, demographic, cultural, and social dynamics in considering domestic and international legal, media, environmental, gender, and ethnicity issues. They are able to examine complex issues in a contemporary and historical context. Majors develop the ability to analyze and evaluate issues from varied disciplinary perspectives. A greater respect for diversity and the ability to integrate knowledge when applying learning to the challenges of living in a complex global society results.

Specific skills acquired include writing, critical thinking, research, analytical thinking, integrative cognitive abilities, and effective public speaking.

Social science majors pursue widely varied careers, including labor relations, human resources, law, social work, broadcast journalism, corporate training, private enterprise, education, public administration, mental health, marketing, and non-profit management.

- *Instructional and Research Facilities:* Students use all university library resources and facilities corresponding with their individual research needs. In addition, each of the contributing social science academic departments offers individual resources to majors. Check with advisers for options.
- *Honors Options Available:* None offered.
- *Research, Internships, and Service Learning:* The program works collaboratively with students interested in pursuing independent study and research opportunities through academic departments that contribute to the major. Opportunities for work with the Carlson Center, Office for International Exchanges, and service learning are possible for all students.
- *Department Scholarships:* The Evening Degree program awards need-based financial aid assistance each year to students from a general fund. Two additional scholarship resources are the Rodney I. Straub Endowed Scholarship and the Nicole Snyder Dettmar Endowed Scholarship.
- *Student Organizations/Associations:* None

Sociology

Department Overview

211 Savery

The Department of Sociology has a strong commitment to research, publication, and training and is dedicated to providing a rich undergraduate program, both for students majoring in sociology and for others who wish to learn about human society and social relations.

Undergraduate Program

Adviser
203 Savery Hall, Box 353340
(206) 543-5396
asksoc@uw.edu

The Department of Sociology offers the following program of study

- The Bachelor of Arts degree with a major in sociology

Bachelor of Arts

Suggested First- and Second-Year College Courses: SOC 110, SOC 212, SOC 240, SOC 270, or any 200-level sociology courses. General coursework developing critical thinking or analytical skills.

Department Admission Requirements

1. Introductory courses (10 credits): SOC 300 (may be in progress at time of application). Any additional 5 credit sociology course.
2. Minimum 2.0 grade for completed course(s) required for admission. Minimum 2.00 cumulative UW GPA.
3. Application: See department website for information required as part of application packet. Exceptions based on special circumstances are reviewed on a case-by-case basis. Application deadlines are the first Friday of each quarter. All applicants who meet the qualifications stated above are admitted in time to register as sociology majors for the following quarter.

Major Requirements

50 credits as follows:

1. Introductory courses (10 credits): SOC 300 and any additional 5 credit sociology course
2. Statistics and theory (10 credits): 5 credits from STAT 220, STAT 311, SOC 221/STAT 221/CS&SS 221, or SOC 321/STAT 321/CS&SS 321; and 5 credits for SOC 316
3. Upper-division sociology electives (20 credits): Any 300-level or 400-level sociology courses, excluding SOC 316, SOC 395, SOC 399, SOC 499
4. Sociology electives (10 credits): Any additional sociology courses, with a maximum 5 credits of either SOC 399 or SOC 499

5. Maximum 10 credits from sociology practicum coursework (SOC 402, SOC 403, SOC 404, or SOC 494) may apply to elective major requirements. Maximum 5 credits from sociology practicum coursework may apply toward the upper-division elective requirement.
6. Academic standards: Minimum 2.0 grade in any course applied to major requirements. Minimum cumulative 2.50 GPA for courses applied to major requirements. 25 of 50 required sociology credits completed in residence through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The Department of Sociology's undergraduate degree is designed to teach majors to think systematically about the relationships among individuals, groups, organizations, and societies. Sociology majors engage current research in political sociology, social stratification, race and ethnicity, deviance and social control, demography and other areas, and develop quantitative and analytical skills in research methods and social theory courses.
- *Instructional and Research Facilities:* The Center for Social Science Computing and Research (CSSCR) maintains an extensive data archive, and offers consulting support and computer lab access to students in sociology courses. The Center for Studies in Demography and Ecology (CSDE) and the Center for Statistics and the Social Sciences (CSSS) provide interdisciplinary courses, seminars, and research opportunities for sociology students.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Sociology majors participate in a variety of internships each quarter. Students can receive academic credit under the supervision of a Sociology faculty member. See adviser for details.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* A chapter of the Alpha Kappa Delta International Sociology Honor Society organizes events involving undergraduates with faculty and graduate students.

Graduate Program

Graduate Program Coordinator
211 Savery, Box 353340
(206) 221-3280
socadvis@uw.edu

Sociology seeks to explain social structure, social institutions, and social interaction. There are three emphases in the graduate training program: understanding and critically evaluating social theory and empirical research; doing theoretically guided research that explores, assesses, and further develops explanatory theories; and developing communication skills (with emphasis on teaching and scholarly writing) that are useful in transmitting sociological knowledge. The department has particular strengths in social and formal demography, deviance and social control, stratification and inequality, health, comparative and historical sociology, family and gender studies, and quantitative methods.

Emphasis is on empirical research aimed at developing explanatory theories. Students are trained in problem formulation, research design, data gathering and analysis, and bringing data to bear on significant questions. Instruction is offered on various methods: statistical, survey, demographic and ecological, field research, and historical. Students learn social research by participating in faculty projects or developing their own studies.

Master of Arts

Admission Requirements

1. Applicants are evaluated on undergraduate performance, Graduate Record Examination scores, statement of educational plans, recommendations, and samples of written work.
2. *Application Deadline:* December 15. Admission is for autumn quarter only. International applicants should submit required application materials by November 1.
3. *Application Materials:* All applicants use the web-based application. See departmental website (<http://www.soc.washington.edu>) for more information.

Degree Requirements

Minimum 45 credits

The master's program, primarily preparation for PhD work, is not a terminal degree, although it may serve as good training for non-academic research. The MA program consists of three elements:

- *Substantive training:* coursework in substantive areas and social theory
 - *Methodological training:* work in social statistics, general social science methodologies, and a data analysis practicum
 - *The master's thesis:* independent empirical research conducted under the supervision of the MA committee
1. Sociological Theory - SOC 510
 2. Statistics - SOC 504, SOC 505, SOC 506
 3. Logic of Social Inquiry - SOC 508
 4. Proseminar - SOC 501
 5. MA Thesis - SOC 700
 6. Electives - 18 credits.

Minimum 12 graded elective credits in courses offered by the Sociology Department. All courses should be at the 500 level or above, although a student may petition for inclusion of a 400-level course. No more than 3 elective credits may be assigned a letter grade (e.g., S or CR) in place of a numerical grade. Minimum 3.30 cumulative GPA.

Doctor of Philosophy

Admission Requirements

Completion of an MA degree in sociology. Occasionally MA degrees in other fields are accepted.

See above Master of Arts section for admission requirements.

Degree Requirements

Minimum 90 credits, to include:

45 credits beyond the Master of Arts requirements (above) as follows:

1. Eight graded Sociology courses beyond the required first-year required courses. Electives taken while completing the MA can be counted. Minimum 24 credits overall.
2. PhD training plan – four methods/skills/knowledge courses focusing on particular advanced methodological skills (broadly defined) or knowledge necessary to undertake dissertation research. Up to two of these courses may also count as part of the required eight graded sociology courses.
3. Comprehensive examination
4. General examination
5. Final examination
6. Dissertation (27 credits)
7. Minimum 3.30 cumulative GPA

Financial Aid

Fellowships, research assistantships, and teaching assistantships are available to qualified graduate students including those in their first year of training.

Spanish and Portuguese Studies

Department Overview

C104 Padelford

Undergraduate Program

C104 Padelford

The educational philosophy of Spanish and Portuguese studies is that knowledge and understanding of other cultures is fundamental in an increasingly global world, and that competence in the languages of those cultures is an indispensable gateway to them. Spanish studies provides students with the four basic language skills (listening, speaking, reading, and writing) in increasing levels of sophistication so that they may read and analyze works of literature written in Spanish as well as understand complex cultural structures and artifacts from Spain, Latin America, and the Latino populations of the United States. The UW offers beginning and intermediate Portuguese and all levels of Spanish.

Adviser

Humanities Academic Services

A-002 Padelford, Box 354330

has-center@uw.edu

The Department of Spanish and Portuguese Studies offers the following programs of study:

- The Bachelor of Arts degree with a major in Spanish
- A minor in Spanish

Bachelor of Arts

Suggested First- and Second-Year College Courses: SPAN 101, SPAN 102, SPAN 103, or SPAN 121, SPAN 122, SPAN 123, or SPAN 134; SPAN 201, SPAN 202 (or SPAN 210), SPAN 203. Spanish, Latin American, and Chicano literature. Courses related to history and culture. Courses in English literature and comparative literature

Department Admission Requirements

1. Completion of SPAN 203, with a minimum cumulative 2.70 GPA for all Spanish coursework completed and a minimum 2.5 grade in each Spanish course
2. Completion of at least 5 credits of English composition with a minimum 2.5 grade
3. Change-of-major forms, available online and outside C-104F Padelford Hall, are processed autumn, winter, and spring quarters only. Forms and unofficial transcripts must be turned in by the end of the third week of the quarter to assure registration priority for the following quarter. Paperwork turned in after the third week of the quarter is processed during the following admission cycle.

Major Requirements

58 credits beyond SPAN 203 as follows:

1. SPAN 301, SPAN 302, SPAN 303 (or equivalents, SPAN 314, SPAN 315, SPAN 316; SPAN 310; SPAN 330)
2. SPAN 321, SPAN 322, SPAN 323
3. One 300-level literature elective: See department website for list of eligible courses.
4. Five 400-level courses
5. Participation in an approved Study Abroad program (one quarter minimum, any level) or one or more experiential learning projects (minimum 2 credits of SPAN 392) which involve significant engagement with the Spanish-speaking community. Students are strongly encouraged to do both.
6. Other than SPAN 400 through SPAN 406, only one course whose instructional materials are primarily in English may apply to the major.

Minor

Minor Requirements: Minimum 27 credits above SPAN 203 level to include the following:

1. One of the following sequences: SPAN 301, SPAN 302, and either SPAN 303 or SPAN 330; SPAN 314, SPAN 315, and either SPAN 316 or SPAN 330; SPAN 310 and either SPAN 303, SPAN 316, or SPAN 330
2. Four 300- or 400-level electives
3. Only one course in which instructional materials are primarily in English may apply to the minor. SPAN 327 may not apply to the minor and is not open to heritage/native speakers.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The study of Spanish and Portuguese is both skills- and content-based, i.e., it has practical and cognitive elements. Students learn to communicate in Spanish or Portuguese, refining their language skills as they acquire a body of knowledge about the literary and cultural history of Spain, Latin America, and the Spanish-speaking populations of the United States. Graduates have found these skills extremely useful as they pursue careers in teaching, business, NGOs and human rights organizations, law, and politics.
- *Instructional and Research Facilities:* Departmental facilities include a Writing Center for students registered in third-year Spanish. The Center for Spanish Studies, housed in the department, is a joint initiative of the University of Washington, the Education Office of the Embassy of Spain, and the Office of Superintendent of Public Instruction. This center provides services that include workshops for K-12 teachers of Spanish, sponsorship of cultural events, and a lending library of books as well as audio and visual materials. A branch of the Spanish government sponsored Cervantes Institute, also housed in the department, offers linguistic and cultural resources to the university and the general community as well.

The department directs three study abroad programs, in León (Spain), Oaxaca (Mexico) and Cádiz (Spain). These programs are "living laboratories." Approximately 100 students participate each year.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Experiential Learning:* Internship opportunities are posted on the department website as they become available. Also, students may participate in experiential learning (which may include service learning), in which they combine study with service to the community. Students must volunteer two-to-five hours per week (a minimum of 30 hours per

quarter) in organizations that provide services primarily, although not exclusively, to Spanish speakers. Alternatively, they may volunteer in public schools as tutors of different academic themes. Some of the organizations and schools involved include CASA Latina, The Mexican Consulate, El Centro de la Raza, Our Lady of Mt. Carmel, Northwest Immigrant Rights Project, Cascade People's Center, Center for Spanish Studies, John Stanford International School, Bryant Elementary School, John Hay Elementary School, Hamilton Middle School, Nathan Hale High School, the Pipeline Project, and the East Side Literacy program. Students apply and increase their knowledge of the Spanish language in a real context. They are exposed to Hispanic multiculturalism and become active agents of social change in the community.

- *Department Scholarships:* An annual scholarship, the Susan B. Johnson Memorial Endowment Fund, is awarded to a student of Spanish for foreign study in Spain.
- *Student Organizations/Associations:* None.

Of Special Note: 100- and 200-level Spanish courses do not count toward major/minor requirements.

Graduate Program

Graduate Program Adviser
C104F Padelford, Box 354360
(206) 543-2020
spsadv@uw.edu

The Department of Spanish and Portuguese Studies offers a program of graduate study leading to the Master of Arts degree.

The Master of Arts degree program in Hispanic Literary and Cultural Studies was reformed and updated in 2001 to foster study of Hispanic culture, literature, and language together. The program calls attention to the rich diversity of Hispanic cultural texts and to their interdisciplinary study while also promoting broad understanding of Spanish and Latin American literature. The program gives careful attention to acquainting students with the traditions of scholarship in the field as well as a range of current textual theory, criticism, and research methods.

Study of Portuguese and other Romance literatures and cultures, comparative literature, Romance and Spanish linguistics, and other related disciplines may be included in the master's degree program. The degree is earned normally in six academic quarters.

Students who wish to pursue advanced study in Spanish and Portuguese in a post-master's degree program may do so by entering the doctoral studies programs in Hispanic Studies of Comparative Literature or other departments of the University.

Master of Arts

Admission Requirements

1. Application for admission to the Graduate School
2. Three letters of recommendation
3. Unofficial transcripts. International applicants must also submit official transcripts to the Graduate School.
4. Academic autobiographical statement composed by the applicant in Spanish

5. A sample of the applicant's written work in Spanish in some area of Hispanic literature and culture. This may be a copy of a paper written for a course in the area of the applicant's major. An analytical or critical writing sample is preferred.
6. Graduate Record Examination (GRE) scores are required from applicants whose first language is English, and from applicants whose first language is not English who hold a bachelor's, master's, or doctoral degree from a regionally accredited university in one of the countries noted in Memo 8 from the Graduate School Memoranda. The GRE requirement is waived for applicants whose first language is not English, if they do not hold a bachelor's, master's, or doctoral degree from a regionally accredited university in one of the countries noted in Memo 8 from the Graduate School Memoranda.
7. Foreign students: Applicants whose native language is not English should note that the Graduate School requires proof of proficiency in the English language in one of the ways described in detail in Memo 8 of the Graduate School Memoranda. TOEFL (Test of English as a Foreign Language) or its computerized version (TOEFLC) or the Michigan Test and also the TSE (Test of Spoken English). A TOEFL score of 500 (or a TOEFLC score of 173) is required for admission, and a score of 580 (or 237 on the computerized form) is required for teaching assistant eligibility. Alternatively a Michigan Test score of 80 is required for admission and 90 for teaching assistantship eligibility. A minimum score of 55 is required on the TSE.8. Complete and upload Assistantship and Fellowship Application regardless of whether or not applicant is applying for a TA position.
8. Complete and upload Assistantship and Fellowship Application regardless of whether or not applicant is applying for a TA position. If applying for a Teaching Assistant position, the following is also required.
 - A digital voice recording (mp3 file format preferred) in which the applicant summarizes his/her reasons for applying to the graduate program and explains his/her interest in the TA position. Only spontaneous speech is considered. The recording must be in English for native Spanish speakers, and in Spanish for all other applicants.
 - Resume or Curriculum Vitae

Degree Requirements

1. A total of 60 applicable credits (500 level and above). To remain in good standing the student must maintain a 3.00 cumulative GPA. The minimum acceptable grade for any given course is 2.7.
2. Either SPAN 577, or an alternate graduate-level literary theory course which must be pre-approved by the Graduate Program Coordinator
3. SPAN 510 is required of all teaching assistants and is taken during or before a student's first quarter of teaching.
4. *Distribution requirement:* Minimum 5 credits (normally one course) must be earned in five of the six: Medieval Spain, "Golden Age" Spain; Spain of the eighteenth and nineteenth centuries; twentieth-century Spain; colonial and nineteenth-century Latin America; and twentieth-century Latin America.
5. MA candidates must pass an MA examination: During the first quarter of graduate study, students must select one area in which to be examined from the six areas of study specified above. They then have a year to prepare that field. Students may not write their MA thesis in the field they have chosen for their examination. The MA examination is written at the beginning of the fourth quarter of study (ordinarily fall quarter). The examination consists of one question, and the student has five hours to answer his/her question, with only a dictionary available for consultation. The examination in the chosen area is based on the MA reading list, available on this website: depts.washington.edu/spanport/programs/grad_readingList.html.

6. MA candidates must complete an MA Thesis: Students must take ten credits of MA thesis (SPAN 700) in their second year of study (5 credits in the fall quarter and 5 credits in the winter quarter). The MA thesis (minimum 45 pages of text, plus bibliography) is directed by a graduate faculty member and submitted to the Graduate Studies Committee for its approval by the end of the fifth quarter of study.
7. Admission to the Graduate School allows students to continue graduate study and research at University of Washington only as long as they maintain satisfactory performance and progress toward completion of their degree program. Details can be found here: depts.washington.edu/spanport/programs/grad_academicRequirement.html.

Financial Aid

The department awards annually a number of teaching assistantships. The assistant normally participates in teaching three classes during the academic year. Each class is limited to approximately 25 students and meets five hours a week for the ten weeks of the quarter.

Applicants whose native language is not English must demonstrate English proficiency in one of the ways described in the Graduate School's Memorandum 15 to be considered for a TA position. For more information

see: www.grad.washington.edu/policies/memoranda/memo08.shtml; www.grad.washington.edu/policies/memoranda/memo15.shtml.

Speech and Hearing Sciences

Department Overview

210 Eagleson Hall

Speech and hearing sciences concern the processes and disorders of human communication and swallowing across the life span. This includes the study of typical hearing, speech, and language, cognitive-communication, and swallowing development; anatomy and physiology of speech, hearing, and swallowing; speech acoustics and perception; the nature of language, speech, cognitive-communication, swallowing, and hearing disorders in children and adults; social and cultural aspects of communication disorders; and the clinical processes involved in identification, prevention, and remediation of those disorders.

Undergraduate Program

Adviser

210 Eagleson, Box 354875

(206) 685-7403

shugadv@uw.edu

The Department of Speech and Hearing Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in speech and hearing sciences. (Formerly Speech and Hearing Sciences offered two major options: (1) General Academic and (2) Communication Disorders. As of summer quarter, 2019, however, those two options have been replaced by a single major. Please refer to the [UW Seattle General Catalog Archive](#) for information about the options.)
- An accelerated, fee-based, Bachelor of Science degree with a major in speech and hearing sciences for candidates with an existing bachelor's degree.

Bachelor of Science

Suggested First and Second-Year College Courses: Social/behavioral science: anthropology, public health, psychology, or sociology. Biological science: BIOL 118 or BIOL 180. Physics or chemistry: PHYS 107, PHYS 110, or CHEM 110, CHEM 220. Statistics: STAT 220 or EDPSY 490. Linguistics: LING 200 or LING 400.

Department Admission Requirements

1. Minimum 75 credits
2. Minimum 2.50 cumulative GPA
3. Completion of the following with a minimum 2.0 grade in each
 - a. *Social/Behavioral Science:* psychology, educational psychology, sociology, anthropology, or public health. See department for approved list.(3-5 credits)
 - b. *Biological Science:* human- or animal-based biological science, anatomy and physiology, neuroanatomy and neurophysiology, human genetics, or veterinary science. Laboratory component not required. See department for approved list.(3-5 credits)

- c. *Physical Science*: chemistry or physics. Laboratory component not required. See department for approved list.(3-5 credits)
 - d. *Statistics*: non-remedial, historical, or methodological. See department for approved list.(3-5 credits)
 - e. *Linguistics*: linguistics that provides introductory knowledge of phonology, phonetics, morphology, syntax, and semantics. See department for approved list. (3-5 credits) (Transfer students may apply with this course in progress or planned. See adviser.)
4. Admission is capacity constrained, based on the following criteria. Meeting the criteria guarantees consideration but not admission.
 - a. GPA
 - b. Preparation for major in speech and hearing sciences as indicated by grades earned in courses required for admission
 - c. Personal statement reflecting an interest in and commitment to speech and hearing science
 - d. Other evidence of a commitment to becoming a speech and hearing sciences major
 - e. Copies of unofficial transcripts from all colleges attended (UW and transfer)
 5. Admission is for autumn quarter only. Application deadline: for UW students - Monday of the third week of spring quarter; for transfer students - February 15. Transfer students may apply to the department (if they are at or near junior standing) and to the UW concurrently. Applicants are notified of the department's decision within four weeks. Applications and additional information available outside 210 Eagleson and on the department's website.

Major Requirements

Minimum 50 credits

1. SPHSC 250, SPHSC 261, SPHSC 302, SPHSC 303, SPHSC 304, SPHSC 305, SPHSC 306, SPHSC 320, SPHSC 371, SPHSC 405, SPHSC 425, SPHSC 461, SPHSC 481
2. Minimum 2.00 cumulative GPA for all courses applied to the major

Post-baccalaureate Bachelor of Science

A fee-based postbaccalaureate program, designed for individuals who already have a bachelor's degree or an advanced degree in a discipline other than speech and hearing sciences and wish to obtain the necessary academic background to apply directly to a graduate program in speech-language pathology or audiology. An intensive program designed to take four quarters with a mandatory summer quarter start. Students have matriculated status at the UW as they work toward a second bachelor's degree in preparation for graduate school.

Admissions Requirements

1. Bachelor's degree or advanced degree outside the area of speech and hearing sciences
2. Minimum 2.50 cumulative GPA
3. Completion of the following with a minimum 2.0 grade in each
 - a. *Social/Behavioral Science*: psychology, educational psychology, sociology, anthropology, or public health. See department for approved list. (3-5 credits)

- b. *Biological Science*: human- or animal-based biological science, anatomy and physiology, neuroanatomy and neurophysiology, human genetics, or veterinary science. Laboratory component not required. See department for approved list. (3-5 credits)
 - c. *Physical Science*: chemistry or physics. Laboratory component not required. See department for approved list. (3-5 credits)
 - d. *Statistics*: non-remedial, historical, or methodological. See department for approved list. (3-5 credits)
 - e. *Linguistics*: linguistics that provides introductory knowledge of phonology, phonetics, morphology, syntax, and semantics. See department for approved list. (3-5 credits)
4. Admission is capacity constrained, based on the following criteria. Meeting the criteria guarantees consideration but not admission.
 - a. Overall academic record and GPA from prior degree
 - b. Preparation for major in speech and hearing sciences as indicated by grades earned in courses required for admission
 - c. Personal statement reflecting an interest in and commitment to speech and hearing science
 - d. Other evidence of a commitment to becoming a speech and hearing sciences major
 - e. Copies of unofficial transcripts from all college attended
 - f. Three letters of recommendation sent to the department. SPHSC recommendation form available on department website. However, a letter is acceptable.
 5. Application deadline: February 15. Incomplete applications are not processed. Admission is contingent upon admission to UW. (See program website for details on the two-part admission process.)

Degree Requirements

Minimum 50 credits:

1. SPHSC 250, SPHSC 261, SPHSC 302, SPHSC 303, SPHSC 304, SPHSC 305, SPHSC 306, SPHSC 320, SPHSC 371, SPHSC 405, SPHSC 425, SPHSC 461, SPHSC 481
2. Minimum 2.00 cumulative GPA for all required courses

Continuation Policy

All students must make satisfactory academic progress in the degree program. Failure to do so results in probation, which can lead to dismissal. For the complete continuation policy, contact the department adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The graduate (1) has knowledge of the following: mechanisms involved in speech, language, and hearing; societal implications of language differences and of disorders of speech, language, and hearing; opportunities in, and requirements for, careers available to those in the speech and hearing sciences; (2) understands the following: normal acquisition of speech and language; the etiology and nature of communication disorders across the lifespan; principles and procedures for diagnosis and treatment of speech, language, and hearing disorders; the manner in which context (specifically, situation, social/interpersonal, and culture context) influences communication and disorders; social-cultural aspects of communication development and disorders; (3) has the following abilities: to analyze language in

terms of its auditory, phonetic, phonological, morphological, and syntactic properties; to utilize strategies for solving scientific problems; to read and understand relevant literature; (4) has experience with a research project

- *Instructional and Research Facilities:* classrooms, research laboratories, computer laboratory, and clinic located in the department and in nearby campus buildings
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Faculty welcome undergraduate students into their research labs, offering independent study research opportunities (SPHSC 499), in addition to mentored, year-long honors research projects (SPHSC 498). No formal internship programs offered. Clinical learning opportunities are available (SPHSC 491). See adviser for community-based service learning and internship opportunities.
- *Department Scholarships:* None offered
- *Student Organizations/Associations:* The National Student Speech Language Hearing Association (NSSLHA) UW chapter, 153 Eagleson Hall.

Graduate Program

Graduate Student Services
Eagleson Hall, Box 354875
(206) 685-7402
shgrad@uw.edu

The department offers four graduate degree programs that equip students to do research, teach at the college and university level, and provide clinical services to the communicatively impaired.

- The Master of Science in Speech-Language Pathology (MS SLP)
- The Master of Science in Medical Speech-Language Pathology (MS MedSLP)
- The Doctor of Audiology (AuD)
- The Doctor of Philosophy (PhD)

At the MS and AuD level, specific focus is on evidence-based clinical procedures involved in the identification, prevention, and remediation of communication disorders. Students meet all requirements of the Certificate of Clinical Competence (CCC) granted by the American Speech-Language-Hearing Association (ASHA), the professional, scientific, and credentialing organization for speech-language pathology and audiology professionals.

At the PhD level, the program provides opportunities for development of scholarly and professional competence in various areas of specialization: speech and language acquisition, phonetics, speech production, hearing, hearing development, psychoacoustics, physiological acoustics, speech perception, and assessment and treatment of human communication disorders related to language, speech, and hearing.

Master of Science in Speech-Language Pathology (MS SLP)

Entrance is for autumn quarter only. The department does not accept transfer students, Graduate Non-Matriculated (GNM) applicants, or applicants interested in a non-clinical master's degree.

Admission Requirements

1. Complete UW Graduate School application between September 15 and January 15, to include the following:
 - a. Department's supplemental application
 - b. Unofficial transcripts for all schools attended
 - c. Official GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
 - f. Resume
2. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
3. English language proficiency
4. Bachelor's degree from a regionally accredited institution with a major in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named major) or in another major with sufficient undergraduate coursework in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named program)
5. Prerequisite undergraduate coursework as required by the American Speech-Language-Hearing Association's (ASHA) accreditation standards and guidelines.
 - a. Speech and hearing sciences coursework across these areas of knowledge:
 - i. Linguistics
 - ii. Phonetics/language science
 - iii. Anatomy and physiology of the speech mechanism
 - iv. Speech and language acquisition/development
 - v. Speech and language disorders
 - vi. Hearing science/nature of sound
 - vii. The hearing mechanism
 - viii. Hearing disorders
 - ix. Audiometry
 - x. Aural rehabilitation/management of hearing loss
 - xi. Social cultural aspects of communication
 - xii. Principles of assessment
 - xiii. Principles of treatment
 - b. Basic science and statistics coursework: one course in each of the following areas:
 - i. Biological science (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
 - ii. Social or behavioral science (psychology, sociology, anthropology, or public health)
 - iii. Physical science (physics or chemistry)
 - iv. Statistics

6. Minimum 25 documented, clinical observation hours within the scope of practice of speech-language pathology, under direction of an ASHA-certified speech-language pathologist.

Degree Requirements

Minimum 108 credits

1. *Didactic (57 credits)*: SPHSC 500, SPHSC 501, SPHSC 506, SPHSC 529, SPHSC 531, SPHSC 532, SPHSC 533, SPHSC 534, SPHSC 535, SPHSC 536, SPHSC 537, SPHSC 538, SPHSC 539, SPHSC 540, SPHSC 565
2. *Clinical (43 credits)*
 - a. Minimum 43 credits from SPHSC 591, SPHSC 551, SPHSC 552, SPHSC 555, either SPHSC 601 or SPHSC 602. Includes completion of a pre-internship and a full-time internship in a community-based clinical facility.
 - b. Minimum 375 clock hours of supervised clinical experience in the practice of speech-language pathology.
3. *Electives*: Either adult-emphasis path or pediatric-emphasis path (8 credits)
 - a. *Adult-emphasis path*: one from SPHSC 541, SPHSC 545, SPHSC 546, or SPHSC 548, and two out-of-department elective courses
 - b. *Pediatric-emphasis path*: SPHSC 526, SPHSC 543, SPHSC 550
4. *Thesis (optional)*: SPHSC 700 (minimum 9 credits)
5. *Additional Requirements*: 36 credits of non-clinical practicum work at the 400 level or above. Minimum 18 of these 36 credits in courses numbered 500 and above. Maximum 9 thesis credits at 500 level or above. Completion of requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association.

Master of Science in Medical Speech-Language Pathology (MS MedSLP)

Entrance is for autumn quarter only. The department does not accept transfer students, Graduate Non-Matriculated (GNM) applicants, or applicants interested in a non-clinical MS degree.

Admission Requirements

1. Complete UW Graduate School Application between September 15 and January 15, to include the following:
 - a. Department's supplemental application
 - b. Unofficial transcripts for all schools attended
 - c. Official GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
2. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
3. Demonstrated English language proficiency
4. Bachelor's degree from a regionally accredited institution with a major in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named major) or in another major with sufficient undergraduate coursework in speech and hearing sciences (communication disorders, communication sciences and disorders, or a similarly named program).

5. Completed prerequisite undergraduate coursework as required by the American Speech-Language-Hearing Association's (ASHA) accreditation standards and guidelines.
 - a. Speech and hearing sciences coursework across these areas of knowledge:
 - i. Linguistics
 - ii. Phonetics/language science
 - iii. Anatomy and physiology of the speech mechanism
 - iv. Speech and language acquisition/development
 - v. Speech and language disorders
 - vi. Hearing science/nature of sound
 - vii. The hearing mechanism
 - viii. Hearing disorders
 - ix. Audiometry
 - x. Aural rehabilitation/management of hearing loss
 - xi. Social cultural aspects of communication
 - xii. Principles of assessment
 - xiii. Principles of treatment
 - b. Basic science and mathematics coursework. Minimum one course in each of the following areas:
 - i. Biological science (biology, anatomy & physiology, neuroanatomy & neurophysiology, human genetics, or veterinary science)
 - ii. Social or behavioral science (psychology, sociology, anthropology, or public health)
 - iii. Physical science (physics or chemistry)
 - iv. Statistics
6. Minimum 25 documented, clinical observation hours within the scope of practice of speech-language pathology, under direction of an ASHA certified speech-language pathologist.

Degree Requirements

Minimum 114 credits

1. *Didactic (72 credits)*: SPHSC 500, SPHSC 501, SPHSC 506, SPHSC 507, SPHSC 529, SPHSC 531, SPHSC 532, SPHSC 533, SPHSC 534, SPHSC 535, SPHSC 536, SPHSC 537, SPHSC 538, SPHSC 539, SPHSC 540, SPSHC 541, SPSHC 543, SPSHC 545, SPHSC 546, SPHSC 548, SPHSC 549, SPHSC 565
2. *Clinical (42 credits)*
 - a. 42 credits of SPHSC 553 and SPHSC 554. Includes a full-time internship in a community-based clinical facility.
 - b. Minimum 375 clock hours of supervised clinical experience in the practice of speech-language pathology. Includes completion of a pre-internship and a full-time internship in a community-based clinical facility.
3. *Thesis (optional)*: SPHSC 700 (minimum 9 credits)

4. *Additional Requirement:* 36 credits of non-clinical graduate work at the 400 level or above. Minimum 18 of these 36 quarter credits in courses numbered 500 and above. Maximum 9 thesis credits at the 500 level and above. Satisfactory completion of all didactic and practicum requirements detailed above. Completion of requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association.

Doctor of Audiology

Entrance is for autumn quarter only. The department does not accept transfer students, Graduate Non-Matriculated (GNM) applicants, or applicants interested in a non-clinical AuD degree.

Admission Requirements

1. Complete UW Graduate School Application between September 15 and January 15, to include the following:
 - a. Departmental's supplemental application
 - b. Unofficial Transcripts for all schools attended
 - c. Official GRE scores earned within the last five years
 - d. Three letters of recommendation
 - e. Personal statement
 - f. Resume
2. Minimum 3.00 GPA for last 90 quarter credit hours of study (60 semester)
3. Demonstrated English language proficiency
4. Bachelor's degree from a regionally accredited institution

Undergraduate Coursework: Foundational coursework is required for the graduate degree and clinical certification in audiology. The department encourages, but does not require, students to complete foundational coursework prior to starting graduate study.

1. Basic science and mathematics: Minimum one undergraduate course in each of the following areas to be eligible for ASHA certification: biological science; social or behavioral science; physical science; statistics. See adviser for list of acceptable courses.
2. Speech and hearing sciences coursework. Undergraduate coursework in normal development of speech and language; and in language and speech disorders across the life span, to be eligible for ASHA certification.
3. If undergraduate coursework is not completed prior to graduate study, students take one or more of the following speech and language courses during their graduate program: SPHSC 250, SPHSC 304, SPHSC 305, SPHSC 425.

Degree Requirements

Minimum 186 credits

1. *Didactic (minimum 82 credits):* SPHSC 462, SPHSC 503, SPHSC 504, SPHSC 509, SPHSC 521, SPHSC 522, SPHSC 523, SPHSC 542, SPHSC 570, SPHSC 571, SPHSC 572, SPHSC 574, SPHSC 575, SPHSC 576, SPHSC 577, SPHSC 579, SPHSC 580, SPHSC 581, SPHSC 582, SPHSC 583, SPHSC 584, SPHSC 585, SPHSC 586, SPHSC 588, SPHSC 592, SPHSC 593
2. *Clinical (minimum 92 credits)*

- a. 2 credits of SPHSC 552
 - b. 50 credits of SPHSC 591
 - c. 40 credits of SPHSC 601
3. *Practice Doctorate/Capstone Research Coursework (minimum 12 credits)*
 - a. Minimum 12 credits of SPHSC 801
 - b. Statistics at the 400 level or above (e.g., EDPSY 490)
 - c. Written document and oral defense of research
 4. *Additional Degree Requirement:* 36 credits of non-clinical graduate work at the 400 level or above. Minimum 18 of these 36 quarter credits in courses numbered 500 and above. No more than 12 credits of courses 500 level and above in 801 capstone research credits. Completion of requirements for the Certificate of Clinical Competence (CCC) of the American Speech-Language-Hearing Association

Doctor of Philosophy

Entrance is for summer or autumn quarter only. The department does not accept Graduate Non-Matriculated (GNM) applicants.

Admission Requirements

1. An identified faculty mentor from within the department who officially agrees to support the application.
2. UW Graduate School Application completed between September 15 and February 15. Submit the following to the department by February 15:
 - a. Unofficial transcripts for all schools attended
 - b. Official GRE scores earned within the last 5 years
 - c. Three letters of recommendation
 - d. Statement of Purpose
 - e. Writing sample or paper
 - f. Department's supplemental application
3. Minimum 3.00 GPA for the last 90 quarter credit hours of study (60 semester)
4. Demonstrated English language proficiency
5. Bachelor's or master's degree from a regionally accredited institution, depending upon area of interest

Degree Requirements

Minimum 90 credits

Includes 36 credits of graduate work at the 400 level or above and a minimum 18 of the 36 quarter credits in courses numbered 500 and above.

1. *Academic Coursework:* For students with a prior undergraduate or graduate degree in speech and hearing sciences (minimum 41 credits as follows):
 - a. SPHSC 560, SPHSC 561, and SPHSC 562 (minimum 9 credits)

- b. SPHSC 504, SPHSC 506, or approved alternative (minimum 3 credits)
 - c. Four statistics courses (chosen in consultation with advisory committee). (minimum 14 credits)
 - d. SPHSC 568 (minimum 3 credits)
 - e. SPHSC 567; research seminar series (minimum 12 credits) Required autumn, winter, and spring quarters throughout the program
 - f. *Other Coursework*: Students with a degree in a field other than speech and hearing sciences complete the following: SPHSC 303; SPHSC 320; SPHSC 461; plus one of the following: SPHSC 250; SPHSC 305; SPHSC 371
2. *Research Coursework*: (minimum 43 credits). Pre-dissertation (16 credits) and dissertation (27 credits). All students conduct supervised research by the end of their first year.
 3. *Teaching Experience*: (minimum 6 credits)
 - a. Instructional Development Forum (minimum 2 credits)
 - b. Teaching Practicum (minimum 1 credit) For students pursuing an academic career
 - c. Other Coursework: (3 credits)

Financial Aid

PhD students are guaranteed financial support as teaching or research assistants as long as they make adequate progress in the program.. In addition, the department has traineeships/fellowships supported by the National Institutes of Health on a competitive basis. Students are strongly encouraged to apply to the National Institutes of Health or other funding agencies for individual fellowships to support dissertation work. Summer support, although not guaranteed, can also generally be arranged.

Research Facilities

The department's research laboratories, as well as those of the Virginia Merrill Bloedel Hearing Research Center, the Institute for Learning and Brain Sciences, contain sophisticated equipment for the collection and analysis of data related to the study of human communication and its disorders. The University Speech and Hearing Clinic and the Center on Human Development and Disability also provide laboratories to support basic and applied research in speech, language and hearing development and disorders, across the life span.

Statistics

Department Overview

B309 Padelford

Probability provides the conceptual foundation and mathematical language for the logic of uncertainty and induction. Statistics is concerned with procedures for the acquisition, management, exploration, and use of information in order to learn from experience in situations of uncertainty and to make decisions under risk. Statistical practice includes design of experiments and of sampling surveys; exploration, summarization, and display of observational data; drawing inferences, and assessing their uncertainty; and building mathematical models for systems with stochastic components.

Instruction is enriched through academic contacts with the Foster School of Business; the College of Engineering; the departments of Applied Mathematics, Atmospheric Sciences, Biology, Cardiology, Computer Science, Earth and Space Sciences, Economics, Genetics, Mathematics, Psychology, Radiology, and Sociology; the Quantitative Ecology and Resource Management program; the Center for Statistics and the Social Sciences; the Applied Physics Laboratory; the Applied Statistics Division of the Boeing Company; Microsoft Research; and Insightful Corporation. The department has an especially close relationship with the Department of Biostatistics; for example, the two departments are jointly developing new curricula in statistical genetics.

Undergraduate Program

Adviser

B309 Padelford, Box 354322
(206) 543-8296

The Department of Statistics offers the following programs of study:

- The Bachelor of Science degree with a major in statistics. Provides training in theoretical foundations of statistics, statistical modeling and methodology, and applied data analysis. Also offered is a Data Science option that in addition emphasizes computation and data management.
- In conjunction with the departments of Applied Mathematics, Computer Science and Engineering, and Mathematics, the Bachelor of Science degree with a major in applied and computational mathematical sciences (ACMS).
- A minor in statistics

Bachelor of Science

Suggested First- and Second-Year College Courses: MATH 324; one of CSE 142 or CSE 160; STAT 311. Additional courses in the sciences and quantitative methods add strength to this major.

Department Admission Requirements

Admission is competitive. Completion of minimum requirements described below does not guarantee admission. All applicants have the right to petition and appeal the department's admission decision. Applications are considered once each academic year and are due on the third Friday in April.

Minimum course requirements for admission applications as follows:

1. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
2. One of STAT 311 (highly recommended), STAT 390, or an approved substitute. See website for approved list.
3. MATH 324; one of CSE 142 or CSE 160
4. Factors in the admission decision include but are not limited to academic performance as measured by GPA in courses listed above and any additional advanced quantitative courses presented for application consideration.
5. Admission is competitive. Successful applicants typically have a cumulative GPA higher than 3.00 in courses listed above under course requirements, with no individual course grade lower than 2.5.

Major Requirements

Minimum 65 credits

1. *Mathematics (25-30 credits)*: either MATH 124, MATH 125, MATH 126, MATH 300, MATH 307, MATH 308, MATH 324, and MATH 327; or the Honors sequence MATH 134, MATH 135, MATH 136, MATH 334, and MATH 335.
2. *Computing (7-9 credits)*: For the major in statistics: CSE 142 or CSE 160; either STAT 302 (recommended), CSE 143, or an approved substitute. For the data science option: 9 credits from the following: CSE 142, CSE 143, STAT 302, CSE 160, CSE 163
3. *Statistics (24-27 credits)*: STAT 311 (highly recommended), or STAT 390, or an approved substitute (STAT 220, STAT 221, or STAT 301 which is seldom allowed); either STAT 340 (highly recommended) or both STAT 394/MATH 394 and STAT 395/MATH 395. (Note that both STAT 394/MATH 394 and STAT 395/MATH 395 are required to replace STAT 340 as a prerequisite for STAT 341.) STAT 341, STAT 342, STAT 421, STAT 423. (STAT 342 is required for enrollment in STAT 421 or STAT 423 by a statistics major; STAT 390 is not sufficient for a statistics major.)
4. *Electives*: For the major in statistics: at least three courses for a minimum total of 9 credits. Elective choices require prior approval of the Statistics undergraduate adviser. For the data science option: two courses from STAT 435, STAT 403, STAT 425; CSE 491, SOC 225, or another 1-credit seminar covering privacy, security, ethics, and societal implications of data science; CSE 414 or INFO 340; one of the following: HCDE 411, INFO 474, CSE 412, CSE 442
5. Minimum 2.0 grade in all courses used to satisfy major requirements.
6. Minimum 2.50 cumulative GPA for all courses used to satisfy major requirements.

A "Majors Factsheet" is available from the Statistics department.

Minor

Minor Requirements: 26 credits, as follows:

1. MATH 126 or MATH 136 (5 credits)
2. STAT 302, STAT 390/MATH 390, STAT 394/MATH 394, STAT 395/MATH 395 (13 credits)
3. either STAT 425/BIOST 425 or STAT 396/MATH 396 (3 credits)
4. Minimum 5 credits of approved electives. See adviser for approved list.

5. Minimum grade of 2.0 in each course used to satisfy minor requirements
6. Maximum 5 credits may be applied to a student's major.
7. At least 20 credits must be taken through the UW.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Statistics emphasizes decision making in the face of uncertainty. Tools developed by the major include probability theory, mathematical statistics, experience with data analysis, and use of statistical tools via the computer. Graduates have pursued careers in actuarial science, financial planning, drug development, statistical consulting, teaching, public health, military science, aerospace, computer technology, and forest resources.
- *Instructional and Research Facilities:* Computer workstations are available on a drop-in basis through the College of Arts & Sciences Instructional Computing Laboratory. Tutoring in a set of introductory statistics courses is currently available at the Statistics Tutor and Study Center.
- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:* A special seminar series for undergraduates is offered in conjunction with the ACMS program.
- *Department Scholarships:* None offered.
- *Student Organizations/Associations:* The Actuary Club at the University of Washington

Graduate Programs

Graduate Program Coordinator
B309 Padelford, Box 354322
(206) 685-7306

The graduate programs emphasize both the theory and application of statistics, including probability theory, mathematical statistics, data analysis, statistical computing, and scientific applications. Computing facilities in the department reflect the department's expertise in the field of statistical computing. An ongoing statistical consulting program provides students practical experience in using statistics and in communicating with clients. Under faculty supervision, participants in the program assist members of the University community in applying statistical methodology. The department offers master of science and doctor of philosophy degrees.

Admission Requirements

1. Background in mathematics, statistics, or a quantitative field, with 30 or more quarter credits in mathematics and statistics, to include a year of advanced (second-year) calculus, one course in linear algebra, and one course in probability theory
2. Graduate Record Examination scores (the Advanced Mathematics subject test is encouraged but not required)
3. Three letters of recommendation from appropriate former or current faculty

Master of Science

Degree Requirements (36-49 credits)

Part-time/Concurrent Track (minimum 36 credits)

At least twelve approved courses numbered 400 or above (minimum 36 credits); of these, at least six courses numbered in the 500 series (exclusive of STAT 512, STAT 513) – minimum 18 credits or more,

representing a coherent theme. Approved proficiency in statistical computing. Satisfactory participation in statistical consulting and the departmental seminar. Passage of an appropriate final master's examination or successful completion of a master's thesis which can count as up to three courses worth 9 credits but cannot replace any of the six courses in the 500 series mentioned above. All programs must be approved by the departmental Graduate Program Coordinator.

Advanced Methods and Data Analysis Track (minimum 49 credits)

1. Core Courses: STAT 502, STAT 504, STAT 512, STAT 513, STAT 534, STAT 536, STAT 570, STAT 571
2. Statistics capstone data analysis: STAT 528
3. Satisfactory participation in at least one quarter of the departmental seminar
4. Passage of the first year MS theory examination

Doctor of Philosophy

Degree Requirements

Minimum 90 credits, to include:

1. Training in statistics and related sciences
2. General examinations of basic graduate-level knowledge in statistics and probability (including two preliminary examinations)
3. MATH 574, MATH 575, MATH 576
4. Three approved core-course sequences chosen from STAT 570, STAT 571, STAT 572; STAT 581, STAT 582, STAT 583; STAT 521, STAT 522, STAT 523; STAT 534, STAT 535, STAT 538; and STAT 516, STAT 517, STAT 518. (In some circumstances, other graduate-level mathematical science courses may be used as a substitute.)
5. Statistical consulting (typically STAT 598 and STAT 599)
6. Proficiency in computing
7. STAT 590 (1 credit per quarter)
8. Final examination

Graduation requirements for PhD tracks in statistical genetics and statistics in the social sciences may replace or be in addition to some of the requirements listed above.

Financial Aid

The department annually awards a limited number of teaching and research assistantships and fellowships for the support of new and continuing graduate students on the basis of academic promise.

College of Built Environments

College Overview

224 Gould

Dean

John Schaufelberger

Associate Dean

Jeffrey Ochsner

www.be.washington.edu

The College of Built Environments (CBE) devotes its resources to the tangible improvement of built and natural environments. Four departments comprise the college: architecture, construction management, landscape architecture, and urban design and planning. Each prepares students for professional careers involving the design, planning, production, and sustainability of physical and natural environments, as well as addressing policies and programs that engage problems of urban growth and livable communities.

The College offers a variety of programs and degrees focusing on the environmental design and construction disciplines within a liberal arts education. The undergraduate programs of the Departments of Construction Management and Landscape Architecture lead to professional degrees that serve as the educational credentials for careers in their respective fields. Undergraduate programs in the Departments of Architecture and Urban Design and Planning offer students pre-professional undergraduate majors-in Architectural Studies and in Community, Environment, and Planning respectively-that prepares students for professional programs in the design and planning disciplines, as well as related leadership roles in society.

The College offers a variety of professional and post-professional Master's degrees: Master of Architecture; Master of Science in Architecture; Master of Science in Construction Management (evening degree); Master of Urban Planning; Master of Landscape Architecture; and Master of Science in Real Estate. Master's students may elect also to work toward the interdisciplinary Certificates in Urban Design and in Historic Preservation. The College offers two interdisciplinary doctoral degrees: the Ph.D. in the Built Environment and the Ph.D. in Urban Design and Planning. All program curricula encompass an appropriate level of design and technical understanding, and include broader social, economic, and cultural issues fundamental to understanding, preserving, and enriching our built and natural environments.

As a part of a major university and metropolis in the Pacific Northwest, the College directly engages this extraordinary setting as a laboratory for study. Faculty members in CBE departments and programs work closely with various professional communities to build curricula and offer experience attuned to the understanding and creation of appropriate built environments.

Facilities

Computing Facilities

Mark Baratta, Director

The College provides an extensive computing infrastructure to support student work. Students have easy access to high-speed wired and wireless networking in the College's buildings, computers in labs and studios, a comprehensive collection of software used in our disciplines, specialized hardware (large-format scanning and plotting, laser cutters, 3D printer), an equipment loaner program (laptops, digital cameras (fixed-lens and SLR), camcorders, digital audio recorders, projectors), and consulting. Most classrooms and seminar rooms are equipped with projectors; several have interactive whiteboard displays.

Built Environments Library

Alan Michelson, Librarian

The Built Environments Library, 334 Gould, is the primary location for materials on architecture, landscape architecture, construction management, and urban design and planning. The collection contains 46,745 volumes, 7,500 microforms, and 163 currently-received serial subscriptions and 243 serial titles in total. Access to its collection is provided through the UW Libraries Information Gateway, a single World Wide Web location which encompasses all the library's print and electronic resources as well as tools, services, and the ability to search the library's catalog and a wide range of Internet resources. The Gateway is available in all UW libraries and on the Web at www.lib.washington.edu.

Photography Lab

John Stamets, Lecturer

A large photography laboratory is provided with studio and film darkroom facilities for use by photography classes, design-studio classes, special instruction, and independent activity.

Shop

Penny Maulden, Director

Fully staffed and well-equipped workshops provide students opportunities to design and make projects using wood, metals, concrete, plaster, plastics and other materials. A wide and deep selection of hand-tools, machine-tools and digital fabrication tools support the instructional use of the workshops and adjacent classroom. Coursework and research supported by the workshops include building design, design/build, furniture studios, structures, materials, and digital fabrication courses. Individual projects including thesis and research can also be accommodated.

Visual Resources Collection

Joshua Polansky, Director

The Visual Resources Collection consists of over 80,000 digital images covering architectural, landscape, design and planning, and construction subject matter, supporting the curricular and research needs of the

College. They are accessible to students and faculty through an online image database. New materials for lectures and projects are continually added.

Undergraduate Degree Programs

The College of Built Environments offers the following professional and pre-professional undergraduate degree options and opportunities:

College Bachelor Degree Programs

- [Bachelor of Arts in Architectural Studies](#)
- [Bachelor of Arts in Community, Environment, and Planning](#)
- [Bachelor of Landscape Architecture](#)
- [Bachelor of Science in Construction Management](#)

Minors and Dual Degree Options

- [Minor in Architecture](#)
- [Minor in Landscape Architecture](#)
- [Minor in Urban Design and Planning](#)
- Dual Degree option combining the Bachelor of Arts in Architectural Studies with the Bachelor of Science in Construction Management

Graduate Program

The College of Built Environments offers the following professional, post-professional graduate degrees, and doctoral options and opportunities:

College Graduate Degree Programs

- [Master of Architecture](#)
- [Master of Science in Construction Management](#)
- [Master of Landscape Architecture](#)
- [Master of Science in Real Estate](#)
- [Master of Urban Planning](#)
- [Distance Learning Master Program in Construction Engineering](#)
- [Distance Learning Master in Infrastructure Planning Management](#)

Interdisciplinary Ph.D Degree Programs

- [Ph.D. in the Built Environment](#)
- [Ph.D in Urban Design and Planning](#)

College-wide Certificate Programs

Historic Preservation Certificate Program

The College of Built Environments offers education in historic preservation. This approach reflects a conscious choice to emphasize preservation within the context of the individual design professions. Thus, the curriculum offers an awareness and familiarity with issues involved in the identification, designation, interpretation, and preservation of historic places, as well as the restoration, adaptive reuse, and design of sympathetic new construction in historic contexts.

Program Coordinator

Box 355740

206-543-5996

histpres@uw.edu

www.be.washington.edu/certificates/hp.html

Admission Requirements

Open to students accepted into a professional or graduate program in the College of Built Environments, including the M.Arch., M.S. (Arch. History/Theory), B.L.A., M.L.A., M.U.P., and Ph.D. programs. Application is made first for admission to a degree program within the college. Once accepted, a separate "Statement of Interest" form is required. Application is made within the first two weeks of classes for two-year degree programs, and by the end of the first year for three-year programs.

Certificate Requirements

The certificate consists of courses required for the student's degree and an additional, complementary 12-15 credits of preservation study which may not overlap with courses required for students' degrees but which may fall into elective requirements and be part of the total credits required for the degree. We recommend students meet with the program coordinator and Preservation faculty to choose the courses that will best complement their degree program and academic interests in preservation.

1. **Track I:** Requirements for Students in the M.Arch. Degree Program
 - a. *Courses Required from the M.Arch. curriculum:* ARCH 500 (6), ARCH 590 (3), an advanced studio on preservation design or design in an historic context
 - b. *Core Certificate Courses:* ARCH 582 (3) if available; Case Studies, either ARCH 498 (3) or URBDP 587 (3); Preservation Planning, either URBDP 585 (3) or URBDP 586 (4)
 - c. *Elective Course(s):* Additional electives in areas related to preservation in architecture, landscape architecture, planning, or related design.
 - d. *Thesis:* Thesis topic with content in the area of preservation design or related issues in historic preservation. Thesis committee chaired by a member of the Historic Preservation faculty.
2. **Track II:** Requirements for Students in the B.L.A., M.L.A., M.S. (Arch), M.U.P., and Ph.D. Degree Programs
 - a. *Courses Required from Degree Curriculum:* Any required or "selective" courses with preservation/historical content, and if the degree requires studio work (B.L.A., M.L.A., M.U.P), choose a studio with preservation content.
 - b. *Core Certificate Courses:* URBDP 585 (3), URBDP 586 (4), one graduate seminar in preservation planning (3).

- c. *Elective Course(s)*: Additional electives in areas related to preservation in architecture, landscape architecture, planning, or related design.
- d. *Thesis*: Thesis, professional paper, or dissertation topic with content in the area of preservation planning and design or related issues in historic preservation. Thesis must be chaired by a member of the Historic Preservation faculty.

Urban Design Certificate Program

The College of Built Environments offers an interdisciplinary program which leads to the Certificate of Achievement in Urban Design for students in the B.L.A., M.L.A., M.Arch., and M.U.P. professional degrees and to students in the Interdisciplinary Ph.D. in Urban Design and Planning or the Ph.D. in the Built Environment. It is designed to give students in these programs a broad and strong understanding of urban design that they may incorporate into their later professional and scholarly careers.

Program Coordinator

Box 355740

206-543-5996

ud@uw.edu

www.be.washington.edu/certificates/ud.html

Admission Requirements

Any student accepted into the degree programs listed above is eligible and may begin participate in the program by returning a Statement of Interest (this form may be obtained from the program office or the program website). We recommend that students in two-year programs apply at the beginning of their programs and that those in longer programs apply at the beginning of their second year. However, students must possess the necessary design abilities prior to enrollment in advanced studios. Such enrollment is determined by the studio in question (for example, advanced studios may require a prerequisite studio preparatory class and/or previous studios and/or the equivalent as evaluated by the studio instructor).

Certificate Requirements

The certificate consists of courses required for the student's degree and an additional, complementary 12-15 credits of urban design courses, which may not overlap with courses required for students' degrees but which may fall into elective requirements and be part of the total credits required for the degree.

These requirements vary with the students' degree requirements (for example, if a course listed below is required for the students' degree requirements, the student must meet the 12-15 credit requirement by choosing an additional course). We recommend students meet with the program coordinator and Urban Design Program faculty to choose the courses that will best complement their degree program and academic interests in urban design.

1. Core Curriculum:

- a. *Introductory Course*: ARCH 590 (M.Arch. and M.L.A. students); L ARCH 362 (B.L.A. students); URBDP 470 (any program); URBDP 500 (M.U.P. students)
- b. URBDP 479
- c. URBDP 580
- d. Thesis prep as appropriate for students' degree programs

2. *Urban Design Studios*: Three required from ARCH 500-505, L ARCH 402-403, L ARCH 503-505, or URBDP 507-508 as designated by the program each quarter; students must take at least one studio either outside their home department or with a clear interdisciplinary focus)
3. *Mandatory Course Areas*
 - a. Urban Form and History: one course from L ARCH 450, L ARCH 451, L ARCH 498 (when history of urban design), URBDP 564, URBDP 565, or others as appropriate
 - b. Urban Design Methods: two courses from L ARCH 341, L ARCH 571, URBDP 474, URBDP 576, URBDP 598, or others as appropriate
 - c. Urban Studies: one course from PB AF 527, URBDP 422, URBDP 466, URBDP 500, URBDP 510, URBDP 520, URBDP 530, URBDP 560, URBDP 562, or others as appropriate
 - d. Urban Development: one course from URBDP 561, URBDP 552, URBDP 553, URBDP 554, URBDP 555, or others as appropriate
4. *Thesis*: Students' theses, professional projects, or dissertations must have an urban design component and a member of the Urban Design Program faculty member as their committee chair.

Architecture

Department Overview

208 Gould

Architecture includes the study of building design, representation, computing, structures, construction materials, environmental control systems, history, theory, and professional practice. In its teaching, research, practice, and community engagement, the department addresses the traditions of architecture within the context of social and technological change, a legacy of craft in the making of architecture, an activist and community-based design process, and the principles of ethical action to address human and environmental concerns.

Undergraduate Program

Adviser

208 Gould Hall, Box 355720

(206) 543-3043

bainfo@uw.edu

Advising for the first two years of the program is done through the Undergraduate Gateway Center, 141 Mary Gates Hall.

The Department of Architecture offers the following programs of study:

- Bachelor of Arts degree with a major in architecture
- Bachelor of Arts degree with a major in architectural design
- A dual-degree program leading to the Bachelor of Arts degree with a major in architectural design and the Bachelor of Science degree in construction management
- A minor in architecture

The Bachelor of Arts (with a major in architecture) is a four-year, undergraduate degree program in architecture in which students explore the factors that shape our built environment. The program provides a liberal arts foundation in the discipline of architecture, which covers spatial reasoning, aesthetics, political and economic structures, socio-cultural influences, urbanism, landscape, and ecology, and gives students the opportunity to concentrate their studies through a sequence of courses investigating history and theory, materials and making, or sustainable technologies. Students in the Bachelor of Arts (with a major in architecture) program can prepare for graduate study in architecture and related fields such as construction management, landscape architecture, real estate, and urban planning, as well as careers in other fields.

The Bachelor of Arts (with a major in architecture) consists of two, two-year sequences. Years one and two include 14 credits of preparatory architectural coursework in addition to at least 76 credits devoted to satisfying the UW's general education requirements. These include coursework in the Visual, Literary, and Performing Arts (VLPA), Individuals and Societies (I&S), mathematics, science, and other areas of knowledge. The intent of these first two years is to help students build their skills in communication and critical thinking; gain broad exposure to other disciplines in order to make more informed academic and career decisions; and provide the broad academic foundation essential to successful study in architecture. All interested UW students are welcome to participate in this first two-year sequence.

The second two-year sequence begins in the junior year. Upper-division admission to the program requires the completion of architecture prerequisites and a minimum of 90 credits, and occurs through a selection process at the beginning of spring quarter of the sophomore year. Years three and four include 29 credits of required courses, including the capstone, 38 credits of discipline-specific selectives and electives, and 23 credits of upper-division electives. Students can focus their studies by choosing a concentration of history and theory, materials and making, or sustainable technologies, or a combination of these.

The Bachelor of Arts (with a major in architectural design) is a pre-professional degree that prepares candidates for admission with advanced standing to professional architectural programs. It is also good preparation for other roles in society that benefit from an understanding of and exposure to architectural design and problem solving such as government, development, management, planning, art, graphic design, and digital arts. Students develop visual literacy and complex problem solving through the design process, including researching historical precedents, analyzing theoretical texts, and on-site understanding of the physical built and natural environment. International study programs (Rome, Scandinavia, India, Mexico, Japan) provide further opportunities for students to engage built environments within global/local and contemporary/historical cultural contexts. A focus on sustainable technologies and the craft and making of architecture play an important role throughout the program.

The Bachelor of Arts (with a major in architectural design) is for students who are interested in the architecture profession and who may continue their studies by earning a graduate professional degree in architecture. The master's degree in architecture is a professional degree and generally takes two or more years to complete if the student enters with the pre-professional Bachelor of Arts (with a major in architectural design).

The college also offers a design and construction concurrent degree (Bachelor of Arts with a major in architectural design, BS in construction management), awarded after completion of 225 credits. Students interested in this double degree must complete the prerequisites for the architectural design major, be admitted to architectural design, and then apply to construction management while completing the architectural design major. This is a five-year program. In addition, the College of Built Environments offers three other bachelor degrees: the BLA in landscape architecture, a five-year professional degree; the BS in construction management, a four-year professional degree; and the BA in community, environment, and planning, a four-year interdisciplinary degree.

Bachelor of Arts (with a major in architecture)

Suggested First- and Second-Year College Courses: See Department Admission Requirements below.

Department Admission Requirements

Applicants are considered for autumn admission only. Admission is competitive. Admission groups are freshmen/sophomore admission (F/S A) and upper-division admission (UA). Consult department website for more information and application form.

Freshman Admission

The department enrolls freshman-year students directly out of high school, prior to their completion of any university-level prerequisites. All freshmen indicating architecture on their UW application are considered for freshman admission to the BA (with a major in architecture) program; no additional application materials are required. Students admitted as freshmen must complete all preparatory and general education requirements listed under upper-division admission as well as all major requirements in order to earn a degree.

Sophomore Admission

Application deadline is the first Monday of spring quarter. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Completion of prerequisite requirements does not guarantee admission. Students admitted as sophomores must complete all preparatory and general education requirements listed under upper-division admission as well as all major requirements in order to earn a degree.

Transfer Admission

Transfer students may apply for admission at the beginning of the sophomore year or the beginning of the junior year. Application deadlines are the same as for sophomore or upper-division admission. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Transfer students must also submit a separate application to the UW.

1. Sophomore-year transfer students must complete all preparatory architectural coursework and general education requirements listed under upper-division admission requirements, as well as all major requirements, in order to earn a degree.
2. Junior-year transfer students must complete all general education requirements and are strongly encouraged to complete all preparatory architectural coursework before entry into the program. These courses can be taken through UW Educational Outreach, on a non-matriculated basis, prior to admission to the UW. These, as well as all major requirements, must be completed in order for a student to earn a degree.

Upper-Division Admission Requirements (UA)

1. Junior Standing (90 or more credits completed by the quarter of admission), to include the following:
 - a. Preparatory Architectural Coursework (19 credits): ARCH 200, ARCH 231, ARCH 350, ARCH 351, ARCH 352
 - b. General Education Requirements: minimum of 71 credits selected from Visual, Literary, and Performing Arts (VLPA) (20 credits); Individuals and Societies (I&S) (20 credits); Natural World (NW) (20 credits), including 5 credits of mathematics (MATH 112 or MATH 124); additional Areas of Knowledge (6 credits); electives (3 credits). Composition/writing (10 credits total) may be met by freshman English composition courses and/or other general education courses designated "W," with a minimum 2.0 grade for each course; diversity (3 credits) may be satisfied by general education courses designated DIV.
2. Minimum 2.80 college/university GPA
3. Department Application (See department website)
4. Transcripts of all college-level work. Unofficial transcripts are accepted.
5. Application Deadline: First Monday of spring quarter. For enrolled UW students, all prerequisite requirements must be completed or under way by the application deadline, and all prerequisite requirements must be completed by the time the student enters the program in autumn quarter. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, and personal motivation. Completion of prerequisite requirements does not guarantee admission.

Major Requirements

1. Coursework (91 or more credits completed during years three and four): ARCH 331, ARCH 332, ARCH 361, ARCH 362, ARCH 468, ARCH 469. One history and theory selective course (3 credits), one craft and fabrication selective (3 credits), and one sustainable technologies selective (3 credits). Three Department of Architecture areas of concentration courses (at least 9 credits), two approved electives offered with College of Built Environment programs (at least 6 credits), five approved Department of Architecture electives (at least 15 credits), and at least 23 credits of approved upper-division electives. Selective and concentration courses are chosen from approved lists maintained by the department.
2. Capstone (ARCH 469) completed in residence through the UW
3. Minimum 2.00 cumulative GPA for all courses presented for the major

Bachelor of Arts (with a major in architectural design)

Department Admission Requirements

1. 90 credits to include the following:
 - a. *Preparatory Architectural Coursework (19 credits)*: ARCH 350, ARCH 351, ARCH 352 (9 credits); ARCH 200, ARCH 201 (10 credits). *Note*: These courses can be taken through UW Extension on a nonmatriculated basis, prior to admission to the UW, or they can be taken in the sophomore year on campus.
 - b. *General Education Requirements (70 credits)*: English composition (5 credits); Visual, Literary, and Performing Arts (VLPA) (20 credits); Individuals and Societies (I&S) (20 credits); Natural World (NW) (20 credits, including MATH 112, MATH 124, or MATH 145); additional Areas of Knowledge (5 credits).
 - c. *Electives (1 credits)*
2. While the cumulative GPA is an important factor in the admission evaluation, the committee places emphasis on the evaluation of performance in the preparatory architectural coursework the student has completed. It is to the student's advantage to take as many of these courses as possible before applying.
3. *Application deadline*: May 15 for autumn quarter only. Prerequisite courses must be completed by the time the student enters the program in autumn quarter.

Major Requirements

90 credits as follows:

1. *Preprofessional Coursework (69 credits)*: ARCH 300, ARCH 301, ARCH 302, ARCH 315, ARCH 320, ARCH 321, ARCH 322, ARCH 362, ARCH 380, ARCH 400, ARCH 401, ARCH 402, ARCH 431, CM 313. One selective course in each of the following areas: (1) graphics/media; (2) history/theory; (3) building science/materials. Selective courses to be chosen from approved lists maintained by the department.
2. 21 credits of approved upper-division electives.
3. The final 45 credits must be completed as a matriculated student in residence through the UW.
4. Minimum 2.50 cumulative GPA for all work done in residence.

Dual-Degree Program

Admission Requirements

Dual-degree majors first apply to the architectural design program and must meet architectural design admission requirements. Admitted architectural design students apply to the construction management program during spring quarter of their junior year (first year in the architecture program). For architectural design students, construction management prerequisites are waived, but such students must take CM 313 and CM 323 prior to the construction management application deadline, April 1.

Dual Degree Program Requirements

142 credits

1. *Architecture Foundation Courses (60 credits)*: ARCH 300, ARCH 301, ARCH 302, ARCH 315, ARCH 320, ARCH 321, ARCH 322, ARCH 362, ARCH 380, ARCH 400, ARCH 401, ARCH 402, ARCH 431
2. *Architecture Selectives (6 credits)*: 3 credits of graphic/media selective chosen from among the following BIM-recommended courses: ARCH 316, ARCH 410, ARCH 412, ARCH 413, ARCH 415, ARCH 418, ARCH 478, ARCH 481, ARCH 482, ARCH 484, ARCH 485, ARCH 486, ARCH 498. 3 credits of history/theory selective from among the following courses: ARCH 441, ARCH 442, ARCH 450, ARCH 452, ARCH 455, ARCH 457
3. *Construction Management Courses (76 credits)*: CM 301; CM 310, CM 311, CM 312, CM 313, CM 321, CM 322, CM 323, CM 330, CM 331, CM 332, CM 333, CM 334, CM 335, CM 410, CM 411, CM 412, CM 414, CM 421, CM 422, CM 423, CM 426, CM 431 (capstone experience), CM 432, and CM 434
4. *Additional Major Requirement*: Minimum 2.50 cumulative GPA in upper-division college courses completed in the College of Built Environments. Minimum 2.0 in CM 431

Note: A minimum of 225 credits is required to complete a dual degree.

Minor

Minor Requirements: 25 credits to include a minimum of 20 credits in ARCH courses (at least 9 credits at the upper-division level) and 5 additional upper-division credits from courses in the College of Built Environments.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*:
 - The architecture program emphasizes a broad liberal arts foundation followed by a focus on architectural history and theory, materials and making, and sustainable technologies. Specific goals for student learning include an understanding of the sequences and history of human building activities; social, political, legal, and economic influences on design and construction; various architectural theories and current thought about the aesthetics of design; construction materials and their properties; relationships of buildings to their sites and ecological contexts; sustainable technologies used in building construction.
 - The architectural design program emphasizes a broad liberal arts foundation followed by a focus on entry-level courses in architectural design, theory, the technology of building, and materials. Specific goals for student learning include an understanding of the organization of three-dimensional space in response to specific human needs; the

sequences and history of human building activities; various architectural theories and current thought about the aesthetics of design; construction materials and their properties; building systems and their integration for human comfort; structural principles, relationships of buildings to their sites; social, political, legal, and economic influences of design and construction. Specific goals in the area of personal development include an ability to visualize three dimensions and think spatially; graphic, verbal, and written communication skills for design development and presentation; an ability to think critically and exercise self-criticism.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships are available and vary according to individual interests within the program. See adviser for details.
- *Department Scholarships:* A limited number of department scholarships are available to eligible students entering their final year of the major.
- *Student Organizations/Associations:* AIAS (American Institute of Architectural Students)

Of Special Note:

Most states require that an individual intending to become an architect hold an architecture degree accredited by the National Architectural Accrediting Board (NAAB). The NAAB accredits three types of degrees: (1) the Bachelor of Architecture (BArch), which requires a minimum of five years of architectural study (this degree is not offered at the University of Washington), (2) the Master of Architecture (MArch), which requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related pre-professional bachelor's degree, and (3) the Doctor of Architecture (this degree is not offered at the University of Washington). These professional degrees are structured to educate those who aspire to registration and licensure to practice as architects.

The UW's four-year, Bachelor of Arts degree in architectural design is a pre-professional degree and is not accredited by NAAB. The pre-professional degree is useful to those desiring a foundation in the field of architecture as preparation for either continued education in a professional degree program or for employment options in fields related to architecture.

Architectural education at the University of Washington requires a minimum of six or seven years of higher education to attain the first professional degree, the Master of Architecture. The curriculum is divided into three two-year segments of coursework with a pre-professional Bachelor of Arts degree (with a major in architectural design) awarded at the completion of the second two-year segment. The professional degree, Master of Architecture, is awarded only upon completion of the third segment. (Students with the Bachelor of Arts in Architecture or bachelor's degrees in unrelated fields take an additional year of coursework).

Graduate Program

Graduate Program Coordinator
208 Gould, Box 355720
(206) 543-4180
archinfo@uw.edu

The department offers the Master of Architecture (MArch) and the Master of Science in architecture (MS Arch).

The MArch is a National Architectural Accrediting Board (NAAB)-accredited program for students already grounded in the sciences or liberal arts. Applicants interested in entering the profession of architecture should apply to the MArch program, which has three accredited tracks:

- 2+year accredited MArch for candidates holding a BA or BS in architectural design
- 3+year accredited MArch for candidates holding a bachelor's degree in a discipline other than architecture
- accredited dual degree, MArch/MLA, for candidates with or without prior architecture or landscape architecture degrees
- MArch in high performance building, a 1-year non-accredited post-professional program for candidates holding an accredited BArch or MArch

The MS Arch is a non-accredited advanced research-oriented degree for candidates who hold a bachelor's degree from a wide range of disciplinary backgrounds. The MS in architecture has two distinct degree streams:

- MS Arch in design computing
- MS Arch in architectural history and theory

Master of Architecture

The MArch degree, accredited by the National Architectural Accrediting Board (NAAB), is the only professional degree offered by the University of Washington. Completion of the department's 2+year or 3+year MArch degree program satisfies the educational requirement for licensing (and registration) as an architect.

1. 2+year MArch degree: design studio (30 credits); core courses (31 credits); electives (21 credits); thesis preparation (4 credits); thesis (9 credits). Students pursue one of three transcribed degree options: history, theory, and criticism; materials and fabrication; sustainable systems and design.
2. 3+year MArch degree: preparatory coursework and optional summer internship (51 credits); remaining 95 credits as described in 1, above.
3. MArch/MLA dual degree
4. Post-professional MArch degree in high-performance building: studio (6 credits); core courses (15 credits); electives (12 credits); thesis preparation (4 credits); thesis (9 credits)

Admission Requirements

1. Completed MArch application form
2. Transcripts from baccalaureate (or higher) degree(s). Primary emphasis on more recent and architecturally related coursework; minimum 3.00 (B) (or higher) GPA in the last 90 graded quarter hours or last 60 semester hours.
3. GRE test scores from within the last five years
4. Portfolio of work in visual arts and/or design. Of primary significance for all candidates.
5. Statement of purpose describing the candidate's professional aspirations and the extent to which the program can prepare the student for those objectives
6. Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the program

Degree Requirements

95 credits for 2+year degree; 146 credits for 3+year degree

1. *Preparatory-year requirements (for students in the 3+year MArch program only):* ARCH 303, ARCH 304, ARCH 305, ARCH 310, ARCH 311, ARCH 312, ARCH 323, ARCH 324, ARCH 331, ARCH 332, ARCH 350, ARCH 351, ARCH 352, ARCH 360
2. *First-year requirements* ARCH 500, ARCH 501, ARCH 502, ARCH 521, ARCH 531, ARCH 533, ARCH 570, ARCH 590, ARCH 591, one architectural history and theory selective, elective.
3. *Second-year requirements:* ARCH 503, ARCH 504, ARCH 571, ARCH 595 or ARCH 599, one professional practice selective, electives.
4. *Final year requirement:* ARCH 700, and one elective

1-Year MArch in High Performance Building Degree Requirements

46 credits

1. *Core Curriculum:* ARCH 503, ARCH 526, ARCH 530, ARCH 533
2. *Selectives:* 6 credits of building technology courses
3. *Electives:* 12 credits of electives
4. *Thesis:* 4 credits of ARCH 599; 9 credits of ARCH 700

Master of Science

45 credits

The MS Arch offers advanced, specialized study in two areas: design computing and architectural history and theory.

Design computing includes design methods, augmented and virtual environments, building simulation and analysis, digital fabrication, human computer interfaces for design, collaboration and community in design, and other related topics. Students work in the Design Machine Group (DMG), a collaborative research studio that fosters innovation and actively seeks ideas that shape the future of design and information technology. Coursework: 11 core credits, 21 credits of design computing electives, 4 credits of thesis preparation, and 9 credits of thesis.

Architectural history and theory encompasses the architectural, cultural, and political forces that have shaped modernity in architecture, including all its contemporary manifestations. Coursework: 11 core credits, 21 credits of history and theory electives, 4 credits of thesis preparation, and 9 credits of thesis.

Admission Requirements

1. Completed MS in Architecture application form
2. Transcripts from baccalaureate (or higher) degree(s) with a minimum 3.00 (B) (or higher) GPA in the last 90 graded quarter hours or last 60 semester hours of coursework
3. GRE test scores taken within the last five years
4. Portfolio of work showing evidence of the applicant's preparation for study in design computing, or a writing sample that shows evidence of applicant's preparation for study in the history and theory of architecture.

5. Statement of purpose that clearly articulates the applicant's goals and the extent to which the program can be expected to prepare him or her for those objectives. The statement should also describe the applicant's background and experience appropriate to the program and must also include a proposed research focus.
6. Written recommendations from three persons who can evaluate the applicant's past record and future promise of success in the MS in Architecture program

Design Computing Stream Degree Requirements

45 credits, as follows:

1. *Core Curriculum*: ARCH 587, ARCH 588, ARCH 597
2. *Electives*: 21 credits chosen from design computing courses, or other approved courses.
3. *Thesis*: 4 credits of ARCH 599; 9 credits of ARCH 700

History and Theory Stream Degree Requirements

45 credits, as follows:

1. *Core Curriculum*: ARCH 560, ARCH 597, B E 552
2. *Electives*: 21 credits of architectural history and theory courses, or other approved courses.
3. *Thesis*: 4 credits of ARCH 599; 9 credits of ARCH 700

Certificate Programs

Two interdisciplinary certificate programs offered by the College of Built Environments are available to MArch students in the areas of historic preservation and urban design.

The department also offers certificates in design computing and lighting design.

International Studies

The department offers architecture in Rome, Italy, at the UW Rome Center; architecture in Mexico City, Mexico; and architecture in Chandigarh, India. Other programs include travel to Scandinavia, Germany, Japan, and Australia.

Financial Aid

Scholarships and assistantships are more typically available to students already enrolled in the architecture program at the time of awarding, although some financial aid is offered to newly entering students. Other financial aid and assistantship possibilities may be found through the Graduate School's Fellowships, Assistantships, and Awards and the Office of Student Financial Aid.

Built Environment

Program Overview

410 Gould Hall

The PhD in built environment a College-wide, interdisciplinary degree program housed within the College of Built Environments. Provides students a common core of substantial, integrated knowledge concerning the multi-faceted built environment and then offers areas of specialization in three discrete fields of knowledge and practice:

- Sustainable Systems and Prototypes (across a range of scales, from building elements and assemblages, to buildings, site, and neighborhood context, city, and region)
- Technology and Project Design/Delivery (focusing on design of computing tools for planning and design and other built-environment fields)
- History, Theory, and Representation studies (focusing on issues of regional-global modernity)

Graduate Program

Graduate Program Coordinator
410 Gould Hall, Box 355740
(206) 543-5996
bephd@uw.edu

Doctor of Philosophy

Admission Requirements

1. Program application form
2. Three letters of recommendation
3. Curriculum vitae
4. An exhibit of work which best illustrates applicant's interests and abilities related to the built environment. May be an essay, a paper, a publication, a report, or a project for which the applicant has had major responsibility.
5. Statement of purpose
6. Graduate Record Exam (GRE) scores
7. Prospective international, immigrant, and permanent resident students whose native language is other than English and who have not received a bachelor's or master's degree from an accredited institution where the native language is English: TOEFL, with a minimum score of 92 on the Internet-based test.

Program Requirements

90 credits minimum

1. *Core courses (21 credits):*

- a. B E 551, B E 552, B E 553
 - b. Colloquium/Practicum (2 quarters at 3 credits each)
 - c. Research methods and design: 6 credits from list, including both qualitative and quantitative coursework
2. *Specialization (minimum 30 credits)*: One of three fundamental areas (sustainable systems and prototypes; technology and project design/delivery; history, theory, and representation), within which the student takes advanced and specialized coursework and conducts the dissertation research project. Courses within the College of Built Environments and in other UW units are available.
 3. *General Examination*: Written and oral.
 4. *Dissertation (30 credits)*: Concludes with a final oral defense.

Construction Management

Department Overview

120 Architecture

Construction management is a diverse discipline focused on the delivery of projects that compose the world's built environment. Included are the determination of project requirements, management of design, procurement of materials, and management of the construction of the project within cost, time, and design parameters. In terms of dollar value output, the construction industry is the largest single production activity in the U. S. economy - accounting for almost 10 percent of the gross national product. The construction industry is heterogeneous and enormously complex. The major classifications of construction differ markedly from one another: residential, commercial, industrial, and infrastructure, as well as specialties such as electrical, mechanical, framing, excavation, and roofing. Construction management is the study of how projects are conceived, designed, and built; the types of materials and methods used; techniques for estimating the cost of construction; design and contract law; construction accounting; oral and written communications; safety requirements; project planning and project management.

Undergraduate Program

Adviser

120 Architecture, Box 351610

(206) 543-6377

uwcm@uw.edu

The department offers the following programs of study:

- Bachelor of Science in Construction Management degree
- A dual-degree program leading to the Bachelor of Arts degree with a major in architectural design and the Bachelor of Science degree in construction management
- A minor in Construction Management

Students take the first two years of study as an undeclared major in the College of Arts and Sciences or a community college, completing program prerequisite requirements. Upon admission to the major, students take the prescribed curriculum shown below.

Bachelor of Science

Suggested First- and Second-Year Courses: M E 123; PHYS 114, PHYS 115, PHYS 117, and PHYS 118; 5 credits of economics; ENGL 131, ENGL 281; ESS 101; MATH 112 or MATH 124; ACCTG 215 and ACCTG 225, CM 250, COM 220, MGMT 200, QMETH 201; chemistry or environmental-science courses.

Department Admission Requirements

Admission is for autumn only, is capacity constrained, and is divided into three groups: Freshmen Direct (FA), Early Admission (EA), and Upper-Division Admission (UA). Consult department website for more information.

- *Freshman Direct Admission (FA)*

The department enrolls a small number of students each year directly out of high school, prior to their completion of any university-level prerequisites. Freshman applicants to the University listing construction management as their intended major are automatically considered. Admission is offered to students with exceptionally competitive academic records, including but not limited to high school GPA and SAT or ACT scores. Freshman Direct students work with the construction management adviser to plan their first two years of coursework before beginning the standard curriculum. Such students are eligible to join the construction management student organizations, apply for scholarships, and participate in student competitions.

Students admitted under the Freshman Direct Admission program must complete all prerequisite course requirements listed under Upper-Division Admission as well as all major requirements to earn their degrees.

- *Early Admission (EA)*

Students may also apply to the department in spring of their freshman year to enter as part of the Early Admission (EA) group in their sophomore year. This admission path is open to students who began their studies through UW as freshmen, have been enrolled no more than three quarters, and have completed at least 27 credits through UW (25 of the 27 UW credits must be numerically graded). Courses completed prior to applying must include: MATH 112 (or MATH 124 or Q SCI 291), PHYS 114 and PHYS 117 (or PHYS 121), and ECON 200. Other courses from the list of upper-division prerequisites may be taken to complete the minimum 27 credits.

Application deadline for Early Admission is April 1. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, apparent attitude, and personal motivation. Completion of prerequisite requirements does not guarantee admission and all prerequisite requirements must be completed by the April 1 deadline.

Students admitted under the Early Admission program must complete all prerequisite course requirements listed under Upper-Division Admission as well as all major requirements in order to earn their degrees.

- *Upper-Division Admission (UA)*

1. *Prerequisite Courses:* Minimum 88 credits in the following categories (courses must be completed by the beginning of autumn quarter for admission that quarter):
 - a. *Construction:* CM 260
 - b. *Business and Management:* ACCTG 215 and ACCTG 225; MGMT 200
 - c. *Individuals & Societies (I & S):* 5 credits of economics; 5 additional I & S credits from UW Areas of Knowledge list (CM 250 recommended)
 - d. *Natural World (NW):* PHYS 114 and PHYS 117 (or PHYS 121), and PHYS 115 and PHYS 118 (or PHYS 122); MATH 112 (or MATH 124 or Q SCI 291); ESS 101; QMETH 201 (or STAT 220 or STAT 311); 10 additional NW credits from UW Areas of Knowledge list (chemistry or environmental studies recommended)
 - e. *Language Skills:* 5 credits from English composition list; 5 credits from "W" courses or English composition list (ENGL 131 and ENGL 281 recommended)
 - f. *Visual, Literary & Performing Arts (VLPA):* COM 220; 5 additional VLPA credits (from UW Areas of Knowledge list)

- g. *Diversity (DIV)*: 5 credits that meet UW's diversity requirement.
2. Admission to the major is capacity constrained. Admission decisions are based on an applicant's academic performance and potential, extent and quality of relevant experience, apparent attitude, and personal motivation. Completion of prerequisite requirements does not guarantee admission. Completion of prerequisite requirements is not required to apply, but is required prior to being admitted in autumn quarter.
3. Departmental application deadline: April 1, for the following autumn quarter. Selection for acceptance is made by early May, and all applicants are notified shortly thereafter. Because each application is valid only once, a student whose application for admission is denied must reapply if consideration is desired in any subsequent year.

Major Requirements

92 credits:

1. *Foundation Courses (78 credits)*: ARCH 320, ARCH 321; MGMT 300; CM 310, CM 311, CM 312, CM 313, CM 321, CM 322, CM 323, CM 330, CM 331, CM 332, CM 333, CM 334, CM 335, CM 410, CM 411, CM 412, CM 414, CM 420, CM 421, CM 422, CM 423, CM 432, and CM 434
2. *Construction Electives (minimum 6 credits)*: Two of the following: CM 415, CM 416, CM 425, CM 426, CM 428, CM 429, CM 430, or CM 433
3. *Capstone Experience (5 credits)*: Minimum 2.0 in CM 431
4. *Additional Writing Requirement (3 credits)*: CM 301
5. *Additional Major Requirement*: Minimum 2.50 cumulative GPA in upper-division courses completed in the College of Built Environments

Dual-Degree Program

For requirements of the dual-degree program in architectural design and construction management, see the Architecture section.

Minor

Construction Management: Minimum 27 credits

1. Required courses (15 credits): CM 310, and CM 311 or CEE 307; CM 331; CM 333; CM 411
2. Electives (12 credits): four courses from the following: CM 321, CM 322, CM 332, CM 335, CM 414, CM 415, CM 421, CM 423, CM 428
3. Minimum 2.0 GPA in courses counted toward the minor

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The study of construction management involves an interdisciplinary curriculum that contains a mix of technical, managerial, and business courses to

provide graduates the essential skills needed to be successful in the construction industry. Oral and written communication skills are strengthened through written requirements and oral presentations. Construction management skill sets include the ability to read and interpret construction contract documents; the ability to determine appropriate methods for project construction and the proper sequence for each associated construction task; the ability to estimate project costs and time requirements; the ability to evaluate project site safety hazards and take action to minimize the potential for accidents occurring; an understanding of the legal framework associated with contract construction; and the ability to manage the myriad activities associated with constructing a project. Graduates pursue careers with construction companies, design firms, public agencies, homebuilders, consulting firms, real estate developers, and construction material suppliers.

- *Instructional and Research Facilities:* The Built Environments Library (located on the third floor of Gould Hall) houses construction management books and periodicals. Additional materials are located in the Engineering Library and the Foster Library (Business School). College resources include a 30-work-station computer laboratory in the basement of Gould Hall.
- *Honors Options Available:* None
- *Research, Internships, and Service Learning:* An internship is required for completion of the degree program. Every student is encouraged to seek summer employment in the construction industry, to provide a taste of real-world experience and an opportunity to work for a construction firm. While the department seeks to identify opportunities for internship positions, the responsibility for securing a position rests with each student.
- *Department Scholarships:* A limited number of scholarships are available to eligible students.
- *Student Organizations/Associations:*
 - *Sigma Lambda Chi* is a national student honor society for recognition of outstanding students majoring in construction management. Membership is offered only to those students in the top twentieth percentile of their class. Each year the student chapter conducts community service activities.
 - *Associated Students in Construction (ASIC)* is an umbrella organization for several student chapters of national organizations: Associated General Contractors of America, National Association of Home Builders, Mechanical Contractors Association of America, and the National Electrical Contractors Association. Activities include professional guest lectures, field trips, attendance at professional meetings and seminars, and community service.

Graduate Program

Graduate Program Coordinator
120 Architecture Hall, Box 351610
(206) 616-1917

Master of Science in Construction Management

Admission Requirements

1. BS or BA in civil engineering, construction management, building technology, architecture, or similar field from an accredited college or university in the United States, or its equivalent from a foreign institution. Students with undergraduate degrees in an area other than construction management or building technology must demonstrate an understanding of estimating, project planning and control, and project management either by transcript, validation examination, or successful completion of the following courses: CM 410; CM 411; CM 421.

2. Minimum 3.00 GPA, based on last 60 graded semester hours or last 90 graded quarter hours of undergraduate and graduate study
3. GRE scores
4. Statement of goals and objectives
5. Letters of recommendation
6. International applicants whose first language is not English must submit a valid Test of English as a Foreign Language (TOEFL) or Michigan Language Test (MLT) score. Minimum score of 580 (TOEFL) or 237 (TOEFLC) or 90 (MLT)

Degree Requirements

45 credits

1. *Core Courses (9 credits):* CM 500, CM 535, CM 575
2. *Construction Management Elective Courses (15-21 credits):* 15 to 21 credits of the following: CM 505, CM 510, CM 515, CM 520, CM 525, CM 530, CM 540, CM 545, CM 550, CM 555, CM 565, CM 570, CM 580, CM 582, CM 584, CM 586, CM 588, CM 590, CM 598, B E 551, B E 552, B E 553. Thesis option requires 15 credits of CM electives; non-thesis option 21 credits of CM electives.
3. *General Elective Courses (12 credits):* Other graduate-level courses approved by adviser.
4. *Thesis or Research Paper (3 or 9 credits):* research paper - CM 600 (3); thesis - CM 700 (9)

Graduate Program in Construction Engineering

Students who complete this program earn a Master of Science in Construction Management.

Admission Requirements

1. BS or BA in civil engineering, construction management, building technology, architecture, or similar field from an accredited college or university in the United States, or its equivalent from a foreign institution. Students with undergraduate degrees in an area other than construction management or building technology must demonstrate an understanding of estimating, project planning and control, and project management either by transcript, validation examination, or successful completion of the following courses: CM 410; CM 411; CM 421.
2. Minimum 3.00 GPA, based on last 60 graded semester or 90 graded quarter credits of undergraduate and graduate study
3. GRE scores
4. Statement of goals and objectives
5. Letters of recommendation
6. International applicants must demonstrate English language proficiency

Degree Requirements

45 credits

1. *Heavy Construction Project Management (12 credits):* CM 520, CM 580, CM 582, CM 588
2. *Infrastructure Construction (12 credits):* CM 584, CM 586, CEE 595, CM 596

3. *Other Required Courses (17 credits):* CM 500, CM 525, CM 590, CEE 552, CEE 592, CEE 594
4. *Graduate Research Report (4 credits)*

Landscape Architecture

Department Overview

348 Gould

Landscape architecture is a professional design discipline that addresses both the built and natural environments. It focuses on the design, analysis, and planning of outdoor spaces across a wide range of scales, with the intent of creating places that are both meaningful and functional. Landscape architects design everything from infrastructure elements, such as roadways, drainage systems, and parks, to prominent cultural monuments and gardens for public and private housing units. The education of a landscape architect includes aesthetic design skills, the development of social and environmental ethics, technical design skills, knowledge of a wide range of natural processes, an awareness of design history, and skills for working with other people. At the University of Washington, the focus is on urban ecological design education, which allows students to make a difference in the future of cities and urban regions all over the world.

Undergraduate Program

Adviser

348 Gould, Box 355734

(206) 543-9240, (206) 685-4486

belarc@uw.edu

The Department of Landscape Architecture offers the following programs of study:

- The Bachelor of Landscape Architecture (BLA) degree
- A minor in urban ecological design
- Certificates in Urban Design and Historic Preservation (see College of Built Environments)

Bachelor of Landscape Architecture

Department Admission Requirements

Core courses within the department form a seven-quarter curriculum designed to start autumn quarter of the junior year. Students take a sequence of seven studios, other sequential skills-based courses, theory courses, and directed electives.

1. Admission is competitive. Completion of the requirements listed below does not guarantee admission. Admission is based on academic record, a portfolio of creative work, three letters of recommendation, and other application materials. Refer to the department's website, <http://larchwp.be.washington.edu/> to select "undergraduate program" link from the "admissions" bar for application materials and detailed information on admission, prerequisites, and required coursework.
2. Minimum 69 credits
 - a. *Departmental Pre-professional Requirements (12-16 credits)*: L ARCH 300* (usually offered autumn and summer quarters) and two of the following: L ARCH 322 (spring quarter); L ARCH 341 (autumn quarter); L ARCH 352 (autumn quarter); L ARCH 353 (winter quarter); L ARCH 361 (winter quarter); L ARCH 363 (spring quarter). For transfer

students, these seven courses may be taken through UW's Professional and Continuing Education as non-matriculated students prior to admission to the UW.

- b. *General Education Coursework*: minimum 69 credits to include 5 credits of English composition; 4-5 credits of Quantitative and Symbolic Reasoning; and 60 credits selected from the following Areas of Knowledge: Visual, Literary, & Performing Arts (20 credits); Individuals & Societies (20 credits); Natural World (20 credits), of which one course (usually ESS 101, or equivalent) is shown as the prerequisite for ESS 315/ENVIR 313 or ESS 301

*L ARCH 300 can be counted toward general education requirements. Other L ARCH courses which are not required within the BLA program, or as admission requirements, may be counted for general education requirements. Students planning to complete the degree in seven quarters should finish all departmental general education requirements prior to starting major requirements.

3. *Application Deadline*: 5 p.m. the first day of spring quarter for the following autumn quarter. Admission is for autumn quarter only. Applications must include BLA application materials. Students should apply during their second college year to make satisfactory progress toward the degree.

Program Requirements

Minimum 182-196 credits

General Education Requirements (69-83 credits): L ARCH 300 and other L ARCH courses which are not requirements, either within the BLA program or as prerequisites, may count toward I&S/NW/VLPA requirements.

1. *Written and Oral Communication (5 credits)*: one 5-credit English composition course from the University list. 10 additional writing credits are required, but can be met by major core courses.
2. *Visual, Literary, & Performing Arts (VLPA) (20 credits)*: L ARCH 300; 14 additional VLPA credits; drawing class recommended
3. *Individuals & Societies (I&S) (20 credits)*
4. *Natural World (NW) (20 credits)*: one course (usually ESS 101, or equivalent) shown as the prerequisite for either ESS 315/ENVIR 313 or ESS 301; additional NW credits to total 20 credits
5. *Quantitative and Symbolic Reasoning (QSR) (4-5 credits)*
6. *Diversity (DIV) (3 credits)*: Some courses may count for both DIV and I&S.

Major Requirements

Minimum 113 credits

1. *Studio Classes*: L ARCH 401, L ARCH 402, L ARCH 403, L ARCH 404, L ARCH 405, L ARCH 474, L ARCH 475
2. *Planting Design*: L ARCH 424
3. *History*: L ARCH 352 and L ARCH 353
4. *Theory*: L ARCH 341, L ARCH 361, L ARCH 363
5. *Graphics*: L ARCH 411, L ARCH 440, L ARCH 441

6. *Professional Practice*: L ARCH 473
7. *Construction*: L ARCH 431, L ARCH 432, L ARCH 433
8. *Hydrology and Soils*: L ARCH 434
9. *Plant Identification*: either BIOL 331/ESRM 331, BIOL 317, or equivalent course approved by department
10. *Managing Plants*: either ESRM 473, ESRM 474, ESRM 479, or ESRM 480
11. *Geology*: Either ESS 301 or ESS 315/ENVIR 313
12. *Directed Electives* to bring major total to 113 credits, chosen from approved lists maintained by the department: two 1-to-5-credit courses in ecology and forestry, totaling at least 6 credits; one 3-to-5-credit course in environmental legislation/law; one 3-to-5-credit course in urban design and planning

Minor

Urban Ecological Design

Minor Requirements: Minimum 25 credits

1. L ARCH courses open to non-majors (20 credits)
2. Courses 200-level and above from within the College of Built Environments or from ESRM or GEOG courses (5 credits)
3. Minimum 2.0 grade in all courses counted toward the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The BLA program provides a professional, accredited degree which enables graduates to practice successfully in design firms, nonprofit organizations, and public agencies. Building from a liberal arts foundation, the program focuses on developing design knowledge, skills, and abilities through a sequence of nine environmental- and community-based design studios.

The program provides students a broad academic and professional exposure to landscape architecture and design so their creative potential and professional growth are realized, and so they may become leaders in the field. Includes learning to conceptualize and design through practice on studio projects; fostering creativity; developing graphic, written, and verbal communication skills; facilitating cognitive abilities; and developing applicable computer skills in the design process. Studios use individual, team-oriented, and interdisciplinary projects to develop strong interactive and evaluative skills. Studio education applies knowledge gained in lecture courses which include historic and contemporary concepts in landscape architecture, design theory, site planning, construction, and communications, as well as elective courses in allied disciplines. The studio sequence addresses projects from detailed to neighborhood scales, varied contexts, and with diverse cultures. Overall, the program focuses on the application of ecological design strategies to urban and urbanizing areas, which characterizes the department's focus on urban ecological design.

- *Instructional and Research Facilities*: The program affords some opportunities for independent study and work in professional settings, beyond minimum requirements for the major. Departmental courses are complemented by elective courses from other areas, including urban horticulture, soils, geology, urban design and planning, botany, and ecology.

Studio classes led by departmental faculty or members of the professional community. May be taught jointly with faculty from other disciplines. Such classes address specific areas of inquiry

including basic design principles and processes, planting design, materials and craftsmanship, landscape planning for parks or natural areas, neighborhood and civic-space design, urban landscape design, ecological restoration, and culturally-based design. A capstone studio requires students to integrate their knowledge of design theory, practice, and construction in a design-build project for a local community. The department regularly offers study abroad programs as well as opportunities to work with local communities and public agencies.

- *Honors Options Available:* Students may apply for admission to the Bachelor of Landscape Architecture Honors option. See departmental program coordinator.
- *Research, Internships, and Service Learning:* Lecture courses address the functioning of natural systems, site planning issues, computer applications, and cultural and sociological forces that influence the profession's work. Advanced studio courses, including the capstone studio, typically provide service learning experiences in a community context. In addition to required coursework, the program encourages students to pursue personal interests through directed and independent study within and beyond the department. Students are encouraged to gain real-world experience through a practicum with professional firms, organizations, or agencies.
- *Department Scholarships:* Limited availability.
- *Student Organizations/Associations:* Student chapter, Washington Chapter of the American Society of Landscape Architects

Graduate Program

Graduate Program Coordinator
348 Gould Hall, Box 355734
(206) 543-9420
cauplarc@uw.edu

Master of Landscape Architecture

The MLA program offers training in design and inquiry. Design studios form the core, supported by independent investigation in seminars and a thesis project. Students develop a specialty within the discipline. The curriculum emphasizes the following:

Urban Ecological Design. Explores connections between culture and nature and testing ideas on how social and spatial conflicts between development and conservation might be addressed. Faculty focus on ecological infrastructure. Students study cultural resources of human communities as they develop relationships to their environments, and participate in the overlap between natural and cultural processes. The department currently offers Study Abroad programs in Canada, Mexico, Guatemala, Europe, and East Asia as well as opportunities to work with local communities and public agencies.

Design Leadership. Students develop leadership abilities in definition and practice of design as a basis for interdisciplinary work; environmental education and application of ecological concepts to urban design; use of communication technology to develop creative solutions to cultural and environmental conflicts; and international design-build projects in which students confront the global nature of contemporary development issues.

The program encourages applicants from diverse academic and professional backgrounds. Students may add elective courses in other disciplines to their core curriculum and may participate in College-wide certificate programs in Urban Design, and Preservation Planning and Design. See program descriptions in the College of Built Environments section.

Admission Requirements

1. Application deadline: January 15, for admission the following autumn quarter.
2. Baccalaureate degree from an accredited U.S. college or university, or the equivalent from a foreign institution
3. 3.00 or higher GPA in the most recent 90 graded quarter hours (60 graded semester hours)
4. GRE score taken within the past three years. International students with degrees from non-English speaking universities must submit TOEFL scores.
5. Admission is competitive. Contact the department for additional information.

Degree Requirements**Minimum 72 credits**

1. Seminar and field courses to develop a specialty (12 credits), depending on individual interests. Students with a previous degree in landscape architecture begin coursework with required graduate curriculum studios, while students from other educational backgrounds begin with basic core design studios.
2. Thesis or capstone project: For the thesis, a written and graphic product, or a purely written product. Four thesis models are available: professional project, design critique, research, and design. For the capstone project, work either on a Group Project Option or a two-quarter Studio Option.

Real Estate

Department Overview

The minor provides comprehensive exposure to the field, covering areas such as market analysis, development, appraisal, finance, and management. The program examines both residential and commercial real estate, as well as the development process. It also provides coverage of issues from a public policy perspective, such as housing affordability and supply. Students develop a range of technical, statistical, and analytical skills and tools which enable them to analyze and interpret data across a wide range of topics and areas.

Undergraduate Program

Adviser
425 Gould Hall, Box 355727
reminor@uw.edu

The department offers the following program of study:

- A minor in real estate

Minor

Minor Requirements: 25 credits

1. R E 250
2. Electives: See department for approved list of courses. (22 credits)
 - a. Minimum 13 credits in 300-400 level R E courses
 - b. Maximum 9 credits of other approved electives
3. Minimum 2.00 cumulative GPA for courses applied to the minor

Urban Design and Planning

Department Overview

410 Gould

Urban design and planning deals with critical issues of human settlement and urban development, providing communities an informed basis for coordinated public- and private-sector action. Urban design and planning constitutes a professional field of growing complexity, responding to the urban challenges of this century. The department fosters an integrative approach to education and research in planning the physical environment. The academic program includes the social, behavioral, and cultural relationships between people and the form and quality of their built and natural environment; the financial, administrative, political, and participatory dimensions of planning, design, and development; and the informational base for making deliberate decisions to shape urban areas and regions, bringing analysis together with vision.

Departmental faculty participate in interdisciplinary research units, including the Institute for Hazard Mitigation Planning and Research, the Urban Form Laboratory, the Urban Ecology Research Laboratory, the Northwest Center for Livable Communities, and the Urban Infrastructure Laboratory.

The department, committed to public service, has strong connections to the region and beyond. The approach to urban development is driven by the values of sustainability, livability, economic vitality, and social justice. The department is also committed to developing a leading edge urban planning practice with a strong participatory ethos.

Undergraduate Program

Urban Design and Planning offers the following programs of study:

- The Bachelor of Arts degree with a major in community, environment, and planning
- A minor in urban design and planning

Community, Environment, and Planning

208Q Gould

Community, Environment, and Planning (CEP) is an interdisciplinary bachelor of arts degree program offered through the College of Built Environments as one of the University's interdisciplinary undergraduate programs. CEP has gained distinction as a model for a highly personalized, collaborative, and active educational experience within a large research institution. CEP students draw liberally from the entire range of courses, faculty, and programs at the UW.

Bachelor of Arts

Suggested First- and Second-Year College Courses: CEP 200.

Department Admission Requirements

1. Minimum 90 credits completed when student begins the program and at least 80 percent of general education requirements fulfilled
2. Minimum 2.50 GPA with additional emphasis on a written essay, demonstration of relevant extracurricular activities, and a final interview
3. Admission is once a year, for autumn quarter. Early admission deadline is February 15. Additional application dates vary each year. See CEP's website for specific dates.

Graduation Requirements

General Education Requirements

1. *Written Communication (15 credits)*: 5 credits English composition; 10 credits additional composition or W courses. W courses, if applicable, may also be counted toward Areas of Knowledge or major requirements.
2. *Quantitative or Symbolic Reasoning (4-5 credits)*: The QSR course, if applicable, may also be counted toward an Area of Knowledge or major requirement.
3. *Areas of Knowledge (60 credits)*: 20 credits Visual, Literary, & Performing Arts (VLPA); 20 credits Individuals & Societies (I & S); 20 credits Natural World (NW). Required CEP courses and other non-CEP courses used to satisfy major requirements may also be counted toward Areas of Knowledge requirements, if applicable.

Major Requirements

77-82 credits

1. Core Seminars (30 credits): CEP 301, CEP 302, CEP 303, CEP 460, CEP 461, CEP 462.
2. Methods Courses (25 credits): Upper-division courses within the University, with no more than 15 credits from one department; chosen with guidance and approved by CEP staff and faculty.
3. Diversity Course (5 credits): One course that critically analyzes and addresses social constructs and/or issues from a different perspective than that of our dominant culture. Must be approved by the program adviser
4. Digital Skills Proficiency Course (3 credits): One course that enhances student's understanding of the creation, utilization, and implications of digital material. See department for list of approved courses (a course not on approved list must be approved by the program adviser). May count toward Methods Courses requirement if the Digital Skills Proficiency course is an upper-division course.
5. Leadership Retreats (4 credits): CEP 300, autumn and spring
6. Governance Practicum (6 credits): CEP 400, quarterly
7. Internship (5 credits): CEP 446, 120- to 150-hour internship
8. Senior Project Capstone (2-6 credits): CEP 490 and CEP 491, autumn and winter

Electives to complete minimum 180 credits for degree; varies, depending on how many general education courses apply to more than one requirement.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* A CEP education is founded on the following: students start where they are; articulate and embrace a vision of how they intend to make a difference in the world; construct a plan (with guidance from faculty and peers) of CEP seminars, cross-disciplinary courses, and field experiences; move deliberately with this plan in the final two years of undergraduate education; through first-hand experience and in the context of the CEP community of learners, become acquainted with effective ways for working constructively together to anticipate and address critical issues facing the complex communities and world we inhabit.

A CEP education is fully lived, not passively taken. CEP students actively make their education in community with others. CEP class cohorts range from 25-30 students. This group comprises a community of mutual learning that requires commitment, personal investment, and strong teamwork strategies for two years. Through six interconnected, quarterly seminars students engage the core content of the major: community, environment, and planning. These contemporary academic fields and areas of research include the study of community as subject and practice, exploration of the ecological context of all societal life, and an investigation of the potentials of planning for developing strategies for positive change.

CEP students have gone on to careers in a variety of interdisciplinary fields such as community planning and organization, urban development, communications, work in for-profit and nonprofit sectors, public administration, education, community and environmental activism, ecology, and government/community relations.

- *Instructional and Research Facilities:* See College of Built Environments section.
- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:* See College of Built Environments section.
- *Department Scholarships:* Department and program offer specific scholarships. Contact program adviser for details.
- *Student Organizations/Associations:* See College of Built Environments section.

Minor

Minor Requirements: 30 credits to include URBDP 300; minimum 13 additional credits in URBDP-prefix courses; and 12 additional credits in planning-related courses with Urban Design and Planning adviser approval. Minimum 2.0 grade required for each course counted toward the minor. See departmental adviser for recommended courses.

Graduate Program

Graduate Program Coordinator
410 Gould, Box 355740
(206) 543-4190
udp@uw.edu

The department offers the Master of Urban Planning (MUP) and the Master of Science in Real Estate (MSRE) degrees and its faculty participate in the interdisciplinary Doctor of Philosophy (PhD) in Urban Design and Planning. The MUP is the professional degree for urban planners, and the MSRE is a two-year professional degree that provides students the core and advanced training necessary for successful careers and leadership positions in the real estate industry. The PhD is for persons who desire careers in urban design and planning, primarily in academic research and teaching or advanced professional work.

Master of Urban Planning

Focuses on planning the physical environment and its socioeconomic and political determinants. Advanced students are encouraged to conduct research and studies in one of the following specializations:

- urban design dealing with physical form, character, and quality issues
- real estate, designed to provide students a deep foundation and specialized skills to help launch or enhance professional careers in real estate
- historic preservation, focusing on the specialized skills needed actively to protect historic districts, buildings, and landscapes
- land-use and infrastructure planning, including its environmental, socioeconomic, legal, information systems, and administrative aspects
- environmental planning, addressing the interactions between urban systems and natural processes

This degree, a two-year (or six-quarter) program, is the usual educational qualification for professional practice of city and regional planning, including generalist planning, research, urban design, and administrative positions in a wide variety of public agencies and private consulting firms.

Admission Requirements

1. Bachelor's degree in a discipline such as urban planning and environmental design or in other fields such as geography, economics, or other social sciences; English and other humanities; civil engineering and environmental studies; or architecture and landscape architecture. Applicants should have completed at least one college-level course in each of the following areas: micro-economics, mathematics, statistics, and cultural diversity. Students without sufficient background must take these prerequisite courses concurrently with their graduate studies.
2. GRE general test scores
3. Three letters of recommendation
4. Official transcripts for all previous college courses or programs attended
5. Resume
6. Supplemental information form and statement of purpose
7. Work sample (optional)

8. TOEFL for applicants whose native language is not English
9. Application deadline: January 15 (November 15 for international students) for admission the following autumn quarter

Degree Requirements

Minimum 72 credits

1. 33 core-course credits covering the history and theory of planning and urban design, urban form, communication methods, quantitative methods, processes and methods of land use planning, comprehensive planning, planning law, research methods, and a planning studio.
2. 14 credits of restricted electives, including courses in advanced methods and advanced studio (both may be in an area of specialization); and courses in urban development economics, and in history/theory of planning.
3. 9-credit thesis or professional project following completion of all other degree coursework
4. 16 credits in open electives

An internship is encouraged for those without previous professional experience. A specialization in one area of planning is required. Specialized areas include land-use and infrastructure planning, real estate, urban design, historic preservation, and environmental planning.

For specific courses, see program website at urbdp.be.washington.edu/mup.html.

Master in Infrastructure Planning and Management (MIPM)

A two-year, eight-quarter, online degree. Teaches professionals to master the methods and core knowledge required to sustain and ensure resiliency of major infrastructures against both man-made and natural disasters. For further information, see program website at <http://www.infrastructure-management.uw.edu/mipm/>.

Admission Requirements

1. Bachelor's degree in a discipline such as urban planning and environmental design, or other fields such as geography, economics, or other social sciences; English and other humanities; civil engineering and environmental studies; or law or criminal justice.
2. At least one college-level course in mathematics.
3. GIS introductory course (recommended).
4. TOEFL for applicants whose native language is not English
5. Application deadline: July 15 for autumn quarter

Degree Requirements

45 credits

Students take two courses per quarter for a total of 15 of the 16 courses outlined below.

1. Four required core courses: introduces key concepts about infrastructure, systems thinking, financial planning, and the fundamentals of policy making. In addition, students explore the impacts of climate change on infrastructures.
2. Four required methods courses: focuses on processes related to planning and monitoring infrastructures, general management, and leadership. Processes include advanced geospatial analysis, epidemiology, emergency management, and business continuity planning.
3. Five systems courses: focuses on infrastructure systems for food, energy, communications, transportation, and more. (Students select five of the six courses offered).
4. Two capstone courses: helps students synthesize knowledge learned across the program and then apply it to a real-world project, conduct research, and develop a case study.

Master of Science in Real Estate

Provides students basic knowledge, core skills, and advanced understanding necessary to assume leadership positions in the real estate industry. An emphasis on interdisciplinary study allows graduates to engage in collaborative efforts and to address the complex problem of achieving sustainable cities.

Admission Requirements

The Runstad Center admits students whose objectives align with those of the program, which are to apply broad business leadership skills to solve real-world problems; understand how spatial and capital markets affect creation of value; examine the effects of place-bound, three dimensional built forms on cities; explore how behavior of decision makers impacts sustainable real estate.

1. Undergraduate or graduate degree in a discipline such as architecture, business, construction, engineering, geography, public policy, law, or urban planning. Experience in real estate or related field highly valued.
2. Application form to include resume, statement of purpose, personal history
3. Official transcripts from each college or university attended
4. Three letters of reference
5. GRE or GMAT scores
6. TOEFL scores for international students
7. Application deadline: February 1 for autumn quarter (November 1 for international applicants)

Degree Requirements

Minimum 72 credits

The Master of Science in Real Estate degree, a demanding, interdisciplinary program, combines business management skills with an understanding of how real estate markets work and how the three-dimensional, place-bound attributes of real estate products affect their performance. Overarching these three interdisciplinary areas of study is a focus on how behaviors of those involved in making decisions about real estate investment and development affect desired outcomes.

The curriculum provides basic knowledge, core skills, and advanced understanding necessary for graduates to assume positions of leadership in the real estate industry of tomorrow. Learning leadership skills is integral to everything a student does throughout the two years in the program. Interdisciplinary study provides understanding of techniques and tools used in a broad range of fields essential to real estate, enabling graduates to lead collaborative efforts to solve complex problems of creating sustainable

urban environments. The limits imposed by the physical characteristics of real estate have put a premium on understanding behaviors of people involved in creating and managing real estate projects. People make the decisions that drive values of property types. Students explore ethical behaviors leading toward emphasis on using technology to support classroom and case learning and in applying the knowledge and leadership skills learned throughout the program. For curriculum details, see the program website at <http://runstad.be.washington.edu>.

Doctor of Philosophy

Many departmental faculty are part of an interdisciplinary faculty group which offers doctoral study in urban design and planning. The program is located administratively within the Graduate School. See Interdisciplinary Graduate Degree Programs.

Certificate Programs

Graduate students may elect to participate in the College-wide certificate programs in urban design and historic preservation. (See program descriptions in the College of Architecture and Urban Planning section).

Michael G. Foster School of Business

School Overview

Dean

Jim Jiambalvo
303a Dempsey

Associate Dean for Academic Affairs

Thomas Lee

303d Dempsey

busadmin@uw.edu

Men and women embarking on business careers have the opportunity to influence many of the social, political, and economic forces in today's world. The Foster School prepares students for professional careers in management and related disciplines in both the private and public sectors.

The Foster School offers an undergraduate program leading to the degree of Bachelor of Arts in Business Administration (BABA) and graduate programs leading to the degrees of Master of Business Administration (MBA), Executive Master of Business Administration (EMBA), Technology Management Master of Business Administration (TMMBA), Master of Professional Accounting (MPAcc), and Doctor of Philosophy (PhD). An evening MBA program is also offered. Additionally, the Foster School offers a Master of Science degree in Information Systems (MSIS) and a Global Executive Master of Business Administration (GEMBA).

Business Administration became an independent unit within the University system in 1917. It has been accredited by the American Assembly of Collegiate Schools of Business (now known as the International Association for Management Education) since 1921.

Facilities and Services

Most Foster School classes and activities are in four buildings. Dempsey Hall, named for Neal and Jan Dempsey, contains the dean's office, MBA and undergraduate offices, the Arthur W. Buerk Center for Entrepreneurship, MBA and undergraduate career centers as well as classrooms and an executive forum. PACCAR Hall offers a combination of U-shaped tiered classrooms, meeting spaces, a 250-seat auditorium, student breakout rooms, faculty offices, and a soaring atrium with a café and a boardroom. It is equipped with a wide range of technology enhancements including web-linked digital monitors and distance conferencing capabilities. Mackenzie Hall, named in memory of Professor Donald Mackenzie, Chair of the Department of Accounting from 1949 to 1955, contains the offices of the Foster School's Consulting and Business Development Center, the Global Business Center, the Center for Leadership and Strategic Thinking, and the Foster School Advancement and Alumni teams. A fourth building, on the northwest side of Dempsey, has three distinct components: the Bank of America Executive Education Center (which includes the James B. Douglas Executive Forum), the Boeing Auditorium, and the Albert O. and Evelyn Foster Business Library.

To serve the continuing education needs of middle- and senior-level managers, the Foster School offers a number of certificate programs, either University-initiated or co-sponsored with various community and industry organizations. The Executive Development Program, a nine-month, one night per week program, strengthens understanding and skills in all areas of management and provides an opportunity for

successful managers to learn from a distinguished faculty and each other. Short courses and seminars are offered throughout the year, focusing on topics such as leadership, finance and accounting for non-financial executives, and negotiation skills. In addition, the School develops and runs custom programs under contract with individual companies and organizations. Information on continuing education programs may be obtained from the Office of Executive Education, (206) 543-8560, fax (206) 685-9236, execed@uw.edu.

International Business Programs

International business programs are coordinated and developed by the Foster School's Global Business Center. These activities include special graduate and undergraduate certificate programs, the Global Business Program, seminars, internships, business foreign-language programs, special guest-speaker programs, and study tours. Although the Marketing and International Business Department offers a general curriculum in international business, each of the five academic departments within the Foster School maintains faculty with special international teaching and research expertise. Internationally oriented courses are offered by each department.

At the undergraduate level, the Foster School offers the Certificate of International Studies in Business (CISB) program. Students in the program complete the same demanding business curriculum as other students and enhance this training with foreign language study, area studies, and an international experience. The program requires that students have a solid foundation in one of five language tracks: Chinese, French, German, Japanese, and Spanish; a sixth custom track for other languages is also an option. In addition, there is a U.S. track for international students.

At the MBA level, the Foster School offers opportunities for MBA students to build on the international business foundation that every MBA develops through the first year of the program. In addition to international business electives, the program offers overseas travel through study tours, quarter-long exchange programs, and international internships. MBA students may also participate in the weekly Global Business Forum, which brings top international business leaders to campus to discuss important issues facing their companies and industries.

Questions regarding these programs may be directed to (206) 685-3432 or goabroad@uw.edu.

Entrepreneurship Programs

The focus of the Foster School's entrepreneurship programs is on nurturing skills that generate creative ideas, innovative processes, and new business growth. These skills are developed through special academic certificate programs, internships, a business plan competition, club activities, and consulting opportunities with area businesses.

The Center for Innovation and Entrepreneurship (CIE) is open to both undergraduate and graduate students from the Foster School as well as other University schools and colleges. Through its workshops, events (Entrepreneur Week), and annual competitions (Business Plan Competition, Environmental Innovation Challenge, and Venture Capital Investment Competition), CIE encourages a cross-discipline and collaborative approach to business creation, and nurtures overall entrepreneurial thinking in students. The CIE's Lavin Program is a curriculum for entrepreneurially minded undergraduates that provides the core foundational experience, skills, and know how for developing future business ventures. Graduate students may take the Entrepreneurship Certificate program, which offers real-world experience, technology internships with the UW Center for Commercialization, and mentoring from the Seattle entrepreneurial community. For more information visit www.startup.washington.edu, or contact CIE at (206) 685-9868, or uwcie@uw.edu.

The Business and Economic Development Center (BEDC) matches undergraduate and graduate student consulting teams with small-business owners in Seattle's inner city to implement business development projects. Through courses, independent study options, summer internships, and hands-on projects with inner-city entrepreneurs, students explore the challenges faced by central city businesses, while also providing valuable assistance. Questions about the Business and Economic Development Center can be directed to the program office at (206) 543-9327.

Consulting Programs

The Business and Economic Development Center (BEDC) matches undergraduate and graduate student consulting teams with small-business owners in Seattle's inner city to implement business development projects. Through courses, independent study options, summer internships, and hands-on projects with inner-city entrepreneurs, students explore the challenges faced by central city businesses, while also providing valuable assistance. Questions about the Business and Economic Development Center can be directed to the program office at (206) 616-1216 or wtutol@uw.edu.

Business Career Center

The Business Connections Center coordinates all MBA and MPAcc career services. These include career counseling and career management workshops, the administration of special career events such as career fairs, company presentations, on-campus MBA and MPAcc recruitment, and a job-listing service. The Business Connections Center also administers alumni and executive mentoring programs. Questions regarding these programs and services may be directed to the center's office, 202 Lewis, (206) 685-2410.

Undergraduate business-career counseling and on-campus recruitment is provided by the UW Center for Career Services, 134 Mary Gates Hall, (206) 543-0535.

Instructional Resources Office

The Instructional Resources Office promotes excellence in teaching by providing resources in current practice and research in teaching and learning. The office serves faculty and teaching assistants with individual consultations, coordinates a teaching preparation program for doctoral students, and offers assistance with instructional innovations. Questions can be directed to the Instructional Resources Office, 317 Lewis, (206) 685-9608.

The Business Writing Center

The mission of the Business Writing Center is to help undergraduates develop the writing skills essential to professional success. The center offers one-on-one tutoring, workshops and peer feedback for special class projects, and opportunities for advanced students to be peer tutors. Questions can be directed to the center's office, 337 Lewis, bwrite@uw.edu.

Honor Societies

Beta Gamma Sigma is the national scholastic honor society in the field of business. Election to membership is available to both undergraduate and graduate students in business. Selection is based on outstanding scholastic achievement.

Beta Alpha Psi is the accounting honor society. Membership is based primarily on scholastic achievement, but some community service is also required. Beta Alpha Psi provides a mechanism for students, professionals, and educators to meet on both formal and informal bases.

The goals and interests of graduate students are served by the MBA Association, Business Consulting Network, Challenge for Charity, Entrepreneurship and Innovation Club, Graduate Consulting Club, MBA Finance Club, Global Business Association, Graduate and Professional Student Senate, MBA Marketing Club, Net Impact, High-Tech Club, MBA Speakeasy, Women in Business, and the Doctoral Association.

Undergraduate Program

202 Dempsey

Associate Dean

Stephan E. Sefcik

Assistant Dean

Vikki Haag Day

Associate Directors

Pamela B. Lacson

Adam Shinn

Adviser

202 Dempsey, Box 353200

(206) 685-3400

bizinfo@uw.edu

The Foster School offers the following programs of study:

- The Bachelor of Arts in Business Administration degree with options in accounting, entrepreneurship, finance, human resources management, information systems, and marketing.
- A minor in entrepreneurship

Bachelor of Arts in Business Administration

Suggested First- and Second-Year College Courses: English composition, calculus, ECON 200, ECON 201. In addition, classes to fulfill general education requirements which develop strong writing and analytic skills. ACCTG 215, ACCTG 225, MGMT 200, and Q METH 201 are suggested second-year college work.

Department Admission Requirements

The Foster School offers admission to upper division applicants for autumn and winter quarters. Those UW students who are prepared, as freshmen, to apply for early admission, may do so only for autumn quarter. Students admitted for autumn may elect to take classes during the prior summer quarter.

Applicants are considered in two admission groups: the Freshman Direct Admission Program and the Upper-Division Admission Group (UAG), described below. The following requirements apply to the Upper-Division Admission Group:

1. A minimum cumulative 2.50 GPA for all college coursework
2. A minimum cumulative 2.50 GPA for all required business courses

3. A student who has previously attended the UW also must have GPAs of at least 2.50, both UW cumulative and in UW business courses.
4. Since eligible applicants exceed the space available, acceptance is competitive. Admission is based on evaluation of four factors:
 - a. overall scholastic record
 - b. grades in pre-application courses, described below
 - c. written communication skills
 - d. evidence of leadership skills, community activities, and the promise of achievement in a business or professional career.

Consideration is also given to such factors as economic and educational disadvantage, significantly higher recent grades, and exceptional extracurricular activities or work experience.

Admission for UAG is offered twice a year, for autumn and winter quarters. A Foster School application, together with all supporting materials, must be on file by April 5 for autumn quarter admission or October 5 for winter quarter admission. Records of all coursework completed by the deadline must be submitted at the time of application. Admission for Freshman Direct is offered once a year, for autumn quarter only.

Freshman Direct Admission Program

The Foster School enrolls a small number of students each year directly out of high school, prior to completion of any university-level prerequisites. Freshmen applicants to the University listing Business Administration as their intended major are automatically considered. Admission is offered to students with exceptionally competitive academic records, including but not limited to high school GPA and SAT or ACT scores.

Upper-Division Admission Group (UAG)

Students must present a minimum of 60 academic credits at the time of application including the following graded credits: ACCTG 215; ECON 200 or ECON 201; MATH 112, MATH 124, or MATH 134; an approved English composition course, chosen from C LIT 240, ENGL 104-ENGL 105, ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, or ENGL 281, ENGL 297, ENGL 298, or ENGL 299. In addition, the following courses must be completed prior to admission in autumn quarter: ACCTG 225; ECON 200 and ECON 201; MGMT 200; QMETH 201. Applicants should take general education or elective courses to complete the minimum 60 graded credits.

Students admitted to the UW as freshmen are expected to take ACCTG 215, ACCTG 225; MGMT 200; and QMETH 201 in residence.

Qualified applicants with at least 45 credits and a minimum 2.85 GPA who meet University admission requirements, but not Foster School requirements, are eligible to be placed in the College of Arts and Sciences as pre-business majors.

The University of Washington provides equal opportunity in education without regard to race, color, creed, religion, national origin, sex, sexual orientation, age, marital status, disability, or status as a disabled veteran or Vietnam veteran in accordance with UW policy and applicable federal and state statutes and regulations.

Graduation Requirements

180 credits as follows:

General Education Requirements: The following must be selected from the University Areas of Knowledge courses: 20 credits in Visual, Literary, & Performing Arts; 20 credits in Individuals & Societies, including 10 credits in microeconomics and macroeconomics (ECON 200 and ECON 201); 20 credits in the Natural World, including 5 credits in calculus (MATH 112, MATH 124, or MATH 134); most students need precalculus before taking college calculus (some precalculus courses qualify for the Natural World requirement); 5 credits in English composition.

Students from community colleges in Washington should check the Transfer Guide or consult with their community college adviser for equivalent courses. Students from other four-year schools should see an adviser at their school. Students entering the Foster School under the terms of the Associate Degree Agreement may apply courses selected from the community college's breadth list toward the general education requirements.

Foster School Requirements: ACCTG 215, ACCTG 225; QMETH 201; MGMT 200; B ECON 300; MKTG 301; I S 300; I BUS 300; OPMGT 301; FIN 350; MGMT 300; MGMT 320; MGMT 430; and 300- or 400-level business electives (or area of concentration) to bring the total number of business credits to 72; two writing-intensive courses, one from B CMU 301, B CMU 410, ENGL 281, ENGL 381; one from English composition, or from the remaining three courses listed immediately above, or from any W course. No more than 6 lower-division business elective credits; a minimum of 90 non-business credits, which may include up to 14 credits of economics and up to 9 credits of statistics but not GEN ST 350; a minimum 2.50 cumulative GPA in all business credits earned at the UW; and a cumulative 2.50 GPA for all UW credits. No more than 8 credits of business independent research coursework may be applied to the degree and no more than 4 credits of business independent research coursework may be applied to upper-division business electives. No more than 8 credits of internship coursework is applicable to the degree. Business internship credit may not apply to the upper-division business elective requirement. Students must complete six of the nine upper-division core courses, including MGMT 430, and 40 of the 53 required upper-division business credits through the UW. Students who have taken more than three of the nine upper-division core business courses at another school should consult an academic adviser in the Foster School Undergraduate Program Office prior to applying.

Accounting Option: The notation "Accounting" is indicated on the permanent record, or transcript, of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative 2.50 GPA: ACCTG 301, ACCTG 302, ACCTG 303, ACCTG 311, ACCTG 320, ACCTG 321, ACCTG 411, ACCTG 440, and at least one 400-level accounting elective, excluding ACCTG 490, ACCTG 495, and ACCTG 499. Students who have completed ACCTG 505 may not apply to the accounting option. The accounting option requires 186 credits for graduation.

Entrepreneurship Option: The notation "Entrepreneurship" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: ENTRE 370, FIN 457/ENTRE 457, MKTG 455/ENTRE 455; 8 credits from an approved list of electives. See advisor for approved list.

Finance Option: The notation "Finance" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative GPA of 2.50: one course from FIN 450, FIN 453, FIN 454, or FIN 457; either FIN 460 or FIN 461; four additional courses chosen from the 400-level FIN courses, B ECON 301 or ECON 301, or the 400-level B ECON courses, excluding FIN 490, FIN 495, FIN 499, B ECON 490, and B ECON 499.

Human Resources Management Option: The notation "Human Resources Management" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum cumulative 2.50 GPA: MGMT 311, MGMT 411, MGMT 412, and two of the following courses: MGMT 323, MGMT 401, MGMT 402, MGMT 403, MGMT 404, or MGMT 413.

Information Systems Option: The notation "Information Systems" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: I S 320, I S 410, I S 445, I S 451, and I S 460.

Marketing Option: The notation "Marketing" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: MKTG 450, MKTG 460, and three additional MKTG electives, excluding MKTG 490, MKTG 495, and MKTG 499. It is recommended that students take MKTG 450 and MKTG 460 before they take the other electives.

Operations and Supply Chain Management Option: The notation "Operations and Supply Chain Management" is indicated on the transcript of a student who graduates with a degree of Bachelor of Arts in Business Administration and who completes the following courses with a minimum 2.50 cumulative GPA: QMETH 450, OPMGT 443, OPMGT 450, I S 451.

Admission to the options: Students can apply to one option at the same time they apply to the Foster School. Continuing Foster School students can apply during publicized application periods. If demand for the option exceeds the number of spaces available, students are considered based on the factors identified for admission to the Foster School and on their GPA in all previous option-specific courses.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [School website](#).

Minor

Entrepreneurship

Admission is competitive, based on evaluation of three factors: (1) overall scholastic record; (2) grades in lower division prerequisite coursework; (3) evidence of entrepreneurial activities or the promise of achievement in an entrepreneurial business career. Application deadlines and requirements are available in the Foster School Undergraduate Programs Office or at foster.washington.edu/undergrad.

Minor requirements – 29 or more credits as follows: (1) ACCTG 219, or ACCTG 215 and ACCTG 225, or equivalent; (2) ECON 200, or equivalent; (3) ENTRE 370; (4) ENTRE 472 and ENTRE 473; (5) additional ENTRE electives at 300 level or above, selected from a list maintained in the Foster Undergraduate Programs Office to achieve a minimum of 29 credits; (6) Minimum 2.00 cumulative GPA in courses applied to the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* A business education develops important communication and interpersonal skills. The ability to express an idea, negotiate a settlement, motivate others, manage time, and build collaborative networks distinguishes the most successful business people. UW Foster School students learn to recognize and define problems, examine data, and persuasively communicate their ideas to achieve results in organizations and people's lives. Regardless of post-graduation path - be it climbing up the corporate ladder, starting a company, joining the Peace Corps, entering law school, or becoming a doctor - a business education helps immeasurably.
- *Instructional and Research Facilities:* Paccar and Dempsey Halls boast a wide range of technology enhancements including web-linked digital monitors and distance conference

capabilities as well as 25 team rooms for student use, and direct access to the library. The Foster Business Library houses an extensive collection of books, reference tools, and journals necessary to the study of business. The Buerk Center Innovation Laboratory represents a new paradigm for integrating entrepreneurial education with technology development and hands-on experience.

- *Honors Options Available:* Honors students benefit from a sense of community generated by Honors seminars, as well as from the academic challenge associated with more rigorous study. The program requirements are flexible, challenging students to explore business topics in greater depth. Students entering the Honors program become candidates for the degree "With College Honors" or "With Honors."
- *Research, Internships, and Service Learning:* The Foster School encourages student participation in internships to supplement in-class learning experiences. For more information about internship guidelines and a list of undergraduate internship opportunities, visit www.foster.washington.edu/academic/undergrad/Pages/Internships.aspx.
- *Department Scholarships:* The Foster School awards approximately 90 undergraduate scholarships. Some are general scholarships while others are specific to options or areas of concentration. Only students admitted to both the UW and the Foster School are eligible to receive awards. Applicants are considered for all scholarships for which they meet the minimum qualifications and specific criteria. Although financial need is not a requirement for all business scholarships, most are awarded on the basis of need. (The FAFSA must be filed with the Office of Student Financial Aid.) The Foster School scholarship application is due April 5.
- *Student Organizations/Associations:* Chapters of Alpha Kappa Psi, Association of Black Business Students, Beta Alpha Psi, Business Ethics Association, Delta Sigma Pi, International Association of Students in Economics and Business (AIESEC), American Marketing Association, Business Information Technology Society, Hispanic Business Association, Husky Sales Club, Husky Traders, Latino Professional in Finance and Accounting, National Association of Black Accountants, Society for Human Resources Management, Startup UW, Undergraduate Management Consulting Association, University Sales Club, and Undergraduate Women in Business provide opportunities for undergraduate students to meet informally and to participate in a variety of projects and events.

Double Baccalaureate and Second Baccalaureate

Students who wish to earn more than one baccalaureate degree should consult an academic adviser in the Foster School Undergraduate Program Office, either during or before their junior year. Persons seeking a second baccalaureate should apply at the University's Office of Undergraduate Admissions. To be considered, applicants must complete by quarter of entry the same prerequisites for admission as applicants for the first baccalaureate degree. Since the number of eligible applicants exceeds available space, acceptance is competitive, based on the criteria listed above for selection of first baccalaureate degree applicants. The Foster School uses the GPA for the last 90 credits earned.

Undergraduate Diversity Services

Recruitment, admission counseling, advising, and support services are available for minority students underrepresented at the University, and students from educationally and economically disadvantaged backgrounds. Special scholarships are also available for underrepresented minority students. Academic advisers have information on this program.

Graduate Programs

Associate Dean for Master's Degree Programs

David Burgstahler

Admission

GPA, Graduate Management Admission Test score, work experience, educational and professional objectives, and other factors are considered. Applicants to graduate business programs submit scores on the Graduate Management Admission Test. Those admitted must demonstrate understanding of the fundamental concepts of calculus. Inquiries concerning details of admission should be made to the specific degree program of interest, University of Washington, Foster School of Business, Mackenzie Hall, Box 353200, Seattle, WA 98195.

Application Procedure

Admission to the MBA, EMBA, and PhD programs is for autumn quarter only. Admission to the Technology Management MBA and Master of Science in Information Systems program is for winter quarter only. Candidates for the full-time MBA program may apply by any of the following deadlines: October 15, November 15, January 15, or March 15. Preference is not given to applicants who choose an earlier deadline. Applicants receive a decision about two months after the deadline they have chosen. (January 15 is the final deadline for international applicants.) Deadlines for application to other graduate programs are February 1 for the PhD program; April 1 for Evening MBA; and April 15 for the Executive MBA and MPAcc programs. Students are encouraged to apply as early as possible.

The Foster School of Business offers programs of study leading to the advanced degrees of Master of Business Administration, Master of Professional Accounting, Master of Science in Information Systems, and Doctor of Philosophy. Four programs can lead to an MBA degree: the full-time program, the evening program, the Technology Management (TMMBA) program, and the Executive MBA program.

Master of Business Administration

Executive Director

Dan Poston

110 Mackenzie Hall, Box 353200

(206) 543-4661

mba@uw.edu

Degree Requirements

96 credits (80 credits for evening MBA)

The full-time MBA program is designed for students preparing for a professional career in management. Two academic years are required to complete the program. The first year consists of 48 credits of required courses: B A 500, B A 501, B A 502; three of the following bridge elective options: EBIZ 509 (required for EBIZ certificate), ENTRE 509 (required for CIE certificate), FIN 509 (prerequisite for most finance electives), I BUS 509, MGMT 579, or MKTG 509. The second year is 48 credits of elective courses. Students take no more than 24 credits in any one elective area.

The evening MBA program is for fully employed college graduates seeking a management degree that can be earned outside regular working hours. Instruction is two evenings per week; students typically take

two courses per quarter. The program consists of 80 academic credits, with normal completion in ten quarters. Course requirements are as follows: ACCTG 500, ACCTG 501, B ECON 500, B ECON 501, FIN 502, I S 504, MGMT 500, MGMT 502, MGMT 505, MKTG 501, OPMGT 502, QMETH 500, QMETH 501, 34 credits of electives.

Special Programs

Options for special study: global business program; e-business program, and the program in entrepreneurship and innovation. Concurrent degree programs are also available: MBA/JD with the School of Law, MBA/MAIS with the Henry M. Jackson School of International Studies, MBA/MSE with the College of Engineering's Program in Engineering and Manufacturing Management, and MBA/MHA with the School of Public Health.

Executive Master of Business Administration

Director

Louise Kapustka
(206) 685-1333
emba@uw.edu

The EMBA provides an intensive executive-development experience to a select group of midcareer managers who continue to work full-time while pursuing the degree. Candidates for this two-year program should have seven or more years of increasingly successful work experience including three to four years in management, and currently hold mid- or top-level management positions. They are typically sponsored by their organizations and have been identified as employees with high potential to advance as general managers. Students are selected to ensure diversity of industry, functional areas, and organizational size.

The Executive MBA program offers two scheduling options. Both run for two academic years, September through June. (1) The Regional Program meets for a full day once a week, on alternating Fridays and Saturdays. In addition, students attend spring and fall residence sessions each year. (2) The North America Program meets once a month, generally for three consecutive days, Thursday through Saturday. Between monthly sessions, students interact with faculty and classmates online via the Internet and interactive groupware. This format is designed for individuals from the greater Northwest as well as those from the Puget Sound area whose schedules preclude weekly attendance.

While the scope of the curriculum is comparable to that of the regular MBA program, the pace is more intense and the perspective is that of a general manager. There are 21 required courses and no electives.

Admission Requirements

1. Letter of Endorsement: Candidates must be sponsored by their employing organizations and endorsed by senior management as potential general managers. In sponsoring EMBA candidates, organizations agree to release them on class days and, in some cases, to cover the program fee. Individuals not sponsored by a company need to submit an additional letter of recommendation in place of the letter of endorsement.
2. Three letters of recommendation
3. Graduate Management Admission Test (GMAT) scores
4. Two sealed copies of official transcripts from all degree-granting institutions attended

Applications are accepted throughout the year, with an application deadline of April 15 for the class beginning each autumn. Late applications are handled on a space-available basis.

Degree Requirements

68 credits

Required courses: EMBA 502, EMBA 503, EMBA 504, EMBA 505, EMBA 506, EMBA 510, EMBA 511, EMBA 512, EMBA 520, EMBA 521, EMBA 529, EMBA 530, EMBA 531, EMBA 532, EMBA 533, EMBA 534, EMBA 540, EMBA 551, EMBA 552, EMBA 558.

Technology Management Master of Business Administration

Director

(206) 221-6995

tmmba@uw.edu

Designed for professionals employed in technology companies or work in technology jobs in more traditional businesses. The curriculum, combining the essential components of management education with a specialized focus on high-tech industries, is structured for individuals who want to play a broader role in management and are seeking the necessary management skills and business knowledge. The program focuses on real-world projects and analyses, collaborative learning in study groups, and extensive participant interaction in the classroom. Candidates for this 18-month program have technology experience and upward career progression.

The program, which provides an intensive educational experience to professionals who continue to work full-time while pursuing their degree, runs six consecutive quarters, beginning every January and ending the next year in June. Three-hour sessions are held once a week on a mid-week evening and six-hour sessions are scheduled two Saturdays per month. Two residential sessions are offered. Candidates may be sponsored by their organizations or apply on their own.

Admission Requirements

1. Professional position with a minimum five years of work experience. Career trend of increased responsibilities or promotions. Supervisory or management experience not required, but applicants should demonstrate leadership potential. Candidates' work accomplishments and letters of recommendation should provide evidence of their potential for senior management.
2. Baccalaureate degree from an accredited college or university.
3. Personal statement
4. Three letters of recommendation and evaluations
5. Resume
6. Interview
7. GMAT scores
8. Two sealed copies of official transcripts
9. International applicants: Graduate Admissions Application, Proof of Financial Ability form, photocopy of current visa (if applicable), notice of action (if applicable), proof of English language proficiency (if applicable)
10. Permanent residents: proof of English language proficiency (if applicable)

Each year approximately 50 students are accepted into the TMMBA Program. Applications are accepted throughout the year. Contact the TMMBA office for application deadlines.

Degree Requirements

68 credits, as follows:

TMMBA 500, TMMBA 501, TMMBA 502, TMMBA 503, TMMBA 505, TMMBA 507, TMMBA 510, TMMBA 512, TMMBA 515, TMMBA 516, TMMBA 517, TMMBA 520, TMMBA 521, TMMBA 522, TMMBA 528, TMMBA 530, TMMBA 551, 6 credits of electives

Master of Professional Accounting

Managing Director

Francine Shafer
231 Mackenzie
(206) 616-4964

The MPAcc prepares students for high-level careers with major accounting and consulting firms, governmental agencies, and industry. Students with undergraduate degrees in accounting may complete the program in three quarters. Students with no prior business background take an expanded version of the program. Enrollment is limited to 25 to 30 students in each of two tracks - Accounting and Assurance (A&A) and Taxation. MBA students with a strong interest in accounting and taxation may earn a joint MBA/MPAcc degree.

Admission Requirements

1. Satisfactory completion of prerequisite courses (see website)
2. Scores from the GMAT exam
3. International TOEFL scores
4. Well written essays
5. Work experience
6. Volunteer and student activities

Degree Requirements, Auditing and Assurance Pathway

48 credits, as follows:

1. ACCTG 521, ACCTG 523, ACCTG 527, ACCTG 566, ACCTG 576, ACCTG 577, ACCTG 579
2. *Internship*: ACCTG 575. If no internship, complete four approved elective classes: ACCTG 420, ACCTG 524, ACCTG 525, ACCTG 562 ACCTG 564

Degree Requirements, Taxation Pathway

48 credits, as follows:

ACCTG 530, ACCTG 531, ACCTG 533, ACCTG 534, ACCTG 535, ACCTG 536, ACCTG 537, ACCTG 538, ACCTG 539, ACCTG 541, ACCTG 541, ACCTG 543, ACCTG 547

Master of Science in Information Systems

Program Director

Sarah Garner
568 PACCAR
(206) 543-4587
msis@uw.edu

Provides professionals the tools needed to bridge the gap between business and technology. The four-quarter program trains IS students to identify the appropriate technology solution – to either solve an existing business problem or create a new business opportunity. Students learn how to critically analyze business situations and use innovative approaches that suit those situations in a manner consistent with overall organizational strategy.

This full-time, 12-month program holds classes on two weeknights and on some Saturdays, allowing professionals to earn their MSIS degree while working. The program starts in summer quarter (June). Candidates should have an information systems background.

Admissions Requirements

Applicants are evaluated using the following criteria:

1. Past academic experience
2. General intellectual ability
3. Managerial potential
4. Ability to communicate clearly, succinctly, and persuasively

For a detailed list of admission requirements, visit the MSIS website.

Degree Requirements

44 credits, as follows:

1. MSIS 501, MSIS 502, MSIS 503, MSIS 504, MSIS 510, MSIS 511, MSIS 512, MSIS 521, MSIS 522, MSIS 523, MSIS 524, MSIS 526, MSIS 547, MSIS 550
2. 4 credits of electives from: MSIS 541, MSIS 542, MSIS 543, MSIS 544, MSIS 545, MSIS 546

Doctor of Philosophy

Program Coordinator

Jaime Banaag
102 Mackenzie
(206) 543-4111
baphd@uw.edu

The PhD program is research-based and designed to train scholars interested in academic careers, although this training is also useful for individuals seeking research positions in business and government, as well as in consulting firms.

PhD students complete a program of formal coursework (minimum of 18 courses) and participate in doctoral seminars, independent study, and research. Students select one major area of specialization and complete requirements in two or three additional minor areas (including areas outside the Business School, such as economics, psychology, and mathematics).

Major areas of concentration include accounting, finance, human resource management and organizational behavior, marketing, information systems, operations management, operations research, and strategic management. Students must have research methods as one of the minor areas.

Students are admitted autumn quarter only. Most candidates require four to five years to complete the program. Financial aid is available, in the form of research and teaching assistantships, to all doctoral students. Also, fellowships are available on a competitive basis to support students engaged in their dissertation research.

Departments

Accounting

Accounting involves development and communication of financial and operational information for business and nonprofit economic entities. The curriculum includes understanding accounting information systems, using accounting information in managerial decision making, preparing and auditing financial statements under generally accepted accounting and auditing standards, and understanding the fundamental aspects of personal and corporate taxation. Elective courses provide in-depth instruction in managerial and financial accounting, not-for-profit accounting, and taxation. Courses provide a foundation for careers in accounting (public, industrial, private, or governmental), for a general business career, or for other professions such as law.

For more information, see the [Department of Accounting](#) website.

Finance and Business Economics

Finance and Business Economics address the financial and economic aspects of business decision making. The finance curriculum focuses on financial management and the financial markets within which firms and individual investors operate. Business economics courses concern the economic behavior of firms, including factors that determine costs and prices, and real and monetary forces (such as government policies) that affect the national and international economic environment.

For more information, see the [Department of Finance and Business Economics](#) website.

Management and Organization

Management and Organization provides an understanding of the processes and structures of organizations through three distinct programs. The Human Resource Management and Organizational Behavior (HRMOB) courses address personnel and industrial-relations topics such as selection, performance appraisal, compensation, and negotiations, as well as behavioral topics such as leadership, motivation, and group dynamics. They prepare students for managing an organization's human resources effectively. The Organization and Environment (O E) courses examine organization theory, organization design, and management of technology and innovation, as well as the social, political, legal, and ethical environments in which organizations operate. They give students the knowledge, perspective, and analytical tools to deal effectively with organization-environment interactions. The Business Policy (B POL) courses focus on organizational effectiveness from the viewpoint of top management. Emphasis is

placed on an integrated view through strategic management and control, planning, decision making, and entrepreneurship.

For more information, see the [Department of Management and Organization](#) website.

Information Systems and Operations Management

The Department of Information Systems and Operations Management consists of three sub-areas: Information Systems (I S), Operations Management (OPMGT), and Quantitative Methods (QMETH). The information systems area focuses on the management of computer-based information systems. The I S curriculum is designed to give students a basic understanding of I S technology and its impact on all phases of an organization. Specific areas of study include telecommunications and network design, systems analysis and design, database management, expert systems, and applications programming. The operations management area of study refers to the functional area of management which produces goods or services in an organization. Specifically, the OPMGT curriculum focuses on the many changes which have occurred in the past ten years in the way that managers think, plan, and operate manufacturing and service facilities. The area includes courses in logistics, quality, inventory and supply-chain management, project management, and waiting lines, among others. The quantitative methods area focuses on the theory and application of mathematical and statistical tools in the modeling and analysis of business problems. The QMETH curriculum includes courses in statistics and data analysis as well as courses in operations research (e.g., linear programming, forecasting, and using spread-sheets to construct decision support models).

For more information, see the [Information Systems and Operations Management](#) website.

Marketing and International Business

Marketing (MKTG) provides knowledge of concepts and relationships in the areas of consumer behavior, channels of distribution, measurement and analysis of markets, pricing, physical movement of goods, product development, promotion, and sales administration. Marketing careers may involve specialization in Internet marketing, product or brand management, advertising, selling, sales management, marketing research, retailing, wholesaling, and international marketing for a wide spectrum of firms and industries. International Business (I BUS) includes trade, payments, and multinational corporate systems and activities. The area prepares students for international responsibilities in domestic business firms, governmental agencies, and overseas business. Courses in Business Communications (B CMU) stress writing in organizations to accomplish goals, oral reporting, business plan presentation, and the use of computer graphics in communication.

For more information, see the [Department of Marketing and International Business](#) website.

School of Dentistry

School Overview

Dean

Joel Berg
D322 Health Sciences

Established in 1945, the University of Washington School of Dentistry offers courses leading to a Doctor of Dental Surgery (DDS) degree, and advanced education leading to a Master of Science in Dentistry degree and/or a certificate of proficiency in endodontics, oral medicine, orthodontics, pediatric dentistry, periodontics, and prosthodontics. Residency training is available in oral and maxillofacial surgery and general practice. The Department of Oral Biology offers a Master of Science (MS), an MS non-thesis degree for dental hygiene educators, and a doctoral degree (PhD). Postdoctoral study is available in various disciplines.

Opportunities to earn other degrees concurrently (MS or PhD in the School of Dentistry's Department of Oral Biology and other schools) may be arranged on an individual basis.

These educational programs are enriched by the School's strong commitment to Research and the presence of a Regional Clinical Dental Research Center, the Northwest Center to Reduce Oral Health Disparities, Northwest PRECEDENT, an affiliation with the Institute of Translational Health Sciences (ITHS,) and a fellowship Research training program for predoctoral and postdoctoral students. The mission of the Regional Clinical Dental Research Center is to foster clinically relevant Research that advances dentistry's knowledge base, improves patient care, and promotes oral health. The Disparities Center performs Research aimed at reducing oral health disparities in the Pacific Northwest. Northwest PRECEDENT is the Practice-based Research Collaborative in Evidence-based DENTistry. Founded in 2005, this network of dental practices has established the infrastructure to perform a wide variety of oral health Research studies across a five-state region covering Idaho, Montana, Oregon, Utah, and Washington. The mission of the ITHS is to create, enable, and sustain innovative translational Research and Research collaborations across disciplines and professions which accelerates the development of concepts and tangible products that improve human health. State-of-the-art clinical Research facilities are available for faculty and student use.

School of Dentistry Mission Statement: "The School of Dentistry shares the University's overall mission to generate, disseminate, and preserve knowledge and serve the community. The School is an integral part of the Warren G. Magnuson Health Sciences Center and is an oral health-care center of excellence serving the people of the state of Washington and the Pacific Northwest. The primary mission, through educational, Research, and service programs, is to prepare students to be competent oral health-care professionals. The School's Research programs contribute to the fundamental understanding of biologic processes and to the behavioral, biomedical, and clinical aspects of oral health. The service mission is to improve the health and well-being of the people of the community and the region through outreach programs that are especially attentive to minority and underserved populations. The School values diversity in its students, staff, faculty, and patient populations. It seeks to foster an environment of mutual respect where objectivity, imaginative inquiry, and the free exchange of ideas can flourish to facilitate personal development, professionalism, and a strong sense of self-worth." (August 2002)

The following departments participate in the curriculum for the School's programs:

- Dental Public Health Sciences is concerned with the social, legal, political, economic, and psychological aspects of dental healthcare delivery as well as the epidemiology of oral diseases and the application of biostatistical methods in studying them.
- Endodontics offers training in the diagnosis and treatment of diseases and injuries of the tooth pulp and periradicular tissues.
- Oral and Maxillofacial Surgery trains students in the procedures used for all types of operations in the oral cavity and all phases of dental pain control.
- Oral Biology encompasses the study of basic biological mechanisms in normal and diseased oral tissues and structures.
- Oral Medicine provides training in diagnostic techniques and nonsurgical treatments of oral disease.
- Orthodontics provides training in the prevention and correction of malocclusion of the teeth.
- Pediatric Dentistry provides students with a broad understanding of prevention, diagnosis, and treatment of most dental needs from infancy through adolescence with emphasis on the psychological and educational requirements of the patient and parent.
- Periodontics offers training relative to the periodontium and dental implants, with emphasis placed on diagnosis, prevention, treatment, and maintenance.
- Restorative Dentistry offers training in the restoration or replacement of tooth structure and study of the form and function of the masticatory structures, and fabrication and maintenance of removable, complete, immediate, and partial dentures and dental implants.

Undergraduate Program

Dental hygiene seeks to understand why some people get preventable oral diseases and why others do not. Risk factors, such as poverty, ethnicity, and education, as well as environment, contribute to perpetuation of these diseases. The dental hygienist observes and defines dental diseases, assesses potential outcomes of interventions, and manages conditions that compromise oral health. As an applied discipline, dental hygiene links its theoretical foundation to behavioral and natural sciences. Using evidence-based science, the discipline seeks to facilitate holistic assessments of individuals and communities and to find solutions to oral health problems. Students in the discipline learn to transfer learning from clinical to community contexts as a means of improving the oral health status among people.

Adviser
D583 Health Sciences, Box 357475
(206) 543-5820
dhyg@uw.edu

The Dental hygiene degree completion program offers the following program of study:

- Bachelor of Science degree with a major in dental hygiene.

The UW has no pre-licensure program in dental hygiene.

Bachelor of Science

Suggested First- and Second-Year Courses: Students desiring entry into the dental hygiene profession may take their first-year general education courses in chemistry, psychology, sociology, public speaking,

English composition, mathematics, nutrition, microbiology, and liberal studies at the UW, or another community, technical, or four-year institution. Having successfully completed a pre-licensure dental hygiene program and obtained a license to practice dental hygiene, students are eligible to return to the UW to complete the Bachelor of Science degree with a major in dental hygiene.

Department Admission Requirements

The dental hygiene program is not accepting new applicants. Please contact the program for further information.

Major Requirements

Following completion of a pre-licensure dental hygiene program and being licensed to practice dental hygiene, students must complete UW general education requirements as well as dental hygiene major requirements to obtain the BS degree. UW requirements include a 45-credit senior residency; English, writing, and quantitative reasoning proficiencies; and Areas of Knowledge courses. The dental hygiene major requirements include a sequence of three dental-hygiene core courses and a minimum of one path.

Completion of the required major and UW requirements takes one to two years. Students planning to graduate in one year must have a faculty-approved plan of study within the first quarter of enrollment. Students planning a two-year program must have a faculty-approved plan of study within the first two quarters of enrollment. All students must meet with a program adviser yearly and are encouraged to meet with one quarterly.

Core Requirement

Students complete a year-long core requirement founded on significant oral health problems and probable solutions within the context of specific communities. Behavioral change, community development, health education models, and scientific literature provide a theoretical foundation for study in the core courses. The core curriculum focuses on real problems in real places. Using a people-places-problems approach, students use Internet and library resources to Research, analyze, discuss, and make evidence-based decisions relevant to oral health promotion and dental disease prevention. Further, they explore core values, ethics, laws, and issues related to care access, health promotion/disease prevention approaches, and healthcare delivery models. Included are field activities linked to education, government, business, and health resources. Additionally, dental hygiene majors complete requirements in at least one path and may take electives of their choice to complete the senior residency requirement. All students must complete the three core courses, D HYG 465, D HYG 492, and D HYG 493 (3 credits each, total 9) in the prescribed order.

Path Requirement

Students must select at least one of two pathways to fulfill the path requirement. The options are as follows:

Dental Hygiene Care. This path is for dental hygienists who desire to work as clinicians in hospitals, clinics, long-term care facilities, or other healthcare services that require advanced clinical and management skills. Students take courses in interdisciplinary health sciences, along with courses that focus on dental hygiene care and management of persons with physical, mental, developmental, and complex medical disabilities. Required courses in oral medicine augment this path. Major requirements include a minimum of 11 or 12 credits beyond the core: 10 credits in ORALM 460, or approved alternatives that focus on care of special clients; 3 credits of approved interdisciplinary health science courses; and 2 credits of approved Research.

Oral Health Promotion. This path is for dental hygienists who desire to work in multicultural and multidisciplinary settings at the local, state, national, or international levels and who require skills beyond clinical expertise. Students learn about the framework within which societies organize and manage their healthcare services and learn to link health with the environment, people's beliefs, ways of life, and kinship. They learn about differences between Western, Eastern and Shamanistic philosophies of health as prerequisites to developing educational strategies for oral health promotion and dental disease prevention. As students build skills essential for working with health agencies, they participate in community health projects as educators, advocates, or Researchers. Activities focus on the health of children and families in rural and remote areas of Washington state. Major requirements for this path include a minimum of 15 credits beyond the core, to include 3 credits in approved interdisciplinary health sciences courses, 3 credits in healthcare delivery systems, D HYG 402 or substitute; 3 credits in health promotion strategies (D HYG 403) or approved substitute; and a minimum of 4 credits in at least two sections of D HYG 404 or approved substitutes.

Academic Standards

Minimum 2.5 grade in each dental hygiene course counted toward satisfaction of graduation requirements. Minimum 2.00 cumulative GPA for all work done in residence at the University. A student whose cumulative GPA falls below 2.00 in any quarter is placed on academic probation.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The UW dental hygiene completion program emphasizes the health of populations rather than of individuals. Dental hygienists conduct community assessments; develop networks that engage community partners; set priorities; obtain baseline measures; set targets; and measure progress toward solutions to community oral health problems. Dental hygiene core skills include the ability to search and retrieve information from the Internet; use census, geographic, and demographic data; critically assess scientific literature; analyze and interpret data; and apply new scientific knowledge to solutions of health problems. In addition to the core knowledge set, dental hygienists select from two paths of study: care of special populations and oral health promotion. Depending upon area of interest, graduates pursue careers as business managers, marketing specialists, clinic administrators, hospital and nursing home dental hygienists, public health planners, program managers, Research assistants, and teachers of dental hygiene.
- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning:*

Students in the undergraduate program take off-campus service-learning courses related to their path of study. Generally, sites are located in rural and underserved health provider shortage areas of Washington state, but may include regional, national, or international locations.

Students are eligible for international programs and exchanges following completion of their core course requirements. An applicant who is a dental hygienist from an affiliated international institution may be eligible for a tuition waiver during one or more quarters of the regular academic year (autumn, winter, spring). Students interested in these opportunities must contact the program's academic adviser at least six months in advance.

Majors may be eligible, following the completion of prerequisite courses, to participate in study-abroad programs that focus on health care delivery, oral health promotion, or dental disease prevention. The University and its affiliated sites provide the settings for fieldwork, service, and Research activities, and interdisciplinary learning experiences.

- *Department Scholarships:* Students may apply for scholarships offered by the Dental Hygiene Education fund.

- *Student Organizations/Associations:* The Washington Rural Health Organization, Washington State Public Health Association, Washington State Dental Hygienists' Association, American Dental Education Association, and International Association of Dental Research are among many from which to select.

Of Special Note: The 90-credit community college transfer limit does not apply to students admitted to this program. The last 45 credits for the degree, however, must be earned in residence through the UW.

Graduate Programs

Through their respective departments, the graduate faculty members of the School offer programs leading to the degrees of Master of Science in Dentistry, Master of Science, and Doctor of Philosophy, as well as postgraduate certificate programs.

Master of Science in Dentistry/Postgraduate Certificates

Fields of study for the MSD programs include endodontics, oral pathology, oral medicine and orofacial pain, orthodontics, pediatric dentistry, periodontics, and prosthodontics. Although students may enroll in a graduate certificate program only, they may elect to pursue an MSD. Programs are planned to prepare students to think independently, to evaluate their own services and the literature of the programs, and to develop clinical skills to a level to permit successful clinical practice, teaching, or Research in their chosen specialty. Emphasis is placed on the basic principles of diagnosis and treatment. The purpose of the programs is not only to train students in their respective specialties but also to encourage preparation for academic careers or for Research. Research may be undertaken in basic or applied science. Opportunities for collaborative Research are available with the cooperation of other colleges, schools, or departments of the University.

Postgraduate certificate programs are not administered by the Graduate School, and no thesis is required. The course content may vary somewhat from the MSD program, although the same academic standards are applied in both programs. Tuition and fees are assessed at the graduate level for both programs.

Master of Science in Dentistry

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school.
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional: a personal statement that addresses the relationship between personal background and aspirations
5. A brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the department
7. GRE General Test scores
8. TOEFL -- required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

50 credits, to include:

1. *Required courses (Approximately 35 credits from this list):* ORALB 564, ORALB 565, ORALB 566, ORALB 569, PERIO 575, ORALB 570, ORALB 575, ORALB 579; either ORALB 591, ORALB 592, or DPHS 568; for foreign-trained dentists and non-dentists: ORALB 572, PATH 544
2. *Recommended electives (Approximately 15 credits from this list):* DPHS 569, MEBI 520, ORALB 562, ORALB 574, PATH 501, PATH 552
3. *Research:* Fulfilled by either a report on experimentation carried out by the student in one of the laboratories, or a case report with review of the literature. Students interested in a more Research-intensive experience should consider enrolling in the MS in Oral Biology (thesis) program.
4. *Teaching:* Students are encouraged to take elective courses offered through the Department of Medical Education and Graduate School.
5. *Note:* At present, this program is not certified by the American Board of Oral Pathology.

Master of Science in Dentistry, Endodontics

Admission Requirements

1. Professional degree from a dental school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. A personal statement that addresses the relationship between the student's personal background and aspirations
5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Endodontics (international applicants must also send official transcripts to the Graduate School)
7. GRE General Test - required only from applicants who graduated from a non-ADA-accredited dental school
8. TOEFL - required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 148 credits, to include:

1. Students who have adequate backgrounds in required courses may, on presentation of appropriate documentation, be excused from required courses at the discretion of the program director.
2. *Required core courses:* ENDO 561, ENDO 580 through ENDO 587, ENDO 590, ENDO 593, ENDO 594, ENDO 600, ENDO 658, ENDO 660, DENT 565, DENT 568, DPHS 568, DPHS 569, ORALB 569, ORALB 574, ORALB 579, ORALB 591, ORALB 592, ORALM 580, ORTHO 580, PERIO 567, PERIO 582, PERIO 585, PERIO 586
3. *Non-thesis Research:* A non-thesis Research study is required. During the first year, each student is encouraged to gain familiarity with Research in progress and to help identify an area of special interest. Then, a preceptor and Research advisory committee is appointed and the student begins

Research work. The master's defense is concerned with the Research subject matter and is conducted as an open seminar followed by examination by the advisory committee.

4. *Teaching:* Students audit predoctoral lecture courses in endodontics, assist with teaching in the predoctoral endodontics laboratory course, and supervise predoctoral dental students working in the endodontic clinic.

Master of Science, Oral Biology

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional: a personal statement that addresses the relationship between the student's personal background and aspirations
5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Oral Biology
7. GRE General Test
8. TOEFL - required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections)

Degree Requirements

Minimum 70 credits, to include:

1. Minimum 70 credit hours (including at least nine credits of thesis), of which at least 7 credits must be from science courses outside the Department of Oral Biology. Students who have adequate backgrounds in required courses may, on presentation of appropriate documentation, be excused from required courses; up to six hours of transfer credit may be granted at the discretion of the Graduate School.
2. *Required core courses:* ORALB 569, ORALB 575, ORALB 578, ORALB 579, ORALB 581, ORALB 591, ORALB 592, ORALB 600, ORALB 700, DPHS 568
3. *Electives:* 7 credits from science courses outside oral biology
4. *Recommended:* One class on educational methods
5. *Thesis Research:* A Research thesis is required. During the first year, each student is encouraged to spend time in several laboratories to gain familiarity with Research in progress and to help identify an area of special interest. Then, a preceptor and thesis advisory committee is appointed and the student begins thesis work. The final examination is concerned with the subject matter of the thesis and is conducted as an open seminar followed by examination by the advisory committee.
6. *Teaching:* Students are encouraged to take elective courses offered through the Department of Medical Education and Graduate School.

Master of Science in Dentistry, Prosthodontics

Admission Requirements

1. Professional degree from a dental school
2. Complete electronic application to the Graduate School, including \$65 application fee

3. Complete the Questionnaire to Applicants for Postdoctoral Training (available for download at the School's website, www.dental.washington.edu)
4. Class Standing form (available for download at the School's website, www.dental.washington.edu)
5. Waiver form
6. Three letters of recommendation or Evaluation of Applicant forms (available for download at the School's Website, www.dental.washington.edu)
7. A personal statement explaining why the student wishes to pursue an education in prosthodontics
8. A CV or Resume
9. Official transcripts, sent directly to the Department of Prosthodontics (all applicants must also send official transcripts to the Graduate School)
10. GRE General Test (required only for applicants who graduated from a non-ADA-accredited dental school outside the US or Canada)
11. TOEFL required for international students; the minimum TOEFL score required is 237 computer, 580 paper, iBT 70, (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 108 credits, to include:

1. *Required Core Courses:* PROS 560, PROS 562, PROS 563, PROS 564, PROS 572, PROS 660 (minimum 16), PROS 665, RES D 570, RES D 580, RES D 585, RES D 588, RES D 589, RES D 590, RES D 600 (minimum 14), RES D 660 (minimum 24), DENT 565, DPHS 568, DPHS 569, ORALM 570, ORALM 580, ORALB 574, ORTHO 580, ORTHO 582, PERIO 561, PERIO 580, PERIO 582, PERIO 585, PERIO 586
2. *Non-thesis Research:* A non-thesis Research study is required for the MSD. During the first year, each student is encouraged to gain familiarity with Research in progress and to help identify an area of special interest. After the student identifies an area of interest, a Research committee is established. The master's defense is concerned with the Research subject matter and is conducted as an open seminar followed by examination by the committee.
3. *Teaching:* Second- and third-year students supervise predoctoral dental students working in the prosthodontics and restorative clinics.

Master of Science, Dental Hygiene

Admission Requirements

1. Either a baccalaureate or a professional degree from a dental or medical school
2. Completed application and application fee of \$65
3. Three letters of recommendation
4. 200-300 word statement of educational and professional objectives which includes a general area of Research interest and academic goals. Optional - a personal statement that addresses the relationship between the student's personal background and aspirations
5. Brief biographical sketch in a resume/CV format
6. Official transcripts, sent directly to the Department of Oral Biology
7. GRE General Test

- TOEFL - required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

70 credits, to include:

- Coursework*: 48 credits, as follows: CONJ 401, CONJ 402, CONJ 403, PATH 544, PERIO 575, ORALB 520, ORALB 561, ORALB 572, ORALB 575; at least one of the following: PERIO 517, DPHS 568, DPHS 569, or O S 532; at least two of the following: MEBI 520, MEBI 521, GRDSCH 630, ORALB 562, D HYG 595.
- Electives*: 22 credits of electives. Recommended electives: ORALB 569, ORALB 574, ORALB 578, ORALB 579, ORALB 600, DENT 534, DPHS 550, DPHS 569, ORTHO 580, O S 520, PHCOL 434, PHCOL 435, ORALM 520
- Clinical opportunities may be available in the DECOD (Dental Education in Care of Persons with Disabilities) and the Dental Fears Clinics.

Doctor of Philosophy

Admission Requirements

- Either a baccalaureate or a professional degree from a dental or medical school
- Completed application and application fee of \$65
- Three letters of recommendation
- 200-300 word statement of educational and professional objectives which includes a general area of research interest and academic goals. Optional: a personal statement that addresses the relationship between the student's personal background and aspirations
- Brief biographical sketch in a resume/CV format
- Official transcripts, sent directly to the Department of Oral Biology
- GRE General Test
- TOEFL - required for international students. The minimum TOEFL score required is 237 computer, 580 paper, iBT 70 (based only on listening, reading, and writing sections).

Degree Requirements

Minimum 90 credits, to include:

Through coursework, students are expected to gain proficiency in one or more basic biologic sciences and to master modern biological approaches in addition to gaining expertise in the subject area of oral and craniofacial sciences. At least 15 credit hours must come from science courses in departments other than oral biology. These include courses offered through the School of Medicine and courses selected to match the basic science interests of the student. Cross-disciplinary training in bioengineering is also available. All graduate students attend and participate in departmental seminars (ORALB 575).

- Required core courses*: ORALB 569, ORALB575, ORALB 578, ORALB 579, ORALB 581, ORALB 591, ORALB 592, ORALB 600, ORALB 800, DPHS 568
- At least 6 credits from the following School of Medicine courses: CONJ 524 through CONJ 558 and PABIO 537
- Strongly recommended: at least one class on educational methods

Residency Training

Residency training programs are available in oral and maxillofacial surgery and the general practice of dentistry. Both programs provide for rotation through several of the University-affiliated hospitals. Each is a fully accredited program that grants a certificate upon successful completion of the training. Stipends are provided.

The oral and maxillofacial surgery program is four years in duration and provides broad exposure to all aspects of the practice of oral and maxillofacial surgery. Application, selection, and administration of this training program is provided through the Department of Oral and Maxillofacial Surgery. Applicants to the program must be graduates of an accredited U.S. or Canadian Dental School, demonstrate proficiency in the English language, submit National Dental Board Examination scores for Part 1, and register and participate in the Postdoctoral Dental Matching Program. Further information can be obtained by contacting the Residency Program Coordinator, Department of Oral and Maxillofacial Surgery, Box 357134, University of Washington, Seattle, WA 98195-7134, (206) 543-7722.

The General Practice Residency (GPR) is a one-year training program with a second optional year that emphasizes the general dentist's role in a hospital setting and the management of medically, physically, and mentally compromised patients. It also provides multiple resources for enhancement of dental clinical skills in the dental setting, applying management techniques through minimal, moderate sedation and general anesthesia in the operating room. Applicants to the program must be graduates of an ADA-accredited dental school, submit National Dental Board Examination scores for Part 1, and register and participate in the Postdoctoral Application Support Service (PASS) and Postdoctoral Dental Matching Program (MATCH). Further information can be obtained by visiting the website at dental.washington.edu/departments/gpr/general-practice-residency.html.

Postdoctoral Fellowships

Postdoctoral training fellowships are available in behavioral or public-health Research in dentistry in addition to those in oral biology. Programs vary in duration and many accommodate degree-seeking or Research fellows pursuing an academic career. NIH-sponsored partial tuition and a stipend for up to three years are provided for U.S. citizens, noncitizen nationals, and those foreign nationals with permanent-residency status in the United States. Members of ethnic minorities and women are especially invited to apply. Application, selection, and administration of the program are provided through the Departments of Dental Public Health Sciences and Oral Biology.

Graduate Training in Dental Public Health

Opportunities exist for pursuing graduate degrees in public health which emphasize applications to Research in dentistry. Master of Public Health (MPH) programs in the Departments of Epidemiology and Health Services of the School of Public Health can be pursued in conjunction with postdoctoral training in the School of Dentistry's Department of Dental Public Health Sciences. Didactic coursework is taken in the School of Public Health and Community Medicine, augmented with independent study and thesis Research on selected topics in the School of Dentistry. Similar opportunities exist for pursuing the PhD in epidemiology or biostatistics with an emphasis on Research in dentistry. Further information may be obtained from the Office of Academic Affairs, Box 357480, School of Dentistry, University of Washington, Seattle, WA 98195-7480, (206) 221-6887.

The Office of Continuing Dental Education, School of Dentistry, offers programs and courses throughout the year to provide dentists, auxiliary personnel, and others involved in healthcare with current scientific knowledge and methodology of patient treatment. Utilizing local, national, and international experts, these programs provide a broad spectrum of information relevant to the needs of dental-health professionals. The instructional program consists of lectures, clinical courses, study clubs, extended clinical training,

correspondence, and participation courses, some of which are offered in the simulated-patient laboratory. Various programs are presented throughout the year in the Pacific Northwest, Alaska, and Hawaii.

A list of courses offered may be obtained from the Office of Continuing Dental Education, Box 357137, University of Washington, School of Dentistry, Seattle, WA 98195-7137, (206) 543-5444, dental.washington.edu/cde/current-course-listings.html.

Professional Program

Doctor of Dental Surgery

The Doctor of Dental Surgery (DDS) curriculum provides students opportunities to learn the fundamental principles significant to the entire body of oral health. Students (approximately 63 per class) learn the basic health sciences, attain proficiency in clinical skills, develop an understanding of professional and ethical principles, and develop reasoning and critical decision-making skills that enable implementation of the dental knowledge base. The first year is divided among lecture, laboratory, and preclinical activities in basic sciences, dental anatomy, occlusion, and dental materials. There are also early clinical experiences in preventive dentistry and periodontics. In the second year, students develop additional preclinical skills, learn how basic science principles are applied to the clinical setting, and begin clinical patient treatment. In the third and fourth years, students primarily concentrate on providing clinical treatment and attend lectures that refine diagnostic and technical skills. Additionally, students are required to participate in elective clinical and didactic courses. Students choose elective courses offered by all departments, including opportunities in independent study, Research, seminars on various topics, and specialty clinical topics.

The DDS curriculum extends for 42 months or 14 quarters, including two summer quarters. Twelve of the academic year quarters are ten weeks of instruction and one week of examination, while the two required summer quarters following years two and three are each nine weeks long. If needed, students may be allowed additional time to complete required coursework beyond 42 months.

Admission

Requirements include all undergraduate courses listed below; Dental Admission Test; personal interview. The Admissions Committee encourages diversity in majors. Courses in the social sciences and the humanities are included in the committee evaluation. Dental experience, community service, and non-cognitive factors are given consideration as part of the whole file review.

The School of Dentistry is a state-supported institution and participates in the student exchange program provided by the Western Interstate Commission for Higher Education (WICHE) which supports students from western states without dental schools. Although all applications are carefully reviewed, preference in admission is given to residents of Washington and WICHE states, followed by residents of other states.

Required courses: general chemistry - two quarters or one semester; organic chemistry - two quarters or one semester; general biochemistry - two quarters or one semester; general physics - three quarters or two semesters; general biology or zoology - three quarters or two semesters; general microbiology - two quarters or one semester. Recommended: medical microbiology.

Transfer Applicants: The school rarely, and only under exceptional circumstances, admits transfer students from other dental schools.

Foreign Applicants: The school does not provide a special program for foreign-trained dentists.

Health Sciences Minority Student Programs: To increase diversity of students, the school participates in the Health Sciences Minority Student Program. In addition to advising and career counseling, this office works with Health Sciences schools to provide student development and support programs, networking opportunities, and summer Research programs. The HSMSP office activities include participation on several health sciences and campus-wide committees for purposes of collaborating and exchanging strategies on effective methods for recruiting and retaining a diverse student body, as well as promoting and celebrating diversity.

Regional Initiatives in Dental Education (RIDE) is a strategic expansion of the University of Washington School of Dentistry in conjunction with Eastern Washington University, designed to help meet the oral health needs of rural and underserved communities in the Northwest. RIDE creates regional training sites in areas lacking dental schools by partnering with regional universities, dentists and dental associations, community health centers, and others. Student admission to the RIDE program in Spokane is limited to residents of Washington State.

The School belongs to the American Association of Dental Schools Application Service (AADSAS). November 1 of the year prior to matriculation is the AADSAS priority filing deadline. Only applications received in the AADSAS Washington, D.C. office by the priority filing date are forwarded to the UW for consideration by the Admissions Committee. There are no exceptions. AADSAS applications are available online at www.adea.org. The UW Dental School's DAT deadline is October 31 of the year prior to matriculation. Information regarding the Dental Admission Test may be found at www.ada.org.

For information on admission to the UW School of Dentistry, contact the Office of Student Life and Admissions, School of Dentistry, University of Washington, Box 356365, Seattle, WA 98195-6365, (206) 543-5840, askuwsod@uw.edu, or www.dental.washington.edu (click on the "prospective student" link). University of Washington undergraduates may contact the Predental Advising Office, University of Washington, 141 Mary Gates Hall, Box 353760, Seattle, WA 98195-3760.

Once the AADSAS application has been received, a preliminary screening determines if an applicant meets the Admissions Committee's criteria to receive a supplemental application and request for the following materials:

1. A supplementary application which includes a short personal statement
2. A non-refundable application fee of \$35
3. Three letters of recommendation are required: one from a science instructor who can evaluate the applicant's academic and intellectual qualifications, a second from a dentist who is familiar with the applicant's knowledge of and motivation toward the dental profession, and a character reference from someone who can indicate the applicant's contribution to the community, etc.
4. If a predental committee exists on the applicant's campus, a combined recommendation from that committee may be used to replace all three recommendations. The School of Dentistry accepts letters of recommendation processed by AADSAS, or directly from recommenders.
5. Dental Admission Test scores. **Test must be taken by October 31 of the year prior to entry.**
6. Transcripts from all higher education institutions attended
7. A list of current and future courses
8. Acknowledgment of having read, understood, and being able to meet, with or without reasonable accommodation, the Essential Requirements of Dental Education at the University of Washington School of Dentistry (to be sent with the supplemental application form)
9. Conviction/criminal history information. Washington state law requires that all faculty, students, and staff disclose background information concerning crimes and offenses against vulnerable populations. A complete copy of the law is available from the School's Office of Student Life and

Admissions and is forwarded upon request. Applications are not considered until completed disclosure forms have been returned to student admissions.

The application is considered complete once all materials noted above (1-9) are returned. Upon receipt of the completed application, invitations for an interview are sent to applicants based on an additional screening of the whole file. The interview is an opportunity for an open, friendly discussion of the applicant's interests, background, and reasons for selecting dentistry as a profession. During the interview day, applicants have numerous opportunities to learn about UW programs, faculty, and student life. In addition to the interview, the School provides the applicant with financial aid and cost information. During the lunch hour, applicants meet with enrolled students and tour the School. Applicants also meet with the deans to learn about programs, Research, and cultural opportunities.

The admissions committee, composed of faculty and community dentists, determines admission status after considering the following:

1. *Grades.* Overall GPA and GPA in required pre dental science courses. Committee members look for a strong, consistent GPA without withdrawals, incompletes, repeated courses, or non-graded options. Grade trends are reviewed.
2. *DAT (Dental Admission Test).* The test, sponsored by the American Dental Association, covers several areas: reading comprehension, quantitative reasoning, survey of natural sciences (including biology, general, and organic chemistry), and perceptual ability (including form development, apertures, angles, cubes, and orthographic projections). At the UW, scores are reviewed to identify an applicant's areas of strength. The test must be taken no later than October 31, one year prior to admission.
3. *Level of Pre-professional Education.* The majority of applicants have completed a baccalaureate degree by the time of entry. Consideration is given to applicants who have not or do not expect to complete a baccalaureate degree, but who have completed all pre dental requirements, have a highly competitive academic record, and a minimum of three years' full-time coursework.
4. *Dental Knowledge.* Includes knowledge of the field of dentistry through volunteer experience in a dental setting (dentist's office, clinic, etc.), introductory dental coursework, and exploration of the dental literature. A qualified applicant has a clear understanding of the profession, a demonstrated interest in the field, and a minimum of 100 volunteer hours in a dental setting.
5. *Contribution to Diversity.*
6. *Unique Life Experiences.* Among other things, Research and teaching efforts, travel, and work experience are some of the life experiences considered.
7. *Personal Attributes.* In addition to motivation, the applicant's poise and communication skills are examined. Personal attributes such as integrity, responsibility, leadership, initiative, community service, perseverance, and diversity of interests are important.
8. *Demonstrated Community Service.*

Interviews begin in October and typically end in February. The American Dental Association Traffic Rules allow dental schools to begin making offers of acceptance on December 1. The School uses a "rolling admission" format, so interviews and committee decisions continue to be made between December and March.

The Admissions Committee makes one of three decisions:

1. *Offer of Acceptance.* Admission application has been accepted. The applicant has a specified time to reply to reserve enrollment in the entering first-year class. In addition, enrollment is contingent on timely submission of the following: registration deposit, transcripts showing

completion of all required pre dental courses, registration for autumn quarter of the upcoming academic year, and completion of required immunizations.

2. *Alternate Status.* Applicant is offered a position on the alternate list. The applicant has a specified time to reserve a position on this list, maintained until the beginning of the school year.
3. *Denial of Admission.* The Committee has considered the application but cannot offer a position or alternate status.

Accepted applicants receive follow-up information about registration procedures, financial aid, and the orientation program throughout the spring and summer. Attendance at orientation is mandatory and provides an opportunity for newly enrolled students to learn about the upcoming curriculum, student rights and responsibilities, financial aid information, student organizations, challenge examinations, and the start of academic coursework. Orientation begins in late August. New students attend an off-campus student retreat to interact with peer advisers and meet classmates in an informal setting.

Western Interstate Commission for Higher Education (WICHE): The school participates in a program administered by WICHE for students who reside in western states not served by a dental school (Alaska, Arizona, Hawaii, Montana, New Mexico, North Dakota, and Wyoming). Such students should seek requests for certification and information about benefits of the program from the WICHE commission office in their state of residence.

Projected costs can be found at dental.washington.edu/prospective-students/projected-costs.html.

Information on loans and scholarships may be obtained from the Director of Financial Aid, D323 Health Sciences, Box 356365. Information relating to student life, including the Academic Regulations Manual and Professional Ethics Code may be obtained from the Associate Dean for Student Life and Admissions, D323 Health Sciences, Box 356365.

Degree Requirements

285-333 credits minimum, as follows:

1. *Year 1 (71 credits, plus electives):* B STR 431, B STR 530, B STR 541; DENT 610; DPHS 510; ORALB 510 (3, 3), ORALB 520; ORALB 521; ORALM 513, ORALM 514, ORALM 515; ORALM 516, ORALM 517; P BIO 505; P BIO 506 (4, 4); PATH 544 (3, 2); PERIO 517; RES D 510 (1, 2), RES D 511, RES D 515, RES D 516, RES D 517, RES D 519
2. *Year 2 (86 credits, plus electives):* DENT 520; DENT 521, DENT 522; DENT 523; ENDO 521; O S 520; ORALM 520 (2, 2, 2), ORALM 525, ORALM 526, ORALM 527, ORALM 528, ORALM 529; ORTHO 520, ORTHO 521, ORTHO 522; PEDO 520, PEDO 525; PERIO 525, PERIO 526 (2, 2); PERIO 620; PHCOL 434, PHCOL 435; PROS 520, PROS 523, PROS 525; RES D 520, RES D 521, RES D 522 (3, 3, 3); RES D 525, RES D 526, RES D 527 (3, 3, 3); RES D 620
3. *Year 3 (74 credits, plus electives):* DENT 533, DENT 534 (1, 1), DENT 537, DENT 543; DENT 551, DENT 552, DENT 553, DENT 554; DPHS 535, ENDO 534, ENDO 535, ENDO 630 (1, 1, 1, 1); O S 530 (1, 1, 1), O S 532, O S 630 (2, 2); ORALM 531, ORALM 532, ORALM 533; ORALM 630 (1, 1, 1, 2); ORTHO 630; ORTHO 631; PEDO 630 (1, 1, 1, 1); PERIO 530, PERIO 531; PERIO 630, PERIO 631, PERIO 632; PERIO 639; PROS 630 (1, 1, 1, 2); RES D 530, RES D 531, RES D 532; RES D 535, RES D 630 (2, 3, 3), RES D 635
4. *Year 4 (55 credits, plus electives):* DENT 547, DENT 548, DENT 549 (2, 2, 2); DENT 555, DENT 556, DENT 557 (1, 1, 1); DENT 640, DENT 645; DPHS 541, DPHS 640; ENDO 630 (1, 1, 1); O S 630; ORALB 540; ORALM 540 (2, 2), ORALM 545 (1, 1), ORALM 640 (1, 1, 1); PEDO 630 (1, 1, 1); PERIO 540; PERIO 640, PERIO 641, PERIO 642 (1, 1, 1); PROS 640 (1, 1, 1); RES D 540, RES D 541, RES D 542, RES D 640 (3, 3, 3)

5. *Electives:* A minimum of two elective courses must be taken during the course of the program. Elective credits may not exceed a total of 50 credits.

Facilities

School clinics, teaching laboratories, and lecture halls are up-to-date, well maintained, and periodically renovated. Clinical modules are assigned to students for use in patient treatment. The D-1 Simulation Clinic is a state-of-the-art teaching facility used for preclinical and laboratory courses.

School Accreditation and Licensure

The school is fully accredited by the Commission on Dental Accreditation, the recognized accrediting body for dentistry and the related dental fields. For information, write to the Commission on Dental Accreditation, 211 East Chicago Ave., Chicago, IL 60611-2678. Admission to the practice of dentistry in any state is conditional upon meeting the requirements of the individual state dental licensure requirement. In order to practice in the State of Washington, the candidate for licensure must have a dental degree from a U.S. or Canadian dental school, and have successfully completed the American Dental Association National Board Examinations and the Western Regional Examining Board Examination. Additional information about licensure requirements should be requested from the Washington State Department of Health, Dental Quality Assurance Commission, PO Box 1099, Olympia WA 98504-1099, (360) 586-6898.

Health Care and Immunization Policy

Enrolled students at the UW School of Dentistry are eligible for healthcare services provided by the Hall Health Primary Care Center. In addition, the University has arranged for an Accident and Sickness Insurance Plan specifically designed for students, their dependents, and their domestic partners for which the Hall Health Primary Care Center is the preferred provider. The UW Health Sciences Center requires that its students, staff, and faculty show documentation of protection against a number of vaccine-preventable diseases. Additional information is available via the Hall Health Primary Care Center website at depts.washington.edu/hhpccweb/

College of Education

College Overview

Dean

Mia Tuan
222 Miller

Associate Deans

Janine Jones
Deborah E. McCutchen

Assistant Deans

Martin Howell
Ann O'Doherty

The College of Education is dedicated to equity and excellence in education through preparation and renewal of education professionals, promotion of social justice, advancement of knowledge through research, and connection of research to inform policy and improve practice. In its graduate programs the College has four broad curricular areas: Teaching, Learning, and Curriculum; Educational Foundations, Leadership, and Policy Studies; Learning Sciences and Human Development; and Special Education, School Psychology, and Statistics. Graduate degrees conferred include the MIT, MEd, EdS, EdD, and PhD. Certification can be earned in teaching (elementary, secondary, and special education), school administration (principals, program administrators, and superintendents), and school psychology.

In addition, the College offers three BA degrees: (1) Education, Communities, and Organizations; (2) Early Childhood and Family Studies; (3) Early Care and Education. In collaboration with the College of Arts and Sciences, the College also offers an undergraduate minor in Education, Learning, and Society.

The College of Education at the UW believes that an effective public education system for a diverse citizenry is the cornerstone of a democratic society. To that end, the College dedicates its resources to helping make an excellent education an everyday reality for every student in every community across the state and country. As part of a major university located in a metropolitan area, the College is able to work in collaboration with a number of school districts in the area to provide teaching, research, and field experiences for its students.

Special Offices and Services

The College of Education maintains a number of specialized offices. Among these are the Office of Teacher Education, the Office of Student Services, the Office of Student Diversity and Inclusion, Unite:Ed (community-practice-research partnerships), and a Writing Support Center. In addition, the College maintains formal relationships with a number of school districts and community organizations in the area to provide research and field experience opportunities for students. Individuals interested in a bachelor's degree in early learning or education in formal and informal settings, graduate degree teacher certification in general and special education, or graduate degree programs in higher education, policy, instructional leadership, school psychology, learning sciences, or educational psychology, may visit the College's website,

education.uw.edu, or e-mail edinfo@uw.edu, for additional information.

Undergraduate Program

Adviser

206 Miller Hall
(206) 221-3527
edinfo@uw.edu

The College of Education offers the following programs of study:

- Bachelor of Arts degree with a major in Education, Communities, and Organizations
- Bachelor of Arts degree with a major in Early Childhood and Family Studies with an option in teaching and learning
- Bachelor of Arts degree with a major in Early Care and Education, an online degree completion program. (Formerly the College of Education offered two major options: (1) General Core and (2) Teaching and Learning. As of autumn quarter, 2020, however, those two options have been replaced by a single major. Please refer to the [UW Seattle General Catalog Archive](#) for information about the options.)
- A minor in Education, Learning, and Society (with the College of Arts & Sciences)

Bachelor of Arts

Education, Communities, and Organizations

Department Admission Requirements

1. Satisfactory progress toward completion of general education requirements; minimum 45 credits
2. Completion of one English composition course (minimum 2.5 grade), EDUC 280 (minimum 2.0 grade), and minimum 2.50 overall GPA
3. Submission of a personal statement indicating interest in the major
4. Application deadlines: April 15 for autumn admission; October 15 for winter admission. Depending on program capacity, applications may be considered after the deadlines.

Information sessions are offered to learn more about the major and how to apply. See schedule at education.uw.edu/programs/undergraduate/eco/admissions

For further information, see: education.uw.edu/programs/undergraduate/eco

General Education Requirements

1. Language and Reasoning Skills
 - a. English Composition (5 credits)
 - b. Quantitative/Symbolic Reasoning (5 credits)
 - c. Writing Courses (10 credits)
 - d. Diversity Course (3 credits)
2. Areas of Knowledge

- a. Visual, Literary & Performing Arts (VLPA) (15 credits)
- b. Individuals & Societies (I&S) (15 credits)
- c. Natural World (NW) (15 credits)
- d. Areas of Knowledge (15 additional credits from any area)

Courses taken to satisfy admission requirements and language and reasoning skills requirements may also fulfill Areas of Knowledge requirements. Courses used to fulfill major requirements may also fulfill these requirements, including up to 15 credits of EDUC-prefix courses.

Major Requirements

68 credits

1. EDUC 280 (3 credits)
2. Core Courses (25 credits): EDUC 251, EDUC 370; one from EDPSY 302, EDPSY 380, EDPSY 404 (depending on life-span emphasis – child, adolescent, or adult development); EDUC 472, EDUC 473
3. Concentration Electives (25 credits): See adviser for current list
4. Major Capstone Courses (15 credits minimum): EDUC 481, EDUC 482, EDUC 483
5. Minimum 2.00 cumulative GPA in courses used to satisfy major requirements
6. Minimum 45 credits applied to the major taken through the UW

Student Outcomes and Opportunities

- *Learning Objectives:* The student will be able to:
 - Support learning of others across a diverse society
 - Understand that development and learning happen in context and how to enter and engage with different contexts
 - Understand the structure, assets, and values of belonging and contributing to institutions, organizations, and communities
 - Represent themselves, their stories, and their ideas orally, in writing, and in action
 - Continuously self-reflect on their own positionality to engage respectfully with people who have the same and different identities, beliefs, experiences, and ideas
 - Seek out learning and constructive feedback with an open mind
 - Commit to the wholeness and wellness of all, especially those who have historically and continue to be targeted and marginalized
- *Service Learning and Research:* Community engagement is an integral part of the student experience. Students complete three hours per week of service learning with a community-based organization or school when they take EDUC 280 Introduction to Education, Communities, and Organizations. In their final year of the program all students complete a three-quarter internship working with a community-based organization or school. Students collaborate with their site supervisor and mentor to develop an internship project that both supports the work of the partner organization and furthers the student's learning objectives.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.

- *Department Scholarships:* See [departmental website](#) for undergraduate scholarship information.
- *Student Organizations/Associations:* Associated Students of the College of Education (ASCE) and International Educators of the College of Education (IECE).

Early Childhood and Family Studies

Department Admission Requirements

1. Satisfactory progress toward completion of general education requirements
2. Admission is capacity constrained, based on the following criteria. Completion of requirements does not guarantee admission.
 - a. Minimum 2.0 grade in ECFS 200
 - b. Minimum 2.0 grade in English composition
 - c. Two-to-three page personal statement reflecting an interest in the early childhood and family studies major and a commitment to learning about the field
 - d. Overall academic performance reflected in copies of unofficial transcripts
 - e. Other evidence of interest in and commitment to the field (e.g., work experience, volunteer experience, or internships)
 - f. Grades in any completed recommended courses and courses applied to major requirements
3. Applications due October 15 for winter quarter start and April 15 for autumn quarter start. For current UW students, notification is sent two weeks later; for transfer students, notification is sent after applicants are admitted to the UW. Transfer students who have not completed ECFS 200 prior to admission must complete this course after matriculation to UW. Applications may be considered after the dates above on a case-by-case basis, depending on program capacity.

Students accepted typically have a minimum cumulative 2.50 GPA and a minimum grade of 2.0 for any prior college coursework that can be applied toward the major.

Information Sessions: Information sessions are offered to learn more about the major and how to apply. See schedule at education.uw.edu/programs/undergraduate/ecfs.

For further information see education.uw.edu/programs/undergraduate/ecfs/, or inquire at 206 Miller.

General Education Requirements

1. Language and Reasoning Skills
 - a. English Composition (5 credits)
 - b. Quantitative/Symbolic Reasoning (5 credits)
 - c. Writing Courses (10 credits)
 - d. Diversity Course (3 credits)
2. Areas of Knowledge
 - a. Visual, Literary & Performing Arts (VLPA) (15 credits)
 - b. Individuals & Societies (I&S) (15 credits)
 - c. Natural World (NW) (15 credits)
 - d. Areas of Knowledge (15 additional credits from any area)

Maximum 15 credits in ECFS-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirements.

Major Requirements

74-86 credits

1. *Early Childhood and Family Studies Core Courses (39 credits)*: ECFS 200, ECFS 303 (3), ECFS 311, ECFS 401, ECFS 402; EDPSY 302, EDPSY 406; EDUC 251; NSG 432
2. *Area of Study (35-47 credits)*: one of the areas below
 - a. Option in core (35-47 credits):
 - i. one of ECFS 315, ECFS 320, or ECFS 419 (5 credits)
 - ii. EDSPE 304 or adviser approved substitute (3-5 credits)
 - iii. ECFS 403
 - iv. *Electives*: see website for approved list of College of Education courses (25 credits)
 - b. Option in Teaching and Learning (45-47 credits):
 - i. All major requirements except ECFS 403 and 25 credits of electives
 - ii. ECFS 301, ECFS 312 (3), ECFS 321, ECFS 400, ECFS 410, ECFS 411, ECFS 454, ECFS 455, ECFS 456; EDUC 170
3. Minimum 2.00 cumulative GPA in courses used to satisfy major requirements
4. Minimum 40 credits applied to the major taken through the UW

Student Outcomes and Opportunities

- *Learning Objectives*: The early childhood and family studies major immerses students in the study of child and family development and education. Students learn about child development, early learning, and family studies from a variety of perspectives. They receive a strong grounding in reading and understanding the theory and evidence that provide the foundation for the field and drive current research and policy efforts.
- *Expected Outcomes*: Students apply their knowledge and skill as they work alongside community-based teachers, community leaders, and care providers. The degree provides preparation for a wide variety of careers in early learning, childcare, parent and family support and education, child and community advocacy and organization, and social and mental health services. It also serves as a pathway for graduate studies in education, child and family studies, educational policy, special education, and other areas.
- *Service Learning and Research*: Two sequences of field-based experiences provide students with real life-learning opportunities in community-based early childhood or family support/education settings. Students participate in both an introductory seminar experience as well as a sequenced field experience during their first year in service learning. In the Teaching and Learning option, students participate in a three-quarter senior service learning, research, and senior project that provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs, and/or research settings. The seminar ties together research and practice, demonstrating how research informs evidence-based decision-making in programs and services. Students also receive guidance in career options and current events in the field, tying in major experiences with their own developmental and career goals. Learning objectives are outlined in class.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Department Scholarships:* See [departmental website](#) for undergraduate scholarship information.
- *Student Organizations/Associations:* Associated Students of the College of Education (ASCE) and International Educators of the College of Education (IECE).

Early Care and Education (Online Degree Completion Program)

Department Admission Requirements

1. Satisfactory progress toward completion of general education requirements
2. Admission is capacity constrained, based on the following criteria. Completion of requirements does not guarantee admission.
 - a. Two-to-three page personal statement reflecting an interest in the early childhood and family studies major and a commitment to learning about the field
 - b. Overall academic performance reflected in copies of unofficial transcripts
 - c. Other evidence of interest in and commitment to the field (e.g., work experience, volunteer experience, or internships)
 - d. Grades in any completed recommended courses and courses applied to major requirements
 - e. Completion of at least 45 transferable credits
3. Application deadlines are posted on the website. Applications may be considered after the deadline on a case-by-case basis, depending on program capacity.
4. This is a limited admission program. Students admitted to the Early Care and Education online program are not allowed to transfer to another onsite or online major/degree program or complete a minor without reapplying to the UW through the normal admission review process.

Students accepted into the major typically have a minimum cumulative 2.00 GPA and a minimum grade of 2.0 for any prior college coursework that may be applied toward the major.

Information Sessions: Learn more about the major and how to apply. See schedule at <https://www.earlyeducationonline.uw.edu/admissions/info-sessions-events/>.

For further information, see <https://education.uw.edu/programs/undergraduate/ece>, or inquire at 206 Miller.

General Education Requirements

1. Language and Reasoning Skills
 - a. English Composition (5 credits)
 - b. Quantitative/Symbolic Reasoning (5 credits)
 - c. Writing Courses (10 credits)
 - d. Diversity Course (3 credits)
2. Areas of Knowledge
 - a. Visual, Literary & Performing Arts (VLPA) and Natural World (NW) (30 credits, with a minimum of 10 credits in each)

b. Individuals & Societies (I&S) (30 credits)

Maximum 15 credits in ECFS-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirements.

Major Requirements

85 credits

1. *Early Care and Education Courses (85 credits)*: ECE 201, ECE 220, ECE 322, ECE 323, ECE 401, ECE 402, ECE 419, ECE 450, ECE 456; ECFS 301, ECFS 311, ECFS 312 (5), ECFS 400, ECFS 410, ECFS 411; EDPSY 302, EDPSY 406; EDSPE 304; NSG 432
2. Minimum 2.00 cumulative GPA in courses used to satisfy major requirements
3. Minimum 64 credits applied to the major taken through the UW Seattle campus

Student Outcomes and Opportunities

- *Learning Objectives*: The early care and education major immerses students in the study of child and family development and education. Students learn about child development, early learning, and family studies from a variety of perspectives. They receive a strong grounding in reading and understanding the theory and evidence that provide the foundation for the field and drive current research and policy efforts. Upon successful completion of this degree, students will be able to:
 - Read and evaluation research.
 - Demonstrate knowledge and skills needed to apply, translate, and expand upon research findings to solve practical issues in early childhood applied settings.
 - Apply neurological, behavioral, and sociocultural knowledge of developmental and family systems theories to create practical strategies that support the development of young children and families in multicultural contexts.
 - Describe risk factors affecting child development and recognize indicators of typical and atypical child development.
 - Engage in family-sensitive practice that acknowledges the impact of biological, social, cultural, ethnic, socioeconomic, and linguistic factors on learning and development to meet the needs of students and families from diverse backgrounds.
 - Identify, evaluate, and create learning environments. While doing so, exhibit adult-child interactions that support children's social relationships, emotional and behavioral health, and self-regulation.
 - Engage in the process of impacting social policy and research by demonstrating an awareness of the assets and needs of communities.
 - Demonstrate ethical and socially responsible professional characteristics and practices anchored in a strong professional identity.
 - Discuss, apply, and teach the skills, routines, and daily habits of a resilient professional.
 - Demonstrate the appropriate selection and use of ongoing child observation and assessment to critically guide teaching and facilitate children's development and learning.
 - Assess the form and function of children's challenging behaviors, develop individual behavior support plans based on the information collected, and engage in ongoing formative assessment of children's progress.
 - Design and implement learning opportunities and justify how these are grounded in evidence-based practices that support young children's language and literacy, math, science, logic and reasoning, and learning and development.

- Design learning environments that include accommodations and adaptations for young children with varying needs and abilities.
- Enact and exhibit the use of evidence-based language and literacy practices.
- Design and implement joint adult-child interactions in mathematical situations and scientific investigations, creating tasks that can enhance children's thinking and justify how these are grounded in evidence-based practices that support young children's mathematical, scientific, logical, and reasoning development.
- *Service Learning and Research:* Two sequences of field-based experiences provide students with real life-learning opportunities in community-based early childhood or family support/education settings. Students participate in both an introductory seminar experience as well as a sequenced field experience during their first year in service learning. During the second phase, students participate in a three-quarter senior service learning, research, and senior project that provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs, and/or research settings. The seminar ties together research and practice, demonstrating how research informs evidence-based decision-making in programs and services. Students also receive guidance in career options and current events in the field, tying in major experiences with their own developmental and career goals. Learning objectives are outlined in class.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Department Scholarships:* See [departmental website](#) for undergraduate scholarship information.
- *Student Organizations/Associations:* Associated Students of the College of Education (ASCE) and International Educators of the College of Education (IECE).

Graduate Degree Programs

Graduate Program Coordinator
206 Miller, Box 353600
(206) 543-7834
edinfo@uw.edu

The College of Education currently offers five advanced degrees: Master in Teaching (MIT), Master of Education (MEd), Educational Specialist (EdS), Doctor of Education (EdD), and doctor of philosophy (PhD). The MIT degree is awarded to elementary and secondary certification students. The EdS degree is awarded to school psychology certification students. Graduate students working toward other degrees may specialize in curriculum and instruction, educational psychology, educational leadership and policy studies, or special education.. Questions should be directed to edinfo@uw.edu, or to the [College's website](#)

Master in Teaching

The Master in Teaching (MIT) degree results in a Washington residency teaching certificate for elementary or secondary (specific subjects) school teaching. The program is an integrated sequence of full-time, daytime coursework and field experiences spanning four quarters. Field experiences are in partner schools in the Seattle/Puget Sound area chosen to provide experience working with children from racially and culturally diverse communities.

Admission Requirements

1. Bachelor's degree from an accredited institution with a minimum 3.00 GPA for the last 90 quarter (60 semester) credits
2. Goal statement
3. 40 or more hours in a classroom that most closely matches the subject and grade level the applicant wishes to teach
4. Two letters of recommendation from faculty or professional references
5. Passing scores from all three subtests of the WEST-B examination. Passing scores on the ACT and/or the SAT may be submitted in lieu of the WEST-B.
6. Official transcripts from all community colleges and universities attended
7. Secondary applicants: complete required content courses in the endorsement subject they wish to teach.
8. Elementary applicants: complete prerequisite courses in child development and mathematics for elementary teachers.
9. Secondary and Elementary applicants: complete one prerequisite course in education of an ethnic group.

Degree Requirements

60-101 credits

1. **Elementary Education Focus**
 - a. Courses: EDC&I 324; EDC&I 494; EDC&I 586; EDLPS 496; EDSPE 526; EDTEP 501, EDTEP 502, EDTEP 503; EDTEP 505; EDTEP 511; EDTEP 521, EDTEP 522; EDTEP 523; EDTEP 531, EDTEP 532, EDTEP 533; EDTEP 541; EDTEP 542; EDTEP 543; EDTEP 551; EDTEP 552; EDTEP 601; UCONJ 510.
 - b. The current Washington state endorsement for elementary teachers is "elementary education." Graduates may be hired to teach specific or multiple subjects in middle or junior high school through grade 8. Those interested in teaching in the middle schools are encouraged to discuss this option with advisers in the Office of Student Services.
2. **Elementary Special Education Focus:** EDC&I 324; EDC&I 494; EDC&I 586; EDLPS 496; EDSPE 404; EDSPE 414; EDSPE 496; EDSPE 496; EDSPE 500; EDSPE 513; EDSPE 514; EDSPE 526; EDSPE 545; EDSPE 601; EDTEP 501, EDTEP 502, EDTEP 503; EDTEP 505; EDTEP 511; EDTEP 521, EDTEP 522; EDTEP 523; EDTEP 531, EDTEP 532, EDTEP 533; EDTEP 541; EDTEP 542; EDTEP 543; EDTEP 551; EDTEP 552; EDTEP 601; UCONJ 510.
3. **Secondary Education Focus:** EDC&I 494; EDC&I 586; EDTEP 551; EDTEP 561; EDTEP 562, EDTEP 563; EDTEP 564; EDTEP 565; EDTEP 571; EDTEP 573; either EDTEP 580, EDTEP 582, EDTEP 584, EDTEP 586, or EDTEP 588; either EDTEP 581, EDTEP 583, EDTEP 585, EDTEP 587, EDTEP 589; EDTEP 591; EDTEP 592; EDTEP 593; EDTEP 595; EDTEP 601; elective outside education

Master of Education

Minimum 45 credits, including minimum 15 credits in a specialized area in education; 9 credits related to, but outside the area of specialization, some coursework outside education; 9 thesis credits or, for the non-thesis option, 9 credits in a field study or other approved project; final examination.

Admission Requirements

1. Baccalaureate degree from an accredited institution
2. Minimum 3.00 GPA for the last 90 graded quarter credits (or 60 semester credits)
3. Transcripts from each college or university attended
4. GRE scores
5. Personal goal statement
6. At least two letters of recommendation
7. Prerequisites stipulated by the area of specialization within the College

Degree Requirements, Curriculum and Instruction Programs

Credits vary, depending on option

1. **Common Area Requirements (18 credits)**
 - a. *Foundations of education (9 credits)*: Courses such as history of education, education as a moral endeavor, human learning, curriculum design, special topics in curriculum and instruction.
 - b. *Thesis, non-thesis, or project option (9 credits)*: May be satisfied by a 9-credit culminating project or 9 credits at the 500 level or above related to the student's teaching and research interests.
 - c. *Colloquium presentation*: Visual representation of the student's work (usually a poster). Students attend one other colloquium prior to presenting.
2. **Language, Literacy, and Culture Study Option (27 credits)**
 - a. *Core studies (9 credits)*: Selected from the following: EDC&I 453, EDC&I 455, EDC&I 460, EDC&I 462
 - b. *Assessment and inquiry (3 credits)*
 - c. *Concentrations (15 credits)*: Minimum three courses in the literacy strand and minimum one course in each of the other strands. ESL specialists select minimum three courses in ESL and minimum one course in each of the other strands.
3. **Mathematics Education Study Option (27 credits)**
 - a. Minimum 27 credits in mathematics and mathematics education. Courses must be appropriate for future career goals. Of the 27 credits, 9 are chosen from mathematics education courses (below).
 - b. *Mathematics education courses*: EDC&I 478, EDC&I 479; EDC&I 575, EDC&I 576, EDC&I 577
4. **Multicultural Education Study Option (30 credits)**
 - a. *Ethnic diversity outside the College of Education (15 credits)*: Courses may be taken from various departments in the College of Arts and Sciences.
 - b. *Multicultural education (15 credits)*: EDC&I 424, EDC&I 569; remainder to be chosen from the following: EDC&I 464; EDC&I 469; EDC&I 474; EDPSY 536; EDLPS 566; EDC&I 573; EDC&I 574
5. **Science Education Study Option (Minimum 21 credits)**: Includes courses in fields such as biology, chemistry, physics, earth science, oceanography, or other science-related fields.

6. **Social Studies Education Study Option (27-36 credits):** 12-15 credits of core social studies courses. 15-21 credits of history/social science courses related to teaching interests, or additional educational courses.
7. **Teaching and Curriculum Study Option (27 credits):** Includes 9-18 credits of required study in teaching and curriculum.

Degree Requirements, Educational Psychology Programs

Minimum 45 or 50 credits, to include:

1. **Measurement, Statistics, and Research Design Study Option (Minimum 50 credits)**
 - a. *Required courses:* One or more from each of the following content fields with options to consist of courses listed below or alternative courses (including courses outside education) approved by the faculty adviser.
 - i. *Measurement and evaluation:* EDPSY 495, EDPSY 512, EDPSY 584, EDPSY 592, EDPSY 595, EDPSY 596, EDPSY 597
 - ii. *Human development:* EDPSY 502, EDPSY 531, EDPSY 532, EDPSY 582
 - iii. *Cognition and learning:* EDPSY 510, EDPSY 524, EDPSY 525, EDPSY 583, PSYCH 414
 - iv. *Language processes:* EDPSY 520, EDPSY 521
 - b. *Research (9 credits):*
 - i. *Thesis option:* Report of a research investigation that requires the student to design and execute an empirical study.
 - ii. *Non-thesis option:* Preparation of a scholarly review of the research literature; should be of publishable quality.
2. **Learning Sciences and Human Development Option (Minimum 45 credits)**
 - a. *Required courses (17 credits):* One or more from each of the following areas
 - i. *Foundations (11 credits):* EDPSY 501; EDPSY 581; EDPSY 502 or EDPSY 503; EDLPS 540, EDLPS 530, or EDLPS 521
 - ii. *Research Methods (6 credits):* EDPSY 490; EDPSY 591; other recommended courses include EDPSY 491, EDPSY 495, EDLPS 588, and EDC&I 581.
 - b. *Strands or Specializations (17 credits):* minimum one course in at least two different strands. Courses for each strand shown on College website.
 - i. *Learning Within and Across Disciplines - Literacy*
 - ii. *Learning Within and Across Disciplines - STEM*
 - iii. *Human Development, Families, and Communities*
 - iv. *Contexts, Culture, and Equity*
 - c. *Research (9 credits)*
 - i. **Thesis option:** Report of a research investigation that requires student to design and execute an empirical study.
 - ii. **Non-thesis option:** Preparation of a scholarly paper of publishable quality.

Degree Requirements, Education Leadership and Policy Studies Programs

48 credits, as follows:

1. **Common Area and Distribution Requirements (Minimum 18 credits)**
 - a. Social and cultural foundations (6 credits minimum)
 - b. Organizations and policy (6 credits)
 - c. Additional EDLPS courses (6 credits)
2. **Specialization Requirement (Minimum 9 credits)**
3. **Breadth Requirement (Minimum 6 credits)**
 - a. Minimum 3 credits in one or more other areas in the College of Education (EDC&I, EDPSY and/or EDSPE)
 - b. Minimum 3 credits outside the College of Education
4. **Research/Inquiry Requirement (Minimum 6 credits)**
 - a. Minimum 3 credits in basic statistics (EDPSY 490 or the equivalent)
 - b. Minimum 3 credits in research/inquiry methods (e.g., EDPSY 588, EDPSY 591, EDLPS 524, EDLPS 535, EDLPS 543, EDLPS 568, or the equivalent)
5. **Completion of Thesis or Non-Thesis Option (Minimum 9 credits)**
6. **Specific courses determined in consultation with adviser**

Degree Requirements, Special Education

48 credits, as follows:

1. **Foundations of Education (6 credits):** Minimum 6 credits of courses in or out of the College of Education, or equivalent
2. **Special Education Major Field (21 credits):** Specific sequence of courses, depending on student's background, educational goals, and type of disabled individual the student wishes to teach
3. **Assessment and Research Methodology (9 credits):** Courses to develop competency in assessment of learners with disabilities and familiarity with research tools
4. **Special Assignments in Special Education (Minimum 12 credits):** From at least two of the following options: EDSPE 500 (1-6, max. 6), EDSPE 600, EDSPE 601 (3-9, max. 9), EDSPE 700 (max. 9). Students entering an EdD or PhD program should select a thesis option.

Education Specialist

Minimum 118 credits

The Educational Specialist (EdS) degree is more advanced than a master's degree but does not constitute doctoral-level study. Generally taken by those who intend to pursue advanced practice in a specialized field such as school administration or curriculum design. In the UW College of Education, only students studying school psychology can pursue the Educational Specialist degree. The school psychology program prepares students to work with the social emotional needs of children and adolescents. School psychologists frequently work in school settings providing assessment, intervention, and consultation services to students, teachers, or parents. The three-year full-time program is comprised

of two years of coursework and practicum and a third year 1200-hour internship. The program, approved by National Association of School Psychologists (NASP), also meets the requirements for initial certification (Educational Staff Associate) as a school psychologist in the state of Washington.

Admission Requirements

1. Personal goal statement
2. Three recent letters of recommendation from professors or first-line supervisors
3. Bachelor's degree from an accredited institution
4. Transcripts from each college or university attended
5. Graduate Record Examination (GRE) scores
6. Minimum 3.50 GPA for the most recent 90 graded quarter credits (or 60 semester credits)
7. Employment or volunteer experience in pre-K through 12 schools
8. Interview

Degree Requirements

1. Statistics and Research (6 credits): EDPSY 490, EDPSY 591
2. Cognition and Learning (3 credits minimum): EDPSY 501; EDPSY 502
3. Social and Developmental Bases of Behavior (6 credits minimum): EDPSY 531, EDPSY 581
4. Exceptionality (6 credits minimum): EDSPE 525; one additional EDSPE course in exceptionality, e.g. EDSPE 504 or EDSPE 526
5. Biologic Bases of Behavior (5 credits): EDPSY 577
6. Specialization Seminars (2 credits minimum): EDPSY 570
7. Individual Differences (8 credits minimum): EDPSY 548, EDPSY 552, EDPSY 553
8. Ethics and School Law (3 credits): EDPSY 568
9. Assessment (23 credits minimum): EDPSY 507, EDPSY 564, EDPSY 540, EDPSY 572, EDPSY 573
10. Intervention (13 credits minimum): EDPSY 544, EDPSY 546, PSYCH 543
11. Courses with Practicum Requirements (2 credits minimum): EDPSY 500
12. Consultation (5 credits minimum): EDPSY 551
13. Internship (30 credits minimum): EDPSY 601
14. Case Study Seminar (6 credits minimum): EDUC 750

The EdS degree is awarded upon successful completion of the above course requirements, a 1200-hour internship, and a portfolio examination of applied and clinical work.

Certification: The Washington State approved internship program at the University of Washington is open only to third-year students in the EdS program. Washington State Certification is awarded by passing the Praxis Examination and by completing a 9-month internship of 1200 hours or more (half of which must be in a school setting); 6 credit hours of university case study supervision; 30 hours of internship credit. Students who successfully complete the internship may apply for National Certification as a school psychologist.

Doctor of Education

Prepares professionals whose primary interest is dealing directly with problems of educational practice. The EdD, as a professional degree, focuses on utilization of research and practitioners' knowledge, rather than on production of research knowledge.

This degree requires specialized study with credit in education and related fields, sufficient preparation in research methodology to interpret research findings for use in practice, an internship and leadership training, a general examination, a dissertation on a problem of educational practice, and a final examination. In addition to the traditional professional degree, the College also offers another option for the Doctor of Education that requires a capstone experience (12 credits) rather than a dissertation. See details in NOTE, below.

Admission Requirements

1. Graduate Record Exam (GRE) scores
2. Master's degree or equivalent from an accredited institution
3. Minimum 3.00 GPA for the most recent 90 (60 semester) credits
4. Transcripts (sealed) from each college or university attended
5. Goal statement
6. Three letters of recommendation
7. Resume/curriculum vita
8. Writing sample(s)
9. Interviews
10. Specific programs may have additional admission requirements. Visit the website or contact the program for further information.

Degree Requirements

102 credits, as follows:

1. **Educational Specialization (24 credits):**
 - a. Area of specialization, designed to provide knowledge of the field (9 credits)
 - b. General area or special interests within the area of specialization other than those selected to fulfill the 9 credits above (15 credits)
2. **Related Field(s) (24 credits):** Minimum 12 credits from within education. Credits outside education to complement educational specialization and to include multidisciplinary learning experiences
3. **Research/Evaluation Preparation (9 credits):** To enhance a student's ability to conduct field-based research/evaluation studies
4. **Leadership Training (9 credits):** EDLPS 520, EDLPS 550, EDLPS 560
5. **Supervised Internships and Field Experiences (9 credits):** Internships and field experiences designed to work in education and related field(s), and to conduct field-based research and evaluation studies.
6. **Dissertation (27 credits)**

NOTE: The Doctor of Education degree, offered through the leadership for learning program, focuses primarily on practical application rather than pure research and is a practice doctorate. A dissertation is not required; 12 credit hours of capstone experience are required instead. A corresponding increase in other areas (educational specialization, research preparation, etc.) is required in order to meet the 102-credit-hour requirement for the Doctor of Education.

Doctor of Philosophy

A degree offering preparation for a research career on issues fundamental to education - issues that range from fairly narrow questions about human learning to macro-questions regarding the form of societies' educational institutions. The scope is broad. The degree may be organized around traditional study areas such as educational psychology, curriculum and instruction, special education, or educational leadership and policy. A student may develop a course of study that integrates various elements of more than one study area (e.g., multiethnic education and literacy). One study option is school psychology, which prepares students for the professional practice of psychology with school-age children, as well as for research.

Admission Requirements

1. Graduate Record Exam (GRE) scores
2. Master's degree or equivalent from an accredited institution
3. Minimum GPA of 3.00 for the most recent 90 (60 semester) credits
4. Transcripts (sealed) from each college or university attended
5. Goal statement
6. Three letters of recommendation
7. Resume/curriculum vita
8. Writing sample(s)
9. Interviews

Degree Requirements

Minimum 90 credits

Six academic areas and the dissertation. Although the department prescribes a limited number of required courses, it does require students to demonstrate in-depth knowledge of education and selected related fields. For most students, this means study in a broad area, a specialization within that area, two cognates, and a specialization outside the department.

Degree requirements include a program of specialized study with credits both in education and in other academic units, preparation in research methodology adequate to design and assess research in the field of specialization, sufficient study in cognate fields inside and outside education to ensure that the candidate can place the specialized research in a broader context, a general examination, a research dissertation, and a final examination.

Accreditation

Within the College of Education, a number of degree programs have formal accreditation. The school psychology EdS program is accredited by the American Psychological Association (APA) and approved by the National Association of School Psychologists (NASP). The school psychology EdS program is also

accredited by NASP and the Washington State Board of Education for initial residency and continuing/professional teaching certificates and initial/residency certification. Graduates qualify for certification in all states party to the Interstate Certification Compact.

Financial Aid

The College of Education offers a limited number of awards with varying stipends for graduate students in education. Primary consideration is given to doctoral students with a background of successful teaching or administrative experience. Specific information on various types of remunerative appointments for graduate students, amounts of stipends, and application procedures is available at education.uw.edu/admissions/funding-and-financial-aid.

Professional Programs

Professional Certification

The College of Education is authorized by the State Board of Education to offer professional certificate programs in education for administrators, educational staff associates, and teachers. Program-design specialists are available to help with pre-program counseling, long-range planning, applications, registration, referrals to other campus resources, general program advising, and continuing/professional certificate requirements.

Administrator Certificates

Administrator certificate preparation programs for superintendents, principals, and program administrators are offered. The following websites contain specific information about admissions, curriculum, faculty, and general advising:

For principals and program administrators, the Danforth Educational Leadership program, education.uw.edu/programs/leadership/danforth.

For superintendents, the Leadership for Learning program, education.uw.edu/141/.

Educational Staff Associate Certificates

Offered for the school psychologist. Information concerning requirements and admission may be obtained from the Office of Student Services, 206 Miller Hall, edinfo@uw.edu.

The College of Education, authorized by the State Board of Education to prepare and recommend individuals for Residency Teaching Certificates, publishes an annual Higher Education Opportunity Act report based on Title II data and available on the College's website: education.uw.edu/my-coe/oir/heoa. The full Title II report may be requested from coeir@uw.edu.

Residency Teaching Certification Program

For individuals desiring careers as elementary or middle/secondary school teachers, or as special education teachers working with students with moderate and severe disabilities or emotional and behavioral disorders, and with infants, toddlers, and preschool children with disabilities. All programs are

offered at the master's level. For additional information, e-mail edinfo@uw.edu, or at education.uw.edu/programs/teacher.

An undergraduate or postbaccalaureate program leading to certification in music education, grades K-12, is offered through the School of Music. For additional information contact the School of Music Advising Office, 116 Music, Box 353450, University of Washington, Seattle, WA 98195-3450.

Professional Teaching Certificates

For information on the Professional Certificate Assessment (ProTeach), visit the Office of the Superintendent of Public Instruction (OSPI): www.k12.wa.us/certification/Teacher/Residency3.aspx#Professional.

Endorsements on Teaching Certificates

Teachers holding an initial/residency or continuing/professional teaching certificate may add endorsements to their certificates which qualify them to teach additional subjects. Information is available at education.uw.edu/programs/teacher/endorsements, or the Office of Student Services, 206 Miller Hall, or e-mail at edinfo@uw.edu.

Special Research and Service Facilities

Opportunities exist for students to gain research and service experience through research centers affiliated with the College. Below is a partial list of those centers; visit education.uw.edu/faculty-and-research/centers for a current and complete list.

The Center for Multicultural Education focuses on research projects and activities designed to improve practices related to equity issues, intergroup relations, and the achievement of students of color. Visit education.uw.edu/cme/.

The Clinical Training Laboratory, operating under the aegis of Educational Psychology, offers observation rooms equipped with video recorders where counseling and psychology trainees and clients can be observed and taped through one-way mirrors.

The **Experimental Education Unit (EEU)** offers an interdisciplinary approach to research, training, and service, providing integrated classes for 150-200 young children, toddlers, and infants with disabilities and their typically developing peers, and services for their families. Learn more by visiting education.uw.edu/faculty-and-research/centers/haring.

The National Center for the Study of Teaching and Policy, a consortium of five universities headed by the University of Washington, conducts studies aimed at local, state, and national policy strategies to promote teacher excellence. Visit depts.washington.edu/ctpmail, or e-mail ctpmail@uw.edu.

The Learning Informal and Formal Environments (LIFE) Center is a collaborative effort among three primary partners — the University of Washington, Stanford University, and Stanford Research Institute — as well as other institutions. Purpose of the LIFE Center is to understand and advance human learning through simultaneous focus on implicit, informal, and formal learning, thus cultivating interdisciplinary theories that guide design of effective new technologies and learning environments. Visit education.uw.edu/research/center/life.

College of Engineering

College Overview

Dean

Michael B. Bragg
371 Loew

Associate Deans

Eve Riskin, Academic Affairs
Dawn Lehman, Infrastructure
Santosh Devasia, Research and Graduate Studies

Engineering is the science and art of applying scientific and mathematical principles, experience, judgment, and common sense to design devices and systems that benefit society. Engineers are fascinated by questions of how and why things work. They use their training in mathematics, physics, and chemistry to understand the physical world and develop creative solutions to society's complex needs. Engineers may be designers, planners, managers, analysts, researchers, consultants, sales specialists, and more. Engineering graduates have many career possibilities open to them.

The primary goal of College of Engineering educational programs is to prepare students for a professional career in engineering by providing the technical foundation required for success in industry, government, or academia. Other goals of the College are to instill within its students the highest ethical standards, the capability for lifelong learning, and a curiosity about the world. Excellence in undergraduate and graduate academic programs remains the College's highest priority.

For undergraduates, the College of Engineering offers a flexible curriculum that not only accommodates varied student needs, both in established departmental programs and interdisciplinary studies, but also culminates in a major and meaningful design experience. (See [Interdisciplinary Engineering Studies Program](#) for interdisciplinary undergraduate programs.)

For graduate students, the College of Engineering offers master's and doctoral programs in aeronautics and astronautics, bioengineering, chemical, civil and environmental, computer, electrical, human centered design and engineering, industrial and systems engineering, materials science, and mechanical engineering.

The College offers active educational and research programs, both departmental and interdisciplinary, at the graduate levels. (See [Interengineering Graduate Program](#) for interdisciplinary graduate programs.)

The College of Engineering has been a major unit of the University since 1899. The first engineering degrees were authorized in mining engineering and metallurgical engineering in 1898. Degrees were added for civil engineering (1901), electrical engineering (1902), mechanical engineering (1906), chemical engineering (1907), ceramic engineering (1919), aeronautical engineering (1929), bioengineering (1983), industrial engineering (1986), and computer engineering (1987). A degree program in technical communication was implemented in 1989. The new human centered design and engineering degree title replaced technical communication in 2009. In 2011, 2,229 upper-division undergraduate majors and 1,787 graduate students were enrolled in engineering programs taught by a faculty of 228 tenure track and 184 other engineering faculty members.

College Facilities

Teaching and research activities of the College are conducted in fourteen major campus buildings (and portions of others), which contain the College's offices, classrooms, and research and teaching laboratories. The Engineering Library, a branch of the University Libraries, provides outstanding collections of books, periodicals, technical reports, and patents of interest to engineers. Computers and terminals are available in all departments and through the Student Access and Computing Group (SACG).

Student Organizations and Activities

All major professional engineering societies have student chapters on campus, and all engineering students are encouraged to join the chapter that represents their field of interest. The UW Chapter of Engineers Without Borders (EWB) students.washington.edu/ewbuw is a registered student-run organization of the University of Washington with members from many engineering as well as non-engineering backgrounds.

The College also has student chapters of the Society of Women Engineers, American Indian Science and Engineering Society, National Society of Black Engineers, the Society of Hispanic Professional Engineers, and the Phi Sigma Rho engineering sorority. Students are encouraged to join the University-wide Science and Engineering Business Association (SEBA).

The honor society open to engineering students is Tau Beta Pi.

Students serve with faculty members on engineering policy committees which make recommendations concerning instructor evaluation, curriculum revisions, advising, grading systems, and other matters of interest to students and faculty.

Special Programs and Resources

Engineering Co-op and Internship Program

014 Loew, Box 352180

enrcoop@uw.edu

The Engineering Co-op and Internship Program provides an opportunity for pre-engineering and engineering students to combine practical, full-time, on-the-job engineering experience with academic study before graduation. Students typically work full-time for three months or more and then return to full-time academic status upon completion of the co-op assignment. Some students work part-time while continuing coursework. In addition, students receive academic credit for the co-op experience. In several engineering departments, the credit earned can be applied toward degree requirements in the major. Advantages of participation include: assistance in deciding which field of engineering to follow, early experience in the industrial sector and industrial exposure that can help guide a student's remaining studies; additional income to help defray college expenses, relevance and motivation for study based on real engineering work, and work experience and employment contacts that may result in regular employment after graduation.

Information may be obtained from the Engineering Co-op and Internship Program office, College of Engineering, Box 352180 (014 Loew), or by visiting the [Engineering Co-op and Internship program](#) website.

Engineering Undergraduate Research Program

014 Loew, Box 352180

Educational Outreach

Fulfilling a commitment to lifelong learning, the College of Engineering is partnered with UW Professional and Continuing Education (UWPCE) to offer master's degree programs, certificate programs, courses, workshops, and conferences to respond to the professional development needs of practicing engineers and related technical professionals worldwide. Thousands of practicing engineers update their technical knowledge or pursue advanced degrees each year through UWPCE. The College of Engineering works with UW Educational Outreach's Education at a Distance for Growth and Excellence (EDGE) to provide multimedia and class capture services either in an EDGE classroom or at a remote location. Go to [UWPCE website](#) or go to [EDGE website](#) for more information.

Office of Research and Graduate Studies

376 Loew, Box 352180

The Office of Research and Graduate Studies promotes, stimulates, and coordinates faculty and graduate research in all fields of engineering. Its primary role is to encourage and develop interdisciplinary research programs and national research initiatives. The Office of Research and Graduate Studies also reviews grant and contract proposals, tracks awards, and provides information on funding opportunities. This office allocates limited matching funds to College units to increase the quality of research in the College of Engineering. The College currently has the following research programs or centers:

- **Bio-Sciences**
 - **Center for Sensorimotor Neural Engineering (CSNE)** - An NSF-funded Engineering Research Center launched in July 2011 to advance the integration of technologies with human neural systems. The center brings together leaders in robotics, neuroscience, computer science, and other disciplines.
 - **Genetically Engineered Materials Science and Engineering Center (GEMSEC)** - Adapts techniques in molecular biology and genomics for developing new materials and systems.
 - **Molecular Engineering & Sciences Institute (MoIES)** - Catalyzes translational research in the clean tech and biotech areas. The institute serves both as an intellectual accelerator to bring fresh approaches and ideas to societal grand challenges in sustainable energy and materials, and in medical therapeutics and diagnostics, and as a physical incubator where new interdisciplinary teams can come together in a shared space. Creates and coordinates new interdisciplinary education programs for undergraduate and graduate students in the College of Arts and Sciences and the College of Engineering. The institute is located in the new Molecular Engineering and Sciences Building, a facility specially designed to promote collaborative molecular-scale research.
 - **National ESCA Surface Analysis Center for Biomedical Problems (NESAC/BIO)** - Develops and applies new surface analysis technologies for biomedical research.

- **Education and Learning**
 - **Center for Engineering Learning and Teaching (CELT)** - Combines two missions: to conduct internationally recognized research in engineering learning and to promote teaching effectiveness in UW engineering classrooms.
- **Electronics and Computing**
 - **Center for Collaborative Technologies (CCT)** - An effort funded by Microsoft Research to develop the ConferenceXP platform and apply the technologies to a wide range of educational and collaborative scenarios.
 - **Center for Design of Analog-Digital Integrated Circuits (CDADIC)** - One of the few research consortiums in the country that addresses problems associated with analog and mixed-signal research.
 - **Intel Research Seattle** - A collaboration among Intel and university researchers to explore new technologies (such as personal robotics and "Trustworthy Wireless") to support the ubiquitous computing environments of the future.
 - **Turing Center** - Investigates problems at the crossroads of natural language processing, data mining, web search, and the Semantic Web.
- **Energy**
 - **Bioenergy Program** - Researches how to balance the technological, environmental, and social dimensions of a sustainable energy economy. (The full program name is Bioresource-Based Energy for Sustainable Societies.)
 - **Northwest National Marine Renewable Energy Center (NNMREC)** - A DOE-funded partnership between OSU and UW. UW is responsible for tidal energy issues. The role of the center is to close key gaps in understanding of marine energy and to inform the public, regulators, research institutions, and device and site developers.
 - **Plasma Science and Innovation Center (PSI)** - Develops predictive capability for emerging concept experiments, allowing new experiments in fusion science and in other areas of plasma science without actual construction.
- **Materials and Structures**
 - **Center for Intelligent Materials and Systems (CIMS)** - A collaboration of botanists and engineers to advance the bio-inspired design of intelligent materials and systems.
 - **Center of Excellence for Advanced Materials in Transport Aircraft Structures (AMTAS)** - Seeks solutions to problems associated with existing, near- and long-term applications of composites and advanced materials for large transport commercial aircraft.
 - **Institute of Advanced Materials and Technology (i-AMT)** - Facilitates interdisciplinary research in photonics, electronics, and magnetic materials; materials for energy generation and storage; biomaterials for the bio-nano interface; and multifunctional composites.
- **Transportation**
 - **Pacific Northwest Transportation Consortium (PacTrans)** - A multi-university, regional transportation center led by the University of Washington and funded by the US Department of Transportation. PacTrans focuses on safe and sustainable transportation in environments ranging from busy urban centers to remote mountainous terrain.
 - **Washington State Transportation Center (TRAC)** - A collaboration among Washington State University, the University of Washington, and the Washington State Department of Transportation to coordinate both state and commercial transportation research efforts and to develop research opportunities nationally and locally.

- **Other Centers Involving Engineering Faculty**
 - **Center for Materials and Devices for Information Technology Research (CMDITR)** - Established by the National Science Foundation in 1987 to fund interdisciplinary research and education activities and encourage technology transfer.
 - **Center for Process Analytical Chemistry (CPAC)** - A consortium established at the UW in 1984 to develop and foster collaboration on new measurement approaches, including the miniaturization of traditional instrumentation and the development of new sensors and non-traditional instruments.
 - **Microfabrication Laboratory (MFF)** - Provides a wide range of fabrication and characterization capabilities in a user facility that is open to academic as well as industrial researchers and engineers, including advanced electron beam lithography, thin film processing, and wet and dry etching in a 15,000 square foot cleanroom.

For more information, see the Office of Research and Graduate Studies web page, www.engr.washington.edu/facresearch/researchcenters.html.

Interdisciplinary Engineering Studies Program

The College of Engineering directly administers non-departmental undergraduate and graduate degree programs.

The Interdisciplinary Engineering Studies (IES) Program is intended for students whose desired course of study does not fall within one of the traditional engineering departments. An interdisciplinary program combines coursework from at least one engineering department as well as other department(s) on campus (engineering or other) to allow students to create a program of study not available through the existing undergraduate degree programs. Although coursework may involve departments outside the College of Engineering, the major thrust must be in engineering.

Undergraduate Programs

Bachelor of Science in Engineering and Bachelor of Science

The IES Program offers a nonprofessional degree program leading to the Bachelor of Science (BS) and a professional degree program for the Bachelor of Science in Engineering (BSE).

Due to the uniqueness of each interdisciplinary student's program of studies, the BS and BSE degrees are not accredited by the Engineering Accreditation Commission of ABET. The experience requirement to obtain a professional engineering license is two years longer for a BSE graduate, except in surveying, than for a graduate of an accredited program. A BS graduate is not eligible for a professional engineering license.

Interdisciplinary students develop personal programs of study approved by a faculty adviser with similar interests. Contact Student Academic Services, email: engradv@uw.edu or phone: (206) 543-1770, for information on established procedures and applications for entry into the BSE and BS programs. Entrance requirements and the continuation policy for participation in these programs are consistent with those of other departments in the College.

Bachelor of Science in Engineering

Admission to this program (usually after completion of 90 credits) is competitive with a minimum 2.80 GPA in technical courses required for entry. A minimum of 75 credits must be completed after entering

the program before a BSE degree is awarded. Detailed information regarding the BSE degree can be obtained from an adviser in Student Academic Services (301 Loew).

Bachelor of Science

The nonprofessional Bachelor of Science degree provides greater flexibility than does the Bachelor of Science in Engineering degree. It can be an excellent base for subsequent professional studies in law, medicine, or business. It may also be the primary educational objective in such fields as technical writing, engineering sales, or environmental studies. Detailed requirements are available from the adviser in Student Academic Services (301 Loew).

Undergraduate Program

Engineering Adviser
301 Loew, Box 352180
(206) 543-1770
engradv@uw.edu

The College of Engineering provides curricula that offer a variety of educational experiences to its students. The curricula also facilitate transfer from community colleges and from other four-year colleges and universities.

Student Academic Services

301 Loew

Students are encouraged to contact Student Academic Services for program, course, or career information and discussion. The Student Academic Services advising office assists any student interested in planning the initial portion of an engineering degree program, and distributes information about prerequisites for application to all departments in the College.

For more information, visit the [Student Academic Services](#) website.

Financial Aid

The College offers financial assistance to undergraduates through industrial scholarships and loan funds. Scholarship information is available at the College of Engineering Student Academic Services office (301 Loew), and at the Office of Student Financial Aid (105 Schmitz). Most scholarships are given after a year or more in residence by the student.

Honors Program

The University Honors Program provides a special learning context for high-achieving students looking for a rigorous and enhanced educational experience. All departments in the College of Engineering participate in the UW Honors Program.

There are two types of Honors degrees available within the College of Engineering: College Honors and Departmental Honors. Students in either program are part of the University Honors Program.

College Honors

To be eligible for College Honors, students must be accepted to the University Honors Program in their freshman year. Additionally, students must be accepted into the departmental honors program (see information below on Departmental Honors) for their major, which usually occurs during the junior year. Students who complete both the Honors Core Curriculum (see the University Honors Program for more information) and the departmental honors requirements graduate "With College Honors in Name of Major".

Departmental Honors

Students who do not participate in or complete the Honors Core Curriculum but are admitted into and complete departmental honors requirements receive a degree "With Honors in Name of Major".

Admission Requirements: All engineering departments require students to have at least a 3.30 cumulative UW GPA to be eligible for departmental honors. Also, most departments require students to complete a specified number of departmental courses with a minimum departmental GPA.

Departmental honors requirements vary by major and are established by the individual departments. Most departments in the College of Engineering require 9 to 10 credits of Honors courses in the major and an Honors senior project or thesis.

International Study

Given the increased likelihood that engineering students will have overseas work experiences or do business with international clients and competitors, the College encourages students to study foreign languages in addition to their engineering coursework and to take advantage of opportunities for study at foreign universities either at the undergraduate or graduate level. The College has exchange agreements with approximately thirty universities in seventeen countries. Foreign-language courses at the third-quarter level or above (e.g., GERMAN 103) may be applied toward the VLPA general education requirement. For more information about international study, visit the College of Engineering International Studies website at www.engr.washington.edu/curr_students/international.html. Engineering students can also participate in the Global Engineering Education Exchange program (through the Center for Workforce Development, located in 101 Wilson Annex) for opportunities to study abroad. Through the UW Chapter of Engineers Without Borders (EWB) students.washington.edu/ewbuw, students work with disadvantaged communities worldwide in order to improve their quality of life through the implementation of environmentally sustainable, equitable, and economical engineering projects.

Admission

Students follow one of three pathways to gain admission:

1. **Direct-to-College:** Freshman applicants indicate an engineering major as their first-choice on the University application. Students admitted through this pathway enter the UW with Engineering Undeclared status and usually place into an engineering major after completing freshman-level requirements. A majority of engineering students enter majors through this pathway. Students who select Computer Engineering as their first choice major on their UW application will instead be considered for Direct Placement into the Paul G. Allen School of Computer Science and Engineering Program. Computer Engineering is not part of Direct-to-College.
2. **Transfer Students:** Apply to the UW by the published deadline. Submit an application to an engineering major. Quarters of admission vary by department. Admission is capacity constrained. See department websites for course requirements.

3. **Other Enrolled UW Students:** Those not admitted through the Direct-to-College pathway may also apply for admission to engineering majors. Admission through this pathway is limited and its capacity is constrained. See department websites for course requirements.

Direct-to College Admission

Freshmen admitted to the UW who indicate an engineering major as their preferred choice enter the UW with Engineering Undeclared status and must complete requirements prior to requesting placement into a specific engineering major. This is the standard admission pathway for engineering students entering the UW as freshmen. The deadline to submit a request for placement in an engineering major occurs annually on July 1. Students who select Computer Engineering as their first choice major on their UW application will instead be considered for Direct Placement into the Paul G. Allen School of Computer Science and Engineering Program. Computer Engineering is not part of Direct-to-College.

Students submit a ranked list of majors along with supporting materials. Since some majors are not able to take all students who request admission, students must identify alternative majors to ensure placement.

Capacity-constrained departments review students' academic records and supporting materials to determine priority for admission. Department priority and student department ranking are both used to determine final placement.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students to support completion of placement requirements and degree course planning or advising on alternate major options outside of engineering.

Engineering Undeclared Placement Requirements

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering. Students requesting placement to Chemical Engineering must take CHEM 152 (or CHEM 153 or CHEM 155) from this list and they are also strongly encouraged to take CHEM 162 (or CHEM 165). Students requesting placement to Industrial Engineering must take AMATH 301, CSE 142, or CSE 160 from this list.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Continuation Policy for Engineering Undeclared Students

While the University has general regulations governing scholastic eligibility for continuation, the College of Engineering and the engineering departments have additional requirements in order to make the best use of limited facilities and resources. Criteria and procedures applied to Engineering Undeclared students for continuation in the College include:

1. Complete at least one required mathematics, science, computer programming, or engineering course each quarter.
2. Maintain minimum 2.50 GPA in mathematics, science, English composition, computer programming, and engineering courses completed after matriculation at the UW.
3. Request placement into a major after completion of three quarters at the UW. Students in good standing who do not complete the placement requirements by July 1 after three quarters at the UW may request placement into a major on a conditional basis pending the completion of all placement requirements. Students who do not request placement after three quarters at the UW will be dropped from Engineering Undeclared status and transitioned to pre-major status. Students with conditional placement to a major who have not met all of the placement requirements after 6 quarters at UW (not including summer) will be dropped from Engineering Undeclared status and transitioned to pre-major status.

Review and Notification of Progress

Student progress is reviewed each quarter. Students whose performance fails to meet the standards outlined above receive a warning message recommending they meet with an engineering adviser. Students on warning status who fail to meet satisfactory progress requirements after one quarter are placed on probation; a hold is placed on their registration, and they must meet with a College of Engineering adviser. Students on probation who fail to meet satisfactory progress requirements after one quarter are dropped from Engineering Undeclared status. Such students may appeal for continuation as Engineering Undeclared students by writing the Associate Dean for Academic Affairs, the letter to describe any extenuating circumstances and to include any additional relevant information.

Types of Programs

The College offers three basic programs leading to Bachelor of Science degrees:

Departmental Major: This program leads to a Bachelor of Science degree in a designated field of engineering (e.g., Bachelor of Science in Civil Engineering). It is designed for students who intend to practice as professional engineers in a standard branch of engineering or who plan to undertake graduate study in that field. Application to a department or program at the upper-division level is made at the time lower-division requirements are satisfied. Currently enrollment limits imposed by faculty size and available laboratory/classroom space are such that entry into a specific department or program is usually competitive. In general, a student applicant must demonstrate scholastic aptitude, as evidenced by the attainment of grades averaging a minimum 2.50 or above (depending upon the program) in mathematics, the natural sciences, English composition, and other courses. A 2.50 GPA is a minimum only. In reality, the GPA of those offered admission is higher. The student is urged to plan ahead by learning the intended department or program requirements and particularly noting which requirements must be fulfilled by the time application is made.

Non-departmental Professional Program: This program leads to a Bachelor of Science in Engineering degree and is designed for students who have well defined, special educational objectives that departmental programs do not satisfy. Graduates can practice as professional engineers in newly

developing fields, or they may embark on graduate study in these or allied fields (see [Interdisciplinary Engineering Studies Program](#)).

Nonprofessional Program: Leading to a Bachelor of Science degree, this program is intended for students who wish to have significant exposure to science and engineering courses, but do not plan to engage in professional engineering practice (see [Interdisciplinary Engineering Studies Program](#)).

Graduation Requirements

To graduate, students must meet or exceed the requirements of the University and their particular program or department. All program or departmental requirements are given in the specific section that describes that program or department.

All departments of the College have continuation policies that specify a minimum rate of progress as well as minimum academic-performance levels. These policies may be more restrictive than those generally applied by the University and may change with time. Information on current policy is available at the departmental offices.

Selecting courses that fulfill graduation requirements is the responsibility of each student. Students are urged to check carefully the course and credit requirements of the program in which they are enrolled.

Inter-engineering Graduate Programs

Master of Science in Engineering and Master of Science

The College offers graduate programs leading to the Master of Science in Engineering and Master of Science degrees, without designation of a specific major. For graduate degrees within specific majors, see the individual departmental listings.

The civil, mechanical, and chemical departments, and inter-engineering offer approved programs that lead to the Master of Science in Engineering degree. The civil department, inter-engineering, and the materials science and engineering department offer approved programs that lead to the Master of Science degree.

The Inter-engineering Master of Science in Engineering (MSE) and Master of Science (MS) program is intended for students whose desired course of study does not fall within one of the traditional engineering graduate programs. An inter-engineering program combines coursework from at least one graduate engineering department as well as other graduate department(s) on campus (engineering or other) to allow students to create a program of study not available through existing graduate degree programs. Applications and files of students entering the MS or MSE option are handled by the designated engineering department. Admission requires a statement describing the applicant's objectives. This statement should state why the student wants to enter the MS/MSE program rather than one of the traditional engineering graduate programs. Applicants to the MS/MSE program must have well-defined educational objectives which cannot be satisfied by established engineering programs.

Admission Requirements

MSE/MS applicants must have a bachelor's degree in engineering, mathematics, or science with a minimum 3.00 GPA in courses taken in the junior and senior years. Students entering without an accredited engineering undergraduate degree and seeking an MSE degree satisfy the minimum general

requirements of the College of Engineering baccalaureate degree. Students complete the degree within two years; situations requiring longer must be approved by the student's faculty adviser.

Development of the Plan of Study: Before applying, the student consults a faculty member from each department in which the student intends to work, and identifies one to serve as the faculty adviser. Each student develops a plan of study and research that meets the general degree requirements (below) and satisfies the student's own program objectives. The program must include in-depth coursework from two or more departments and be approved by the faculty adviser(s). The proposed program becomes part of the student's application to the inter-engineering MSE/MS program.

Development of the Statement of Objectives: Students submit a one-page statement of study and career objectives for seeking this degree, explaining why the student wants to enter the MSE/MS program rather than a traditional engineering graduate program. Also, students should include any additional information, such as work experience, outside interests, and unusual circumstances, that may contribute to a better understanding of the student's record.

Degree Requirements

48 credits

Minimum 39 credits of coursework, with no more than 9 credits of engineering courses at the 400 level and at least 21 credits of engineering courses at the 500 level; also, at least 9 credits of thesis study/preparation.

Aeronautics and Astronautics

Department Overview

211 Guggenheim Hall

Aeronautics and astronautics deals with the design, analysis, and performance of air and space vehicles and a broad spectrum of related engineering science, such as aerodynamics, structural mechanics, automatic controls, flight mechanics, space dynamics, propulsion, plasma dynamics, and related topics.

Undergraduate Program

Adviser

211C Guggenheim Hall, Box 352400

(206) 616-1115

ugadvising@aa.washington.edu

The department offers the following program of study:

- The Bachelor of Science in Aeronautical and Astronautical Engineering degree
- A minor in aeronautics and astronautics

Bachelor of Science in Aeronautical and Astronautical Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121

6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students who do not have Engineering Undeclared status and transfer students may apply. Admission is competitive. Applications from current UW students with Engineering Undeclared status will not be considered by the BSAE admissions committee during the competitive admission process.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements for application: MATH 124, MATH 125, MATH 126, CHEM 142, PHYS 121, PHYS 122, A A 210, 5 credits English composition completed prior to application deadline. MATH 307, MATH 308, MATH 324, PHYS 123, A A 260, CEE 220, ME 230, and AMATH 301 completed with a minimum 2.0 grade prior to autumn quarter
3. Minimum 60 credits completed by application deadline
4. Grade requirements: Minimum 2.0 grade for each course required for application; minimum 2.50 cumulative GPA in courses required for application.

Factors evaluated for admission include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Graduation Requirements

180 credits, as follows:

1. **General Education Requirements (78 credits)**
 - a. *Areas of Knowledge* (49 credits):
 - i. *Visual, Literary, and Performing Arts (VLPA) and Individuals & Societies (I&S)*: 24 credits, to include a minimum 10 credits in VLPA and a minimum 10 credits of I&S, plus 4 additional credits in either area.
 - ii. *Natural World (NW)*: 25 credits to include CHEM 142 (or CHEM 143 or CHEM 145), PHYS 121, PHYS 122, PHYS 123, and an additional 5 credits of Natural World courses (consult department for list of approved courses.)
 - iii. *Diversity (DIV)*: 3 credits, can overlap with other areas of knowledge requirements
 - b. *Mathematics (24 credits)*: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308, and MATH 324.

- c. *Written and Oral Communication*: One 5-credit English composition course from the University list. Additional writing credits are built into the major core courses.
2. **Major Requirements (89 credits)**
 - a. *Engineering Fundamentals (16 credits)*: A A 210, A A 260, CEE 220, and M E 230.
 - b. *Departmental Core (73 credits)*: A A 301, A A 302, A A 310, A A 311, A A 312, A A 320, A A 321, A A 322, A A 331, A A 332, A A 360; either A A 410 and A A 411 or A A 420 and A A 421; A A 447, A A 496, AMATH 301; 15 credits of senior technical electives. With approval, 3 credits of the latter may be chosen from another area of engineering.
 - c. Minimum 1.7 grade in each 300- and 400-level A A course applied to major requirements
 - d. Minimum 2.00 cumulative GPA for courses applied to major requirements
 3. **Free Electives (13 credits)**

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, please contact the departmental adviser or see [departmental web page](#) for more details.

Minor

Minor Requirements

Minimum 32 credits to include:

1. *Core (24 credits)*: A A 210; A A 260; A A 310; A A 311; CEE 220; M E 230
2. *Electives (minimum 8 credits)*: Selected from an approved list of upper-division electives. Minimum one course taken at the 400 level. See adviser for approved list.
3. Minimum 16 credits taken in residence through the UW
4. Minimum 16 credits taken within the Aeronautics and Astronautics Department
5. Minimum 2.00 cumulative GPA in courses applied to the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The goals and objectives of the undergraduate program are to provide a challenging and comprehensive education, to develop necessary functional skills and an understanding of the societal context in which engineering is practiced, to provide a solid foundation in the engineering sciences related to aerospace engineering, to provide a systems perspective, to develop engineering creativity through design experience, and to prepare graduates to succeed in engineering careers and lifelong learning.

Graduates of aeronautics and astronautics are skilled in engineering fundamentals, engineering design, laboratory skills, synthesis of various engineering disciplines, and working in a team environment. Graduates are highly regarded by employers in aeronautics, astronautics, energy systems, and related fields. They develop interpersonal skills and a desire for life-long learning that helps them succeed in their chosen careers. Graduates have been successful and valued at local, national, and international industries, as well as at government organizations and institutions of higher learning.

- *Instructional and Research Facilities*: Visit the department web page to view current research activities. Undergraduates are encouraged to participate in research activities.

- *Honors Options Available:* With College Honors (completion of Honors core curriculum and Departmental Honors requirements). With Honors (completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships are arranged individually. See adviser for details.
- *Department Scholarships:* Scholarships are limited and are usually reserved for students who have junior and senior standing in the department. Deadline for scholarship applications is April 1.
- *Student Organizations/Associations:* American Institute of Aeronautics and Astronautics (AIAA) student chapter. Sigma Gamma Tau

Graduate Program

Graduate Program Coordinator
211B Guggenheim Hall Box 352400
(206) 616-1113
gradadvising@aa.washington.edu

The department offers programs that provide a foundation in the aerospace engineering sciences and expertise in various specialized application areas. Three graduate degree options are offered: Master of Science in Aeronautics and Astronautics, Master of Aerospace Engineering, and Doctor of Philosophy.

Master of Science in Aeronautics and Astronautics (MSAA)

Admission Requirements

1. *Grade Point Average:* Minimum 3.30 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants with less than a 3.30 GPA may still be considered if they have other strong credentials, such as graduation from an outstanding undergraduate program and excellent GRE scores.
2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* The department recognizes that some academic institutions are capacity constrained and high grades are more difficult to obtain.
3. *GRE General Test:* Although no minimum GRE score is required, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, scores should be received before February 15.
4. *Two Letters of Recommendation:* Confidential letters submitted electronically by recommenders, or placed in sealed envelopes and included with application materials, or sent directly to the department by recommenders. Writers should rank the applicant's performance as a student and/or researcher. Recommendations are sent in letter format; no special form is used.
5. *Statement of Objectives:* Information not found in transcripts and other official documents. May include personal histories, professional and academic goals, and specific research interests if applicable.
6. *English Requirements for International Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for international students whose native language is not English.
7. *Prior Degrees:* Undergraduate degree in aerospace or mechanical engineering. Applicants with grades (3.50 and above) in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

39-45 credits, as follows:

1. Program of study plan approved by the department's graduate committee and submitted before 12 credits are completed.
2. Minimum MSAA program: either 10 courses plus 9 thesis credits, or 13 courses. No more than three courses at the 400 level (none in a student's depth area). All courses must be graded. Students enroll in the graduate seminar (A A 520) every quarter of full-time study.

Each program includes depth in a field of specialization, breadth to include at least one course in each of two different subject areas outside the field of specialization, and analytical strength to include three mathematical courses. Senior sequences in engineering, science, or other appropriate professional fields may make up part of the individualized graduate program. Only three undergraduate courses may be counted toward minimum requirements (and none in the student's depth area).

Normally one-and-a-half to two years of full-time study are needed to complete an MSAA degree.

Master of Aerospace Engineering (MAE)

Intended for recent graduates or engineers who wish to expand their knowledge in multidisciplinary areas while also learning other aspects of aerospace engineering, such as business, management, manufacturing, or technical communication.

Admission Requirements

1. *Grade Point Average:* Minimum 3.30 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants with less than a 3.30 GPA may still be considered for admission if they have other strong credentials, such as graduation from an outstanding undergraduate program and excellent GRE scores.
2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* The department recognizes that some academic institutions are capacity constrained and high grades are more difficult to obtain.
3. *GRE General Test:* Although the department does not specify minimum GRE scores, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, the scores should be received before February 15.
4. *Two Letters of Recommendation:* Confidential letters submitted electronically by recommenders, or placed in sealed envelopes and included with application materials, or sent directly to the department by recommenders. Writers should rank an applicant's performance as a student and/or researcher. Recommendations are sent in letter format; no special forms are used.
5. *Statement of Objectives:* Information not found in transcripts and other official documents. May include personal histories, professional and academic goals, and specific research interests if applicable.
6. *English Requirements for International Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for international students whose native language is not English.
7. *Prior Degrees:* Undergraduate degree in aerospace or mechanical engineering. Applicants with grades (3.50 and above) in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

45-54 credits

Students create their own programs of study based on departmental distribution requirements and subject to departmental approval, to include courses in a specialty area, technical and non-technical electives, analytical courses, and a group or independent project. The MAE program includes twelve courses plus 8 credits for the project, or ten courses and one of three business certificate programs.

Doctor of Philosophy (PhD)

Admission Requirements

1. *Grade Point Average:* Minimum 3.40 GPA for the last 90 quarter hours or 60 semester hours of graded undergraduate coursework. Applicants with less than a 3.40 GPA may still be considered for admission if they have other strong credentials, such as graduation from an outstanding undergraduate program and excellent GRE scores.
2. *Quality and Difficulty of Courses Taken and Universities and Colleges Attended:* The department recognizes that some academic institutions are capacity constrained and high grades are more difficult to obtain.
3. *GRE General Test:* Although the department does not specify minimum GRE scores, the typical successful applicant has scores in excess of 450 Verbal, 700 Quantitative, 650 Analytical, or 4.0 Analytical Writing. If the applicant wishes to be considered for a graduate assistantship or fellowship, scores should be received before February 15.
4. *Two Letters of Recommendation:* Confidential letters submitted electronically by recommenders, or placed in sealed envelopes and included with application materials, or sent directly to the department by the recommenders. Writers should rank the applicant's performance as a student and/or researcher. Recommendations are sent in letter format; no special forms are used.
5. *Statement of Objectives:* Information about the applicant not found in transcripts and other official documents. For example, statements can include personal histories, professional and academic goals, and specific research interests.
6. *English Requirements for International Students:* Minimum TOEFL scores of 580 on the paper-based exam or 237 on the computerized exam for international students whose native language is not English.
7. *Prior Degrees:* Undergraduate and graduate degrees in aerospace or mechanical engineering with a 3.40 minimum GPA. Applicants with strong grades in related disciplines (physics, other engineering disciplines) are considered.

Degree Requirements

Minimum 90 credits

1. *Departmental Qualifying Examination:* Minimum 3.40 GPA in technical coursework at the graduate level and an MSAA degree or its equivalent.
2. *General Examination:* Taken within a year after the qualifying examination, but no sooner than two years after the beginning of graduate study.
3. *Completion of Coursework:* At least 18 credits of coursework in addition to that for the MSAA degree.
4. *Preparation of the Dissertation:* Normally requires the equivalent of at least one year of full-time study.

5. *Final Examination*

Research Activities

Current areas of research in the Department of Aeronautics and Astronautics include guidance and control systems, aerodynamics and fluid mechanics, propulsion and energy systems, advanced composite materials and structures, and plasma dynamics and fusion reactors. Research in controls includes autonomous systems involving spacecraft, aircraft, and underwater vehicles, flight systems integration, and development of unmanned aerial vehicles. Among fluid dynamics research topics are turbulent mixing, vortex dynamics and flow control, compressible flow, fluids in microgravity, and advanced fluid flow diagnostics development. Research programs in the areas of propulsion and energy include hypervelocity mass launchers, advanced technologies for generating space and terrestrial energy, combustion, and studies of planetary resources utilization. Structural mechanics research involves damage-tolerant composite structures, structural dynamics, fatigue, and fracture, and multidisciplinary design optimization. Experimental and computational research in plasma science has an emphasis on advanced, alternative concepts for achieving controlled fusion, as well as plasma propulsion for space applications.

Facilities

Facilities that support research activities in controls include unmanned aerial vehicle (UAV) and autonomous flight systems laboratories, and laboratories for underwater vehicle and distributed space systems research. Fluids, propulsion, and energy facilities include the Kirsten 8 x 12 foot low-speed wind tunnel, two water tunnels, a Mach 5, enthalpy blow-down wind tunnel, the Ram Accelerator hypervelocity launcher, a combustion laboratory, and a Mars environment simulation facility. Research in structures is conducted in a composite-material laboratory with material and structural test machines. Various plasma and fusion-research and engineering physics laboratories, including the Redmond Plasma Physics Laboratory (RPPL), exist to support research in plasmas. A variety of computer facilities is available, including a single 20-processor and two 8-processor servers, and a 16-computer heterogeneous cluster, as well as several stereographic visualization systems.

Financial Support

Most students are financially supported by the department as teaching or research assistants, or by their employers. For further information, contact the Graduate Program Coordinator, 211B Guggenheim Hall, Box 352400, or visit the department's [website](#).

Chemical Engineering

Department Overview

105 Benson

The chemical engineering profession is a close-knit group with a common background in chemical processes, systems analysis, and systems economics. Chemical engineering training occurs through course and laboratory work addressing mathematical, scientific, and engineering fundamentals. With a strong background in mathematics, chemistry, and physics, chemical engineering students study transport phenomena (the description of momentum, heat, and mass transfer in chemical processes); chemical kinetics and reaction engineering; process control and design; and optimization of chemical processes. These subjects are common throughout the traditional chemical industry, applying as well to other industries such as electronics manufacture and biological and biochemical engineering. Chemical engineers find industrial employment in areas of electronics, petroleum, consulting, chemical, automotive, forest products, biotechnology, and energy. Chemical engineers also find careers in academia and government and military service.

Undergraduate Program

Adviser

105 Benson, Box 351750
(206) 543-2252

advising@cheme.washington.edu

The Department of Chemical Engineering offers the following programs of study:

- Bachelor of Science in Chemical Engineering (BSCHE) degree
- Bachelor of Science in Chemical Engineering (BSCHE) degree, with an option in nanoscience and molecular engineering

Bachelor of Science in Chemical Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Core courses within the department form a seven-quarter curriculum designed to start spring quarter of the sophomore year. Because the curriculum is cohort-based and all students start and proceed at the same pace, Engineering Undeclared students admitted to Chemical Engineering after their first year are expected to start the curriculum in spring quarter of their second year.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering. Students requesting placement in Chemical Engineering must take CHEM 152 (or CHEM 153 or CHEM 155) from this list and they are also strongly recommended to complete CHEM 162 (or CHEM 165) prior to requesting placement.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Chemical Engineering is the only engineering major that requires students to complete CHEM 152 (or CHEM 153 or CHEM 155) to request placement because that course is required in order to complete the major in four years.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements and readiness to begin the chemical engineering core course sequence in the following spring quarter. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Current UW Students and Transfer Students

The department follows a cohort model beginning in spring quarter. Transfer students, current UW students without Engineering Undeclared status, and current UW students with Engineering Undeclared status who are eligible to begin the chemical engineering core sequence of courses in their first spring quarter may apply. Admission is competitive.

1. Admission is for spring quarter only. Application deadline: January 15
2. Minimum course requirements: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136), MATH 307; CHEM 142, CHEM 152, CHEM 162 (or CHEM 143 and CHEM 153, or CHEM 145, CHEM 155, and CHEM 165); PHYS 121, PHYS 122; 5 credits of English composition. Two required courses may be in progress during winter quarter. CHEM 237 (or CHEM 223 or CHEM 335) strongly recommended.
3. Grade requirements: Minimum 2.0 grade for each course required for application; minimum 2.50 cumulative GPA in courses required for application

Factors evaluated for admission include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

General Expectations of Academic Progress: Completion of all admission requirements listed for "Current UW Students and Transfer Students" as well as the following courses by the start of autumn quarter of the junior year: organic chemistry I and II (CHEM 237 and CHEM 238; or CHEM 223, CHEM 224; or CHEM 335 and CHEM 336), PHYS 123, AMATH 301 (or CSE 142), MATH 308, CHEM 310.

Nanoscience and Molecular Engineering Option (NME): Admission to the NME option is competitive, and normally occurs upon completion of NME 220. Admission is based on grades, including NME 220 and any CHEM E courses already taken. A small number of students may be admitted. Admission is based on the student's academic record and prior experience/work in the field of nanoscience and/or molecular engineering. Students applying for the NME option should so indicate on their chemical engineering application and discuss their interests and background in the essay.

Graduation Requirements

180 credits, as follows:

General Education Requirements (97 credits)

1. *Written and Oral Communications (8 credits)*: one 5-credit English composition course from the University list; ENGR 231, HCDE 231. University required 4 additional writing credits are met by major core courses.
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (24 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 24 credits
3. *Natural World (65 credits)*
 - a. *Physics (15 credits)*: PHYS 121, PHYS 122, PHYS 123
 - b. *Mathematics (24 credits)*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136), MATH 307, MATH 308, and MATH 309 (or STAT 390 or IND E 315)
 - c. *Chemistry (26 credits)*: CHEM 142, CHEM 152, CHEM 162 (or CHEM 143 and CHEM 153, or CHEM 145, CHEM 155, and CHEM 165), CHEM 237 (or CHEM 223 or CHEM 335), CHEM 238, CHEM 455

Major Requirements (74 credits)

1. *Engineering Fundamentals (4 credits)*: AMATH 301 or CSE 142
2. *Chemical Engineering Core Courses (51 credits)*: CHEM E 310, CHEM E 325, CHEM E 326, CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 436, CHEM E 437, CHEM E 457, CHEM E 465, CHEM E 480, CHEM E 485, CHEM E 486
3. *Molecular and Nanoscience Engineering (3 credits)*: CHEM E 455 or CHEM E 460
4. *Engineering Elective Courses (16 credits)*: Only one, 1-credit seminar allowed toward engineering electives. Maximum 9 credits undergraduate research (CHEM E 299, CHEM E 499, of which no more than 3 credits may be CHEM 299) may count toward engineering electives.

Unspecified Electives (9 credits): to reach 180 credits

Nanoscience and Molecular Engineering Option Major Requirements (77 credits)

1. *Engineering Fundamentals (4 credits)*: AMATH 301 or CSE 142

2. *Chemical Engineering Core Courses (51 credits)*: CHEM E 310, CHEM E 325, CHEM E 326, CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 436, CHEM E 437, CHEM E 457, CHEM E 465, CHEM E 480, CHEM E 485, CHEM E 486
3. *Nanoscience and Molecular Engineering Courses (22 credits)*: CHEM E 299, CHEM E 455, CHEM E 499 (3-6 credits, maximum 3 credits from CHEM E 299), NME 220, NME 221, NME 321, NME 421; minimum two additional approved nanoscience and molecular engineering electives. See adviser for list of approved electives.

Unspecified Electives (6 credits): to reach 180 credits.

A minimum 2.00 GPA in core chemical engineering courses, based on the first time each course is taken, is required for graduation.

Many engineers design new equipment and processes or design modifications to them. The design experience is integrated throughout the curriculum, with open-ended problems (sometimes involving economic constraints) in several courses: design of heat exchangers (CHEM E 340) and distillation towers (CHEM E 435), design of piping and pumping systems (CHEM E 330), design of chemical reactors (CHEM E 465). The design experience culminates in two capstone design courses (CHEM E 485 and CHEM E 486 or CHEM E 497) which involve the design of an integrated chemical system. An optional 9-credit specialty area allows each student to develop special competence in a selected subject by taking a minimum of three courses in that area. Engineering and free electives may be used for this purpose. The areas are biotechnology; fuel cells and energy; polymers, composites, colloids, and interfaces; computers applied to chemical engineering; environmental engineering; and nuclear engineering.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Chemical engineering graduates possess knowledge (including safety and environmental aspects) of material and energy balances applied to chemical processes; thermodynamics of physical and chemical equilibria; heat, mass, and momentum transfer; chemical reaction engineering; continuous and stage-wise separation operations; process dynamics and control; and process design. They also gain ability to apply knowledge of mathematics, science, and engineering; ability to design and conduct experiments, as well as to analyze and interpret data; ability to design a system, component, or process to meet desired needs; ability to function on multidisciplinary teams; and ability to identify, formulate, and solve engineering problems. They also possess an understanding of professional and ethical responsibility; an ability to communicate effectively; the broad education necessary to understand the impact of engineering solutions in a global and societal context; a recognition of the need for, and an ability to engage in, life-long learning; a knowledge of contemporary issues; and an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- *Instructional and Research Facilities*: The chemical engineering building, Benson Hall, contains classrooms, offices, stockrooms, computer rooms, machine and electronics shops, and laboratories. The Unit Operations Laboratory holds a variety of experiments designed to give undergraduate students the experience of using real chemical process equipment and to deepen their understanding of chemical engineering fundamentals of fluid flow, heat transfer, separation processes, and reactor behavior. Departmental computer facilities include a network of PCs located in a keyed room for the exclusive use of chemical engineering students. Ten of these machines have hardware for computer data acquisition (to collect experimental data and support

experiments on process automation). All have fast connections to the Internet and to larger UW computers.

- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Students are encouraged to participate in internships, which are generally facilitated through the [Engineering Co-op Office](#).
- *Department Scholarships:* The department awards 20-25 full-tuition scholarships per year. See departmental website for application procedures.
- *Student Organizations/Associations:* The undergraduates in the department run a dynamic chapter of the American Institute of Chemical Engineers.

Of Special Note:

Entrance into most chemical engineering courses is ordinarily limited to majors in chemical engineering and bioresource science and engineering. Other students who wish to take departmental courses must meet the prerequisites and obtain instructor approval (except for CHEM E 485 and CHEM E 486, which are open to majors only).

Graduate Program

Graduate Program Coordinator

105 Benson, Box 351750

(206) 543-2250

grad.admissions@cheme.washington.edu

The department offers studies leading to the degrees of doctor of philosophy, Master of Science in Chemical Engineering, and Master of Science in Engineering. The doctoral degree, centered on the dissertation with a foundation in coursework, is generally completed in four to five years beyond the baccalaureate degree. The master's program primary emphasis is placed on coursework, and the degree generally requires 21 months of study. Thesis and non-thesis options are available.

The program includes basic subjects of importance to all chemical engineers, such as thermodynamics, transport phenomena, kinetics, and applied mathematics. In addition, students are invited to take more-specialized courses in chemical engineering or in other departments. Students usually take three courses the first quarter. In subsequent quarters, less time is spent on coursework, and more on research and independent study.

The department has about seventy full-time graduate students, most of whom are working toward a doctorate.

Master of Science in Chemical Engineering

Admission Requirements

Most students have a Bachelor of Science in Chemical Engineering. A student with an undergraduate degree in chemistry, physics, mathematics, or another branch of engineering may obtain a graduate degree in chemical engineering by meeting certain additional requirements.

Competitive applicants

1. Highly ranked (top 10 percent) in a respected chemical engineering program
2. Minimum 750 score on the quantitative portion of the GRE
3. Minimum 600 score (paper-based), 250 (computer-based), or 70 (Internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

Thesis Option

39 credits

1. Minimum 18 credits in courses numbered 500-599 (or approved 400-level courses; see item 2 for acceptable 400-level course options) of which at most 3 may be seminar credits, such as CHEM E 523. Five courses from at least four of the following five categories. (Courses listed in each category are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
 - a. *Math/Computer/Statistics*: CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, STAT 421
 - b. *Thermodynamics*: CHEM E 525, CHEM 552
 - c. *Transport Phenomena*: CHEM E 530, CHEM E 531, M E 534
 - d. *Reaction Phenomena*: CHEM E 461, CHEM E 560, CHEM E 565
 - e. *Materials and Biotech*: CHEM E 467, CHEM E 554, CHEM E 590
2. Numerical grades for at least 18 credits of coursework. Approved 400-level courses presented for the 18 graded credits include 400-level CHEM E courses not required for the BS degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator. Some approved 400-level courses are listed above.
3. Minimum 3.00 cumulative GPA
4. Minimum 30 credits taken through the UW
5. Minimum 9 credits of independent research under CHEM E 600 during the first year of study
6. A thesis describing original research. At least 12 credits of thesis (CHEM E 700).
7. Final examination

Non-Thesis Option

Degree requirements may be completed in four quarters (completion in three is possible).

39 credits, and other requirements

1. Minimum 18 credits in courses numbered 500-599, of which at most 3 may be seminar credits, such as CHEM E 523. Five courses from at least four of the following five categories. (Courses listed are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
 - a. *Math/Computer/Statistics*: CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, CHEM E 575, CHEM 526, STAT 421
 - b. *Thermodynamics*: CHEM E 455, CHEM E 525, CHEM E 526, CHEM 552
 - c. *Transport Phenomena*: CHEM E 530, CHEM E 531, M E 533, M E 534

- d. *Reaction Phenomena*: CHEM E 461, CHEM E 560, CHEM E 564, CHEM E 565
 - e. *Materials and Biotech*: CHEM E 467, CHEM E 554, CHEM E 558, CHEM E 570, CHEM E 590
2. Numerical grades for at least 18 credits (500-599 or approved 400-level courses). Approved 400-level courses include 400-level CHEM E courses not required for the BS degree and 400-level non-CHEM E courses approved by the Graduate Program Coordinator.
 3. Minimum 6 CHEM E 600 credits (minimum 2.7 numerical grade or S grade). Written report required.
 4. Thesis research (i.e., CHEM E 700 or CHEM E 800) does not count toward the 39 credits.
 5. Minimum 3.00 cumulative GPA
 6. Minimum 30 credits taken through the UW
 7. Final examination: oral presentation of the CHEM E 600 project

Master of Science in Engineering

Admission Requirements

Most students applying for graduate admission have a Bachelor of Science in Chemical Engineering. A student with an undergraduate degree in chemistry, physics, mathematics, or another branch of engineering may obtain a graduate degree in chemical engineering by meeting certain additional requirements.

Competitive applicants

1. Highly ranked (top 10 percent) in a respected chemical engineering program
2. Minimum 750 score on the quantitative portion of the GRE
3. Minimum 600 score (paper-based), 250 (computer-based), or 70 (Internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

39 credits

Requirements are the same as for the MSChE thesis option, except that the research adviser tailors course requirements to the student's background and research objectives (subject to Graduate Program Coordinator approval). Relative to the MSChE options, usually less emphasis is on chemical engineering, more on engineering science and related subjects.

Doctor of Philosophy

Admission Requirements

Most applicants have a Bachelor of Science in Chemical Engineering. A student with an undergraduate degree in chemistry, physics, mathematics, or another branch of engineering may obtain a graduate degree in chemical engineering by meeting certain additional requirements.

Competitive applicants

1. Highly ranked (top 10 percent) in a respected chemical engineering program

2. Minimum 750 score on the quantitative portion of the GRE
3. Minimum 600 score (paper-based), 250 (computer-based), or 70 (internet-based, not including speaking score) on the TOEFL, if an international applicant

Degree Requirements

90-108 credits

1. *Minimum Graduate School Requirements:*
 - a. Minimum 18 credits of courses numbered 500-600, taken through the UW.
 - b. Minimum 18 numerically graded credits of UW 400- and 500-level courses. Any 400-level courses require departmental approval.
 - c. Minimum 90 credits, including at least 60 through the UW
 - d. Minimum 27 dissertation credits (CHEM E 800) over a period of at least three quarters
 - e. Minimum cumulative 3.00 GPA
 - f. General examination
 - g. Final examination
2. *Students with a Chemical Engineering Undergraduate Degree:* In addition to requirements listed above
 - a. Complete non-thesis MSChE degree prior to the general examination. (Students with an MS in chemical engineering from another university may petition the Graduate Program Coordinator for an exemption.)
 - b. TA for at least three quarters.
 - c. Minimum six graded courses numbered 500-599 or approved 400-level courses.
 - d. Five courses from at least four of the following five categories. (Courses listed are typical. Others may qualify subject to approval by the Graduate Program Coordinator.)
 1. *Math/Computer/Statistics:* CHEM E 481, CHEM E 482, CHEM E 510, CHEM E 512, CHEM E 575, CHEM 526, STAT 421
 2. *Thermodynamics:* CHEM E 455, CHEM E 525, CHEM E 526, CHEM 552
 3. *Transport Phenomena:* CHEM E 530, CHEM E 531, M E 533, M E 534
 4. *Reaction Phenomena:* CHEM E 461, CHEM E 560, CHEM E 564, CHEM E 565
 5. *Materials and Biotech:* CHEM E 467, CHEM E 554, CHEM E 558, CHEM E 570, CHEM E 590
 - e. One CHEM E course in a topic outside the student's main research area.
3. *Non-Chemical Engineering Undergraduates:* Students whose undergraduate degree is in engineering or science (e.g., BS in chemistry or materials science but not chemical engineering) must pass or serve as a TA in the following courses: CHEM E 330, CHEM E 340, CHEM E 435, CHEM E 465, CHEM E 485
4. Students lacking a strong background in thermodynamics are advised (but not required) to take CHEM E 326 prior to attempting CHEM E 525.

Research Facilities

Benson Hall contains classrooms, offices, stockrooms, a machine shop, laboratories, and a variety of specialized research equipment. Each graduate student is provided desk space in a small laboratory or office as well as access to larger laboratories in the building. Students also may use the services of the Academic Computer Center, instrument-making shops, research centers (e.g., biomaterials, nanotechnology, chemical analysis), and the Chemistry and Engineering Libraries.

Financial Aid

Students interested in applying for admission and support should visit the department's website: www.cheme.washington.edu, which provides details on application procedures. Offers of admission with financial support are usually made from January through March.

Civil and Environmental Engineering

Department Overview

201 More

Civil and environmental engineering is a profession which interfaces closely with society in the planning, design, construction, and management of facilities serving the needs of people. These activities focus on: transportation infrastructure and construction; heavy construction; hydrology and hydrodynamics; structures, mechanics, and geotechnical engineering; drinking water and wastewater treatment, and water quality management ; solid- and hazardous-waste disposal; and air quality management.

A civil engineer may specialize in one or several of these activities and may further specialize in a particular function, such as design or management. The work frequently provides close associations with the legal profession, urban and regional planners, economists, public officials, biologists, chemists, financial consultants, architects, and system analysts. Education and practice require a consideration not only of the technological-science aspects of a particular problem but also of its relationship to social, economic, political, and environmental constraints. Civil and environmental engineers create and maintain infrastructure in a heavily human-influenced ecosystem.

To accommodate these wide interests, the department is organized into six academic areas: construction engineering; transportation engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and hydrology and hydrodynamics.

Undergraduate Program

Adviser

201 More, Box 352700

(206) 543-5092

ceadvice@uw.edu

The Department of Civil and Environmental Engineering offers the following program of study:

- [The Bachelor of Science in Civil Engineering \(BSCE\) degree](#)
- [The Bachelor of Science in Environmental Engineering \(BSENV\) degree](#)

The BSCE degree is appropriate for students interested in gaining a broad perspective of civil and environmental engineering. Students take introductory courses in six areas (construction, transportation, geotechnical, structural, water and environmental engineering), gain expertise in at least four areas, and may focus their senior-year studies on a single area. The BSCE program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

The BSENV degree offers a specialized focus in environmental engineering. Students gain expertise in the fundamentals of environmental engineering, with specialization in areas including water and wastewater engineering, water resources management, hydrology, environmental fluid mechanics, climate science, sustainable design, resource recovery, environmental chemistry, and environmental microbiology. The BSENV program successfully completed the ABET accreditation review process during the 2019-2020 academic year.

Bachelor of Science in Civil Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is capacity constrained.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements for application: MATH 124, MATH 125, MATH 126; CHEM 142; PHYS 121, PHYS 122; A A 210; 5 credits English composition. All courses completed prior to application deadline. In addition, AMATH 301 or CSE 142; MATH 308; CEE 220; and ME 230 completed with minimum 2.0 grades prior to autumn quarter.
3. Minimum 60 credits completed by application deadline

4. Grade requirements: Minimum 2.0 grade for each course required for application; minimum 2.50 cumulative GPA in courses required for application.

Students are encouraged to complete the following courses prior to autumn quarter - MATH 307; CHEM 152; PHYS 123

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Graduation Requirements

Minimum 180 credits

General Education Requirements (89-91 credits)

1. *Written and Oral Communication (12 credits)*: English composition; ENGR 231; additional W-credit courses to bring total to 12 credits
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (24 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 24 credits
3. *Economics (4-5 credits)*: ECON 200 or IND E 250. ECON 200 may also be applied toward the I&S requirement. IND E 250 may also be applied toward the requirement for an additional Engineering Fundamentals course.
4. *Natural World (49-50 credits)*
 - a. *Mathematics (21 credits)*: MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352)
 - b. *Statistics (3-4 credits)*: IND E 315 (preferred) or STAT 390
 - c. *Science (25 credits)*: CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

Major Requirements (94-97 credits)

1. *Engineering Fundamentals (20 credits)*: AMATH 301 or CSE 142, A A 210, CEE 220, and ME 230. Students who complete STAT 390 must complete an additional engineering fundamentals course from A A 260, IND E 250, IND E 280, M E 123, E E 215, or MSE 170. Students who complete IND E 315 must complete either an additional Engineering Fundamentals course from the above list, or an additional 300-level mathematics course other than statistics.
2. *Civil Engineering Core (40 credits)*: CEE 307, CEE 317, CEE 327, CEE 337, CEE 347, CEE 357, CEE 367, and CEE 377.
3. *Professional Practice and Capstone Design (7 credits)*: CEE 440 and one course from CEE 441, CEE 442, CEE 444, or CEE 445. Minimum 2.0 grade required for both courses in this two-course sequence.
4. *Civil Engineering Technical Electives (15 credits)*: CEE 400-level coursework selected from an approved list (see adviser or department website for list), with at least one core course from three separate areas of concentration within the department. Minimum 2.0 grade required for each of the three courses used to fulfill the core-courses requirement.

5. *Upper-Division Engineering and Science (12 credits)*: Choice of additional CEE 400-level courses or courses from an approved list from outside the department. Must also include one science course from the approved list. Maximum 6 credits of CEE 498 and 3 credits of CEE 499 allowed toward upper-division engineering and science.
6. *Grade Requirements*: Minimum 2.00 GPA in all engineering courses with no grade below 1.0 in these courses.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the department adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Upon completion of the undergraduate program, students can demonstrate proficiency in applying fundamental mathematical, statistical, scientific, and engineering principles in formulating and solving civil and environmental engineering problems; demonstrate sufficient mastery of core civil and environmental engineering topics suitable for entry into the profession and for graduate study; gain significant experience in designing systems and components in civil and environmental applications in both individual and team contexts; possess up-to-date skills for analysis, data collection, modeling, project management, professional development, communication, and presentation; and develop an understanding of professional and social issues suitable for participation and leadership in their communities.
- *Instructional and Research Facilities*: The department has a large and modern computer laboratory as well as substantial research laboratory facilities. The environmental engineering and water program research laboratory facilities include more than 20,000 square feet of laboratory space, well equipped with sophisticated research instruments, including state-of-the-art analytical capability for trace organic compounds. A dedicated environmental engineering teaching laboratory comprising roughly 1200 square feet of space is equipped with a variety of standard lab equipment and analytical tools, in addition to modern PCs and a teaching bench with whiteboard and overhead projector for demonstrations and general instructional purposes. In addition, the department has a 4000 square foot fluid mechanics teaching laboratory (in the Harris Hydraulics Laboratory), which houses seven dedicated teaching facilities including three large flumes, a wind tunnel, desk space and state-of-the-art laser imaging and measurement capabilities. The structural research laboratory contains an earthquake simulator, a modern MTS testing system, and a 2.4 million pound capacity Baldwin universal hydraulic testing machine. The geotechnical engineering laboratory contains soil testing equipment, including triaxial testing devices, a computer-controlled GDS pressure control system, a Bishop-Wesley cell, a recently developed cuboidal shear device, a CKC cyclic triaxial device, and a SBEL (Stokoe) resonant column.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Distinction (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Students typically work at internships in private companies and government agencies in the summer after their junior year, with some part-time internships continuing during the academic year. Many companies advertise internship and job openings through the department and meet with students for on-campus recruiting sessions.
- *Department Scholarships*: The department offers numerous annual scholarships. For more information, see department website. Scholarships are also available through the College of Engineering, the UW Scholarship Office, and external sources, including professional associations and industry.

- *Student Organizations/Associations:* The department has over 20 active student organizations/associations, including American Society of Civil Engineers, Chi Epsilon, Engineers Without Borders, and many more.

Bachelor of Science in Environmental Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is capacity constrained.

1. Application deadline: April 5. Admission is for autumn quarter only.
2. Minimum course requirements for application: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152; PHYS 121, PHYS 122; AA 210; 5 credits English composition. All courses completed prior to April 5 application deadline. Following courses completed with minimum 2.0 grade prior to

autumn quarter: AMATH 301, AMATH 351 (or MATH 307); BIOL 180; CHEM 162; PHYS 123; AA 260; CEE 220

3. Minimum 60 credits completed by April 5 application deadline.
4. Grade requirements: Minimum 2.0 grade for each required course; minimum 2.50 cumulative GPA in required courses.

Students are also encouraged to complete AMATH 352 (or MATH 308) prior to autumn quarter.

Factors considered for admission include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Graduation Requirements

Minimum 180 credits

General Education Requirements (99-101 credits)

1. *Written and Oral Communication (12 credits)*: English composition; ENGR 231; additional W-credit courses to bring total to 12 credits
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (24 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 24 credits
3. *Economics (4-5 credits)*: IND E 250 (preferred) or ECON 200 (also counts as a major requirement)
4. *Natural World (59-60 credits)*
 - a. *Mathematics (21 credits)*: MATH 124, MATH 125, MATH 126, AMATH 351 (or MATH 307) AMATH 352 (or MATH 308)
 - b. *Statistics (3-4 credits)*: IND E 315 (recommended) or STAT 390
 - c. *Science (35 credits)*: CHEM 142, CHEM 152, CHEM 162, BIOL 180, PHYS 121, PHYS 122, PHYS 123

Major Requirements (81-82 credits)

1. *Engineering Fundamentals (16-17 credits)*: Students take all courses on this list - AMATH 301 (preferred, or CSE 142 or CSE 160), A A 210, CEE 220, A A 260 (preferred, or ME 323).
2. *Economics (4-5 credits)*: one course from IND E 250 (preferred) or ECON 200 (also counts as a General Education requirement).
3. *Environmental Engineering Core (30 credits)*: Students take all courses on this list - CEE 347, CEE 348, CEE 349, CEE 350, CEE 352, CEE 354, CEE 356.
4. *Professional Practice (7 credits)*: CEE 440, and either CEE 444 or CEE 445. Minimum 2.0 grade for each professional practice course.
5. *Technical Electives (15 credits)*: CEE 400-level coursework selected from an approved list (see department website for list).

6. *Upper-Division Electives (13 credits)*: CEE 400-level courses or courses from an approved list from outside the department. Must also include one science course from the approved list. Maximum 6 credits CEE 498 and 3 credits CEE 499 allowed toward upper-division engineering and science.
7. *Grade Requirements*: Minimum 2.00 GPA in courses applied to the major with no grade below 1.0 in these courses.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the department adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Upon completion of the undergraduate program, students can demonstrate proficiency in applying fundamental mathematical, statistical, scientific, and engineering principles in formulating and solving environmental engineering problems; demonstrate sufficient mastery of core environmental engineering topics suitable for entry into the profession and for graduate study; gain significant experience in designing systems and components in environmental applications in both individual and team contexts; possess up-to-date skills for analysis, data collection, modeling, project management, professional development, communication, and presentation; and develop an understanding of professional and social issues suitable for participation and leadership in their communities.
- *Instructional and Research Facilities*: The department has a large and modern computer laboratory as well as substantial research laboratory facilities. The environmental engineering and water program research laboratory facilities include more than 20,000 square feet of laboratory space, well equipped with sophisticated research instruments, including state-of-the-art analytical capability for trace organic compounds. A dedicated environmental engineering teaching laboratory comprising roughly 1200 square feet of space is equipped with a variety of standard lab equipment and analytical tools, in addition to modern PCs and a teaching bench with whiteboard and overhead projector for demonstrations and general instructional purposes. In addition, the department has a 4000 square foot fluid mechanics teaching laboratory (in the Harris Hydraulics Laboratory), which houses seven dedicated teaching facilities including three large flumes, a wind tunnel, desk space and state-of-the-art laser imaging and measurement capabilities.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Distinction (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Students typically work at internships in private companies and government agencies in the summer after their junior year, with some part-time internships continuing during the academic year. Many companies advertise internship and job openings through the department and meet with students for on-campus recruiting sessions.
- *Department Scholarships*: The department offers numerous annual scholarships. For more information, see department website. Scholarships are also available through the College of Engineering, the UW Scholarship Office, and external sources, including professional associations and industry.
- *Student Organizations/Associations*: The department has over 20 active student organizations/associations, including American Society of Civil Engineers, Engineers without Borders, American Water Works Association-Water Environment Federation, American Water Resources Association, American Public Works Association. See adviser for details.

Graduate Program

Graduate Program Coordinator
201 More, Box 352700
(206) 543-2574
ceginfo@uw.edu

The department offers programs of study leading to the degrees of Master of Science in Civil Engineering (MSCE), Master of Sustainable Transportation (MST), Master of Supply Chain Transportation and Logistics (MSCTL), and doctor of philosophy.

Graduate work is offered in most fields of civil and environmental engineering, including transportation and construction engineering; geotechnical engineering; structural engineering and mechanics; environmental engineering; and hydrology and hydrodynamics.

Graduate Online Programs:

Construction Engineering Master's Program: In collaboration with the Department of Construction Management in the College of Built Environments, the department offers an online Master of Science in Civil Engineering degree in construction engineering. Designed for working professionals, this program is completed at the student's own pace. Areas covered include heavy construction project management, infrastructure construction, and qualitative construction management. For more information, see the Construction Engineering [website](#).

Master in Sustainable Transportation Program: In partnership with UW Professional and Continuing Education, the department offers an online Master of Sustainable Transportation degree (MST). The program provides transportation engineers and planners the latest knowledge, skills, and tools needed to become leaders in developing and maintaining sustainable transportation practices. Students develop an awareness of green transportation strategies and gain a solid background with practical applications. In a part-time online format, the MST program covers three areas of concentration: planning and livable communities; environmental issues and impacts; and policy development, health, and economics. For more information, see the Master of Sustainable Transportation [website](#).

Supply Chain Transportation and Logistics Master's Program: In partnership with UW Professional and Continuing Education, the department offers an online Master of Supply Chain Transportation and Logistics degree. Combining engineering and business principles with industry best practices, this program provides students the knowledge needed to successfully design, implement, and manage complex supply chain transportation and logistics strategies. Students study cross-functional areas, such as operations, inventory management, and IT systems, to develop skills in the end-to-end management of transportation in a global supply chain. For more information, see the Master of Supply Chain Transportation and Logistics [website](#).

Master of Science in Civil Engineering

Admission Requirements

Priority for admission is based on an applicant's scholastic record; usually at least a B or 3.00 GPA in the junior and senior years. Consideration is also given to Graduate Record Examination scores and other information

Degree Requirements

42 credits, as follows:

Two options are available -- thesis and non-thesis.

- *Thesis option:*
 - 30 credits of coursework with at least 18 credits at the 500 level
 - 3 credits (maximum) of CEE 500
 - 9 credits of master's thesis, CEE 700
- *Non-thesis option:*
 - 39 credits of coursework with at least 18 credits at the 500 level
 - 3 credits (maximum) of CEE 500

Doctor of Philosophy

Admission Requirements

Priority for admission is based on an applicant's scholastic record; usually, at least a B or 3.00 GPA in the junior and senior years. Consideration is also given to Graduate Record Examination scores and other information.

Degree Requirements

90 credits, as follows:

- 60 coursework credits
- 27+ dissertation credits
- 3 seminar credits (for those without a master's degree from CEE at UW)

An appropriate master's degree from an accredited institution may be applied towards 30 of the 60 coursework credits.

Course requirements are individualized depending on student's background and PhD topic area.

Financial Aid

Research and teaching assistantships are available on a competitive basis. The number of positions depends on the current level of funding. Additionally there are a limited number of fellowships, scholarships, and traineeships.

Research Facilities

More Hall has structural, concrete, bituminous materials, soil mechanics, computer, water-quality, solid-wastes, and air-quality laboratories as well as an air-monitoring station and equipment for fieldwork in the construction, water, air, and solid-waste programs. Facilities for experimental studies in hydrology and hydrodynamics are located in the Harris Hydraulics Laboratory.

Computer Science and Engineering

Department Overview

AC101 Paul G. Allen Center for Computer Science and Engineering

The Paul G. Allen School of Computer Science and Engineering educates students to become leaders in the design and implementation of the computing systems that touch every aspect of modern society. The Allen School is widely recognized as one of the top programs in the world, with passionate faculty bringing the latest advances into the classroom and the lab.

The Allen School offers two undergraduate degrees: Computer Science (through the College of Arts & Sciences) and Computer Engineering (through the College of Engineering). While the degree requirements differ in some details, undergraduate majors working toward either degree have the same broad opportunities to take the wide array of courses that the Allen School offers. Many of our graduates go on to careers at the world's great technology companies, from the largest industry titans to the smallest start-ups. Others join innovative companies and non-profit organizations outside the traditional computing industry to use software, hardware, and data to solve the world's greatest challenges. Still others go on to challenging graduate programs in a variety of fields.

At the graduate level, the Allen School offers (1) an integrated Master's program for some of our undergraduate majors seeking a deeper education before leaving campus, (2) an evening Master's program for currently employed software professionals, and (3) a PhD program for students seeking a research career.

The field of computing is broad and growing, and the Allen School's course catalog reflects this breadth. Beyond the popular introductory programming courses taken by thousands of students from every major on campus, our courses cover everything from the mathematical foundations of what computers can and cannot do; to hands-on experiences building software and hardware artifacts with a range of programming languages and tools; to advanced courses in software engineering, human-computer interaction, computer graphics and animation, artificial intelligence, machine learning, large-scale data management, natural language processing, computer networking, computational biology, robotics, computer security and privacy, and much more.

Computers are the most flexible and powerful machines ever created. While the applications of computing continue to grow and change, the core magic of the Allen School is timeless: computer scientists and engineers combine creative problem-solving, rigorous design, and the creation of algorithms, software, and hardware systems to build solutions that change the world.

Undergraduate Program

Adviser

Bill and Melinda Gates Center, Room 170, Box 352355
(206) 543-2656

ugrad-advisor@cs.washington.edu

The Paul G. Allen School of Computer Science and Engineering offers the following programs of study:

- The Bachelor of Science in Computer Engineering degree

- The Bachelor of Science degree with a major in computer science (see [Computer Science](#) in the Arts and Sciences section of this catalog)
- Minor in Neural Computation and Engineering

The core requirements of the two undergraduate majors are similar. The computer engineering major includes a general foundation in engineering fundamentals to enable interdisciplinary work with other departments in the College of Engineering and the University as a whole. It may be more appropriate for students who are interested in building systems that include both hardware and software components and that must be engineered to meet a variety of cost and performance constraints.

The computer science major may be more appropriate for students who want to earn a double major with another College of Arts and Sciences program, who want the additional flexibility of the computer science requirements (the computer engineering major has more required courses and fewer electives), or who may be more interested in the design of software systems and applications.

Bachelor of Science in Computer Engineering

Suggested First- and Second-Year College Courses: MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122; CSE 142, CSE 143; English composition.

Department Admission Requirements (For currently enrolled UW students applying for admission for Autumn 2020 and Spring 2021. All other students should follow the admission requirements effective Autumn 2021 below.)

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students.

1. Deadlines for requesting placement: July 1 and January 15
2. Course requirements to request placement: MATH 124, MATH 125, MATH 126; PHYS 121; CSE 142, CSE 143; 5 credits English composition
3. 30 credits graded college coursework
4. Grade requirements: Minimum 2.0 grade in each course required for placement; minimum 2.50 cumulative GPA in courses required for placement

If the number of Engineering Undeclared students requesting placement into the major exceeds the department capacity for Engineering Undeclared students, a matching process is implemented. Factors considered include performance in courses required for placement, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Other Current UW Students

Current UW students without Engineering Undeclared status may apply. Admission is competitive.

1. Department application deadlines: July 1 and January 15
2. Minimum course requirements: MATH 124, MATH 125, MATH 126; PHYS 121; CSE 142, CSE 143; 5 credits English composition. All courses completed prior to application deadline

3. Minimum 30 graded college credits completed by application deadline
4. Grade requirements: Minimum 2.0 grade for each course required for application; minimum 2.50 cumulative GPA in courses required for application

Transfer Students

Transfer student admission is for autumn quarter only and is competitive.

Transfer applicants are considered based on their University application. No additional departmental application required. Applicants must identify Computer Engineering as their first-choice intended major, and indicate they will begin the major immediately upon transferring. Applicants must meet the following requirements:

1. Minimum 30 graded college credits completed by the University transfer application deadline.
2. Minimum course requirements: MATH 124, MATH 125, MATH 126; PHYS 121; CSE 142, CSE 143; 5 credits of English composition all completed with minimum 2.0 grade prior to autumn quarter

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Department Admission Requirements (Effective Autumn 2021)

Applicants are considered in three groups - Entering Freshmen, Currently Enrolled UW Students, and Entering Transfers. Admission is capacity constrained. Completion of minimum requirements does not guarantee admission.

1. *Entering Freshmen:* The largest pathway for admission to Computer Engineering is directly out of high school, prior to completion of university-level prerequisites. Freshman applicants listing Computer Engineering as their intended major are automatically considered. Competitive applicants have usually taken the equivalent of four years of high school mathematics and at least one year of high school laboratory science upon entering the University. Admission is for autumn quarter only.
2. *Currently Enrolled UW Students:* A portion of each year's class is admitted after matriculating to UW. Admission is for autumn or spring quarter. Application deadlines: July 1 for autumn and January 15 for spring. To be considered, applicants must meet the following course requirements: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); PHYS 121; CSE 142, CSE 143; at least five credits of English composition.
3. *Entering Transfers:* A portion of each year's class is admitted from students transferring from another college or university. Admission is for autumn or spring quarter. Transfer applicants are considered based on their University transfer application and supplemental material provided to the Allen School. Applicants must identify Computer Engineering as their intended major, and indicate they will begin the major immediately upon transferring. Entering transfer applicants must meet the following requirements:
 - a. Minimum 30 graded college credits completed by the University transfer application deadline.
 - b. Completion of the following courses prior to matriculation to UW: MATH 124, MATH 125, MATH 126; PHYS 121; CSE 142, CSE 143; and at least five credits of English composition.

Graduation Requirements

180 credits as follows:

General Education Requirements (83 credits)

1. *Written and Oral Communication (12 credits)*: 5-credit course in English composition from the University-approved list; ENGR 231; 4 credits of UW approved writing (W) or additional UW approved composition (C) courses.
2. *Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S) (30 credits)*: Minimum 10 credits required in each area.
3. *Natural World (41 credits)*:
 - a. *Mathematics (15-18 credits)*: MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken)
 - b. *Science (20 credits)*: PHYS 121, PHYS 122, and 10 additional credits from the list of approved natural science courses in the CS&E handbook
 - c. *Mathematics or Science (3-6 credits)*: 3 to 6 additional credits of math/science (to bring total to 41) chosen from approved natural science courses in the CS&E handbook: STAT 390, STAT 391, STAT 394, MATH 307, MATH 309, MATH 334, MATH 335, AMATH 351, or AMATH 353 (STAT 391 recommended)

Major Requirements (72 credits)

1. *Required Courses (36 credits)*: CSE 142, CSE 143, CSE 311, CSE 312, CSE 332, CSE 351, CSE 369, CSE 371/E E 371, E E 215 or E E 205
2. *CSE Electives (36 credits)*:
 - a. One course chosen from: CSE 403, CSE 474/E E 474, or CSE 484
 - b. Three additional courses chosen from the computer engineering systems electives list in the online CSE handbook
 - c. Two additional courses chosen from the CSE core course list in the online CSE handbook
 - d. A design capstone course from the approved list in the CSE handbook.
 - e. 4 credits of College of Engineering courses from the CSE elective list
 - f. Additional (0-5 credits) CSE electives to bring total CSE electives to 36 credits
3. Minimum 2.0 grade for any course applied to the major, Natural World, or Written and Oral Communications requirements. Transfer students must earn a minimum of 24 graded credits toward the major through the UW.
4. Free Electives (20-25 credits, to bring total for the degree to 180)

Minor

Neural Computation and Engineering

Minor Requirements (30 credits)

1. Either NBIO 405/BIOEN 466, or both NBIO 301 and NBIO 302
2. BIOEN 460

3. Either AMATH 342 or NBIO 303
4. One course from PHIL 442 (preferred), PHIL 242, or PHIL 409
5. Capstone: BIOEN 461
6. Electives At least 12 additional graded credits from the Neural Computation and Engineering elective list, available on the program website
7. Minimum cumulative 2.00 GPA for courses counted toward the minor
8. Minimum 18 credits outside the student's major
9. Students make a presentation during the Mary Gates Undergraduate Research Symposium or Computational Neuroscience Connection Program. With approval, other presentations may satisfy this requirement.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*

Engineering Quality: Graduates engage in the productive practice of computer engineering to identify and solve significant problems across a broad range of application areas.

Leadership: Graduates engage in successful careers in industry, academia, and public service, providing technical leadership for their business, profession, and community.

Economic Impact: Graduates enhance the economic well-being of Washington State through a combination of technical expertise, leadership, and entrepreneurship.

Lifelong Learning: Graduates adapt to new technologies, tools, and methodologies to remain at the leading edge of computer engineering practice with the ability to respond to the challenges of a changing environment.

The computer engineering undergraduate degree is housed in the College of Engineering and is thereby accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, phone: (410) 347-7700. The Allen School has adopted the following student outcomes. Upon graduation from the computer engineering program, students will have:

- a. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- b. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- c. An ability to communicate effectively with a range of audiences
- d. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- e. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- f. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions

- g. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- *Instructional and Research Facilities:* The Allen School is housed in the state-of-the-art [Paul G. Allen Center for Computer Science and Engineering](#). The Allen Center includes more than 20,000 square feet of laboratories, nearly 1,000 computer systems, and more than 50 terabytes of storage. Gigabit connectivity is provided to every desktop by more than 60 miles of data cabling, and wireless access is available throughout the building.

The Allen School general-purpose laboratories support the diverse set of hardware and software platforms required for a cutting-edge education in the field. The special-purpose laboratories provide tailored support for activities such as mobile robotics, computer graphics, digital design, motion capture, embedded systems, laser scanning, educational technology, networking, and artificial intelligence.

The Allen Center and Gates Center are two of the finest computer science and computer engineering facilities in the nation. All Allen School students have access to these resources.

- *Honors Options Available:* With College Honors (Completion of Honors Core and Departmental Honors requirements). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships and co-op opportunities are available for computer science undergraduates. See www.engr.washington.edu/coop and careers.washington.edu for information.
- *Departmental Scholarships:* The Allen School has a limited number of scholarships available to current Allen School majors. Scholarship information is listed at www.cs.washington.edu/education/ugradscholars/scholarships.html.
- *Student Organizations/Associations:* A student chapter of the Association for Computing Machinery (ACM) operates within the Allen School. The ACM helps to coordinate new student orientations, research nights, technical talks, and various tutorials.

Graduate Program

Graduate Program Coordinator
 AC101 Paul G. Allen Center for Computer Science and Engineering, Box 352350
 (206) 543-1695
grad-admissions@cs.washington.edu

The Allen School offers master of science and doctor of philosophy degrees. Students can pursue full-time graduate study leading to a PhD with an integrated MS. Students can also pursue part-time graduate study in the evening, leading to an MS. Current undergraduate computer science and computer engineering majors can apply to a full-time MS program integrated with the bachelor's degree. Programs provide breadth of knowledge as well as depth in an area of specialization.

The Allen School has a large faculty, with expertise across the range of modern computing topics and with considerable focus on several interdisciplinary topics. Topics in graduate-level courses and opportunities for independent research reflect this breadth.

Combined Bachelor of Science/Master of Science - 5th year Program

Admission Requirements

Open only to students currently enrolled as computer science or computer engineering majors at the UW. Applicants must complete all required 300-level CSE courses for their computer science or computer engineering degree. Applications accepted once a year in spring.

Degree Requirements

40 credits

Approved coursework from the PhD-track master's courses, the Professional Master's Program courses, and 400-level courses

1. Minimum 36 credits of approved graded 400-level and 500-level courses except as substituted by research credit:
 - a. Minimum 32 credits in CSE courses. Students may petition to substitute courses in other fields
 - b. Minimum 20 credits from 500-level CSE 4-credit graded courses or other approved CSE graded coursework at the 500-level.
2. 4 credits of research colloquia (CSE 519 or CSE 520) or single-credit research seminars (CSE 590).
3. Students may substitute up to 12 credits of CSE 600 in place of graded CSE courses in 1.a., above. Of these, 4 credits of research may be substituted for graded credits in 1.b., above.
4. Either an approved internship/co-op or at least 3 credits of CSE research.
5. Minimum one approved course from the CSE integrated project (capstone) course list. Includes 500-level capstone-style courses as well as CSE 428, CSE 441, CSE 454, CSE 460, CSE 468, CSE 477, and CSE 481.
6. Courses taken prior to completion of the bachelor's degree may apply to master's requirements if all the following points are met:
 - a. Numbered 500-level or higher
 - b. Fulfill master's requirements as outlined above.
 - c. Taken after a student is admitted to the BS/MS program
 - d. Credits do not satisfy any undergraduate requirements, such as departmental requirements or general elective credits.
 - e. Maximum 12 graduate credits taken as an undergraduate may apply to the master's degree.

Integrated Master of Science

Admission Requirements

See PhD admission requirements, below.

Degree Requirements

40 credits

Non-Thesis Option

1. 20 credits in courses numbered 500 or above; 30 credits in CSE courses. 10 credits may be in one or more supporting fields
2. MS qualifying evaluation.
3. Breadth requirement: One course in four of five CSE areas below plus two additional courses in any area (18 credits total) for graded credit. A waiver is possible for graduate courses taken elsewhere.
 - a. Theory: CSE 521, CSE 525, or CSE 531
 - b. Systems: CSE 548, CSE 550, CSE 551, CSE 552, CSE 561, or CSE 567
 - c. Programming Systems: CSE 501, CSE 503, CSE 505, CSE 507, or CSE 544
 - d. AI: CSE 515, CSE 546, CSE 547/STAT 548, or CSE 573
 - e. Applications: CSE 510, CSE 512, CSE 517, CSE 527, CSE 557, CSE 564, CSE 576
 - f. Non-CSE: GENOME 540; HCDE 544 or INSC 570. Non-CSE courses do not belong in any of the five areas above.
4. Independent project completed under supervision of a primary and secondary faculty adviser.

Thesis Option

1. CSE 700, master's thesis (9 credits)
2. 31 additional credits
 - a. 24 credits in CSE courses
 - b. At least 16 credits numbered 500 or above
 - c. 7 credits may be in one or more supporting fields such as engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine.

Professional Master's Program

Admission Requirements

1. Bachelor's degree in computer science, computer engineering, or related field
2. 3.50 is the average GPA for accepted students.
3. GRE (general examination) except applicants with a PhD from a U.S. institution
4. Two years of post-degree professional experience
5. Significant computing background, to include the following undergraduate courses: data structures, algorithms, computer systems, and programming languages; or professional experience in these areas. Substantial hands-on professional programming experience
6. International students: work visas (or H4 visas)

Degree Requirements

40 credits

Eight 4-credit PMP (Professional Master's Program) courses (determined in consultation with an adviser) and other courses for 8 additional credits. The additional credits may be earned through participation in the Allen School's colloquium series. Students who take one course per quarter, plus 1 credit of colloquium, complete the program in two-and-a-half years.

Doctor of Philosophy

Admission Requirements

1. Solid background in computer science, including programming, machine organization, data structures, discrete mathematics, automata theory, and programming systems (i.e., the equivalent of CSE 311, CSE 312, CSE 332, and CSE 351, and either CSE 401 or CSE 451). Some exceptions are made for otherwise promising students.
2. GRE scores, earned within the preceding five years.
3. Application deadline: December 15 for both U.S. and international students for autumn quarter admission.

Degree Requirements

90 credits

1. PhD qualifying evaluation, to include:
 - a. Breadth requirement, satisfied through coursework.
 - b. One course in four of five areas below plus two additional courses in any area (18 credits total) for graded credit. A waiver is possible for graduate courses taken elsewhere.
 - i. Theory: CSE 521, CSE 525, or CSE 531
 - ii. Systems: CSE 548, CSE 550, CSE 551, CSE 552, CSE 561, or CSE 567
 - iii. Programming Systems: CSE 501, CSE 503, CSE 505, CSE 507, or CSE 544
 - iv. AI: CSE 515, CSE 546, CSE 547/STAT 548, or CSE 573
 - v. Applications: CSE 510, CSE 512, CSE 517, CSE 527, CSE 557, CSE 564, CSE 576
 - vi. Non-CSE: GENOME 540; HCDE 544 or INSC 570. Non-CSE courses do not belong in any of the five areas above.
 - c. Independent project completed under supervision of a primary and a secondary faculty adviser â€” written summary and oral presentation
2. General examination
3. Minimum 40 credits of coursework numbered 500 or above. 45 credits in courses chosen from the computer science course list. At least two CSE courses numbered 500 or above (or approved courses in related disciplines) taken for graded credit in addition to courses taken to satisfy the breadth component of the qualifying evaluation. Coursework taken toward the MS degree is applicable toward the PhD degree.
4. Two quarters of teaching assistantship within the Allen School
5. Dissertation: at least 27 credits of CSE 800. Oral examination

Assistantships

Research and teaching assistantships are based on scholastic excellence and potential. All students accepted are awarded three years of funding. Students applying for assistantships starting in autumn quarter should complete applications to the Graduate School and the Allen School by December 15.

Electrical and Computer Engineering

Department Overview

AE100R Paul Allen Center

Electrical engineering is concerned with the understanding and utilization of electricity and with providing society useful, efficient, and economic products and services. It encompasses everything from batteries and power supplies to crystal fabrication, autonomous robots, and devices that can recognize human speech. Electrical engineers design, produce, study, and operate all manner of devices and systems that use electric and electromagnetic energy. They also work on systems at the macro scale of electric power grids and at the micro scale of nanotechnology.

Contemporary society is in the midst of an information revolution, created in large part from the fruits of electrical engineering. Rapid improvements in communication technologies, computer visualization, and information access continue to have a significant impact on manufacturing, medicine, transportation, and environmental monitoring. Dramatic advances in personal communication services, digital imaging, and network hardware and software are changing the texture of everyday life for an increasing portion of the world's population.

Undergraduate Program

Adviser
AE 100R Paul Allen Center
(206) 221-5270
undergrad@ece.uw.edu

The Department of Electrical and Computer Engineering offers the following programs of study:

- The Bachelor of Science in Electrical Engineering degree
- The Bachelor of Science in Electrical Engineering degree with an option in nanoscience and molecular engineering

Bachelor of Science in Electrical Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is competitive.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements: MATH 124, MATH 125, MATH 126; CHEM 142; PHYS 121, PHYS 122; 5 credits English composition. All courses completed prior to application deadline. In addition, MATH 307 and PHYS 123 completed with minimum grades of 2.0 prior to autumn quarter
3. Minimum 60 credits completed by application deadline
4. Grade requirements: Minimum 2.0 grade for each course required for application; minimum 2.50 cumulative GPA in courses required for application

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Nanoscience and Molecular Engineering Option (NME): Admission is by self-selection and normally occurs in winter quarter of the junior year, upon completion of all electrical engineering prerequisites and formal admission to the BS electrical engineering major. Students who complete NME 220 with a minimum 2.0 grade are eligible. Such students indicate an interest in the NME option on their electrical engineering major application and discuss their interests/background in the application personal statement. To declare, they see an EE undergraduate adviser.

Graduation Requirements

General Education Requirements (81 credits)

1. *Written and Oral Communication*: 12 credits, to include one 5-credit English composition course from the University list; ENGR 231; E E 393 (or department-approved alternative)
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV)* (25 credits): Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 25 credits
3. *Natural World (44 credits)*:
 - a. *Mathematics (24 credits)*: MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352), and MATH 324.
 - b. *Science (20 credits)*: CHEM 142; PHYS 121, PHYS 122, PHYS 123

Major Requirements (80-81 credits)

1. *Computer Programming (9 credits)*: CSE 142, CSE 143
2. *Electrical Engineering Core (14 credits)*: E E 215, E E 233, E E 235
3. *Electrical Engineering Major Concentration Area (24 credits minimum)*
4. *Electrical Engineering Electives (up to 20 credits)*: See adviser for list of acceptable courses. Number of credits of the major concentration and electives should total 44.
5. *Professional Issues*: One course. See adviser for list of acceptable courses. Course may also be counted toward Electrical Engineering Core, Electrical Engineering Major Concentration Area, or Electrical Engineering Electives requirement.
6. *Engineering Electives (10 credits)*: See adviser for list of acceptable courses.
7. *Statistics (3-4 credits)*: Either STAT 390/MATH 390, STAT 391, MATH 394/STAT 394, or IND E 315
8. *Grade Requirements*: Minimum 2.00 GPA in all E E courses with no grade below 2.0 in any of these courses.

Nanoscience and Molecular Engineering Option Requirements (80-81 credits)

1. *Computer Programming (9 credits)*: CSE 142, CSE 143
2. *Electrical Engineering Core (14 credits)*: E E 215, E E 233, E E 235
3. *Nanoscience and Molecular Engineering Courses (6 credits)*: NME 220, NME 221, NME 421
4. *Electrical Engineering Major Concentration Area (24 credits minimum)* See adviser for list of acceptable courses.
5. *Electrical Engineering Electives (up to 20 credits)*: See adviser for list of acceptable courses. Number of credits of the major concentration and electives should total 44.
6. *Professional Issues*: One course. See adviser for list of acceptable courses. Course may also be counted toward Electrical Engineering Core, Electrical Engineering Major Concentration Area, or Electrical Engineering Electives requirement.
7. *Engineering Electives (10 credits)*: See adviser for list of acceptable courses.

8. *Statistics (3-4 credits)*: Either STAT 390/MATH 390, STAT 391, MATH 394/STAT 394, or IND E 315
9. *Grade Requirements*: Minimum 2.00 GPA in all E E courses with no grade below 2.0 in any of these courses.

Electives (18-19 credits)

1. *Approved Non-Electrical Engineering Electives (10 credits)*: Selected from courses listed in the departmental handbook.
2. *Free Electives (8-9 credits)*

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*
 - *Professional Opportunities*: Graduates with a degree in electrical engineering find employment in industries such as aerospace, communications, computer manufacturing, power distribution, consumer electronics, and biomedical engineering. Positions can be found focusing on the research, design, and testing of new products; technical sales and marketing; business consulting; and even growing areas such as intellectual property.

The BSEE program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

- *Program Educational Objectives*: The program educational objectives (PEOs) of the BSEE degree program are to serve the needs of our students, faculty, and regional industry by producing graduates who have acquired foundational knowledge and skills through a comprehensive curriculum and immersive educational and developmental experience. After a few years following graduation, we expect our graduates to:
 - a. **Contribute**: To have successfully and smoothly transitioned into a contributing member of the professional workforce
 - b. **Master**: To have developed the skills, habits, and professional expertise which will carry them through their life and career
 - c. **Evolve**: To rapidly grow and adapt to their fast changing world
 - d. **Innovate**: To embrace change, challenge, growth, inquiry, creativity, and diversity
 - e. **Lead**: To rise to levels of leadership and impact in their chosen specialties
 - f. **Steward**: To responsibly apply their problem solving, critical thinking, communication, and management skills to the benefit of themselves, their communities, their region, and the world at large
- *Student Outcomes*: By graduation, we expect our graduates to have demonstrated abilities in:
 1. **Problems**: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
 2. **Design**: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
 3. **Communication**: An ability to communicate effectively with a range of audiences

4. **Responsibility:** An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
 5. **Teams:** An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
 6. **Experiment:** An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
 7. **Learning:** An ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- *Instructional and Research Facilities:* The department maintains a number of instructional and research laboratories to support courses and independent study activities. There are three general-purpose computing laboratories. Instructional laboratories include a large instrumentation laboratory supporting numerous electronics courses; individual laboratories for digital design courses; a power laboratory to support the power/energy systems classes; an RF laboratory to support electromagnetics and communication systems; and laboratories that support capstone design classes. Students participating in undergraduate research and independent study generally have access to the research laboratories of their supervising faculty member.
 - *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
 - *Research, Internships, and Service Learning:* Many electrical engineering students participate every year in internship and co-op (cooperative education) programs. [The Engineering Career Center](#) is one source for companies recruiting for internship and co-op students. [The UW Career & Internship Centers](#) also lists a variety of internship opportunities.
 - *Department Scholarships:* Many scholarships specifically for electrical engineering majors and based on merit and financial need are awarded each year. Students interested in applying for these and other College of Engineering scholarships may obtain information from the Department of Electrical Engineering Scholarship Award Committee Chair.
 - *Student Organizations/Associations:* [The Institute of Electrical and Electronics Engineers \(IEEE\)](#), UW student chapter organizes social activities, workshops, field trips and other professional development opportunities. [Eta Kappa Nu \(HKN\)](#) is an invitation-only honor society for electrical engineering students. HKN organizes tutoring services, tutorial workshops, social activities, and community services projects.

Graduate Program

Graduate Program Coordinator
AE100R Paul Allen Center, Box 352500
(206) 543-2142
grad@ee.washington.edu

The department offers Master of Science in Electrical Engineering (MSEE) and Doctor of Philosophy (PhD). Graduate courses and research programs are offered in biosystems, circuits and network theory, computational intelligence, computer networks and distributed systems, computer architecture, digital systems, software engineering, operating systems, microprocessors, VLSI design, control systems, electromagnetics (including optics and radio science), electronic materials (including devices and micro-electronics), energy systems (including power electronics and electric drives), signal and image

processing, telecommunications, and virtual reality. Numerous interdisciplinary research opportunities exist, including projects relating to bioengineering, computer engineering, and marine acoustics. The department does extensive research in coordination with the UW's Applied Physics laboratory and Washington Technology Center.

The MSEE degree may be earned in three ways, each requiring 45 credits. (1) perform research and write a thesis; (2) pursue a one-quarter project as part of the program; (3) accumulate a suitable distribution of 45 credits of coursework.

For the PhD degree, students pass the departmental qualifying examination, pass an advanced general examination, pursue an original research problem, and report the results of that research in a dissertation that must be a contribution to knowledge. At least one year of coursework beyond the MSEE degree is usually desirable.

Master of Science in Electrical Engineering

Admission Requirements

1. GRE
2. Formal application, statement of purpose, and minimum two reference letters.

Although most applicants have baccalaureate degrees in electrical engineering, applicants with degrees in other branches of engineering, the physical sciences, computer science, or mathematics often pursue graduate study in electrical engineering following some additional preparation.

For more information, visit the department's website at www.ee.washington.edu/admissions/graduate/index.html.

Degree Requirements

Two pathways

1. *Thesis option*: Best for students who wish to pursue an in-depth research experience with intended preparation for pursuing a PhD
2. *Coursework option*: For students whose main goal is to work in industry immediately upon graduation.

Requirements for both options

1. Plan of study by completed second quarter of study
2. Minimum 45 credits
3. Full time registration (10 credits) each quarter (less in summer)
4. Maximum 3 credits E E 500. (1 credit required)
5. Maximum 5 credits E E 599
6. 1 credit of E E 592 (offered autumn quarter)

Thesis Option

1. E E 700 (9-12 credits)

2. E E courses numbered 500 and above (minimum 20 credits)
3. E E 400-level courses (maximum 12 credits)
4. Non E E courses (maximum 9 credits)

Students pursue an individual problem in depth. Typical problems involve basic research or application of classroom principles to a professional problem beyond the routine practice of electrical engineering.

Coursework Option

1. E E courses numbered 500 and above (minimum 25 credits)
2. E E 400-level courses (maximum 12 credits)
3. Non E E courses (maximum 9 credits)

Students take a prearranged course load specific to each of the seven curriculum areas. A generic coursework option is also available.

Doctor of Philosophy

Admission Requirements

1. GRE
2. Formal application, statement of purpose, and minimum two reference letters.

Most applicants have baccalaureate degrees in electrical engineering, although applicants with degrees in other branches of engineering, the physical sciences, computer science, or mathematics may often pursue graduate study in electrical engineering following additional preparation.

For more information, visit the department's Website at www.ee.washington.edu/admissions/graduate/index.html.

Degree Requirements

Minimum 90 credits

1. Department qualifying examination
2. Individualized course of study approved by the student's PhD Supervisory Committee
3. General examination
4. Dissertation based on original research. EE 800 (30 credits)
5. Minimum 90 credits of coursework, independent study, and dissertation (60 of which must be completed through the UW), 18 of which must be graded credits
6. Minimum 3.00 cumulative GPA

Research Groups

Facilities include research laboratories for advanced digital systems, advanced power technology, applied electromagnetics, optics, remote sensing, applied signal and image processing, mechatronics and intelligent control, modern sensors, and semiconductor technology

Financial Aid

Research assistantships, teaching assistantships, scholarships, and graduate fellowships are available to qualified graduate students in all areas of electrical engineering. Most awards include a monthly stipend plus payment of tuition and fees.

Human Centered Design and Engineering

Department Overview

423 Sieg

In the Department of Human Centered Design and Engineering (HCDE), students are designing the future by building innovative technologies and systems. Putting people first, HCDE students and faculty research, design, and engineer interactions between humans and technology. HCDE students and faculty focus on understanding human needs and interests as they design and build engineering solutions to the world's problems.

HCDE faculty are award-winning and interdisciplinary, with graduate degrees in fields such as computer science, information studies, industrial engineering, design, education, English, linguistics, public policy, and technology and society studies.

HCDE prepares students for leadership roles in user interface design, user experience research and design, human-computer interaction, information and communication systems, computer-supported cooperative work, and related specializations, all from a human-centered perspective, internationally and globally. Whatever their professional direction, classes, directed research groups, and capstone projects, students develop portfolio quality products. HCDE graduates obtain jobs, primarily in the high-tech industry (e.g., Microsoft, Intel, Amazon, Facebook, T-Mobile, Google, Boeing), researching and designing user interfaces, websites, and other form factors to improve the user experience.

HCDE emphasizes student-centered, hands-on learning. Beyond taking traditional classroom courses, students join research groups and work side-by-side with top-ranked professors and graduate students to enhance the knowledge base of this dynamic field. The educational mission is supported by up-to-date facilities.

HCDE prepares students to assume positions of intellectual leadership in industry, government, non-profit organizations, and academia, HCDE students learn the research skills appropriate to their interests, the most effective design strategies, and the most current technologies and practices. They also learn enduring theory and principles so they can dynamically respond to the evolving field of human centered design and engineering.

Technical communicators use their language, visual, and analytical skills, as well as training and research in electronic and other media, to create and enhance communication in scientific and technical environments. Human centered design and engineering prepares students to design, create, edit, and evaluate technical and scientific discourse. The department provides coursework in the development of online help systems and in the design of general-audience content for delivery by means of advanced communication technologies such as the web.

The complexities of modern life have greatly increased the number of people who need to communicate about technical and other specialized topics. Scientific journal articles, manuals, proposals, and other genres are important for a vast array of readers. With the Information Age, gaining and sharing technological understanding and capability has become a crucial human activity. People communicate in more genres, address broader (often global) audiences, and face more complex rhetorical problems than ever before.

To achieve success in their communication activities, progressive organizations are employing sophisticated planning and development methods, including user-centered design and evaluation, content management, and systems-based analyses. In addition, they undertake research projects and apply existing research to their own needs. Contemporary research in technical communication ranges from controlled empirical research on the processing of text, graphics, and multimedia content to observational research on how meaning is created and negotiated in business environments and virtual communities.

Other major interests include the human-computer interface, hypermedia, communications technology, rhetoric of technical discourse, international communication, visual communication, publications and communications management, policy analysis of technological systems, and research and testing.

Undergraduate Program

Adviser

428 Sieg, Box 352315

(206) 543-2567

www.hcde.washington.edu

The Department of Human Centered Design and Engineering (HCDE) offers the following programs of study:

- Bachelor of Science in Human Centered Design and Engineering degree
- A minor in technical Japanese

Bachelor of Science in Human Centered Design and Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.

7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is competitive.

1. Admission is for autumn and spring quarters. Application deadlines: April 5 for autumn quarter and January 15 for spring quarter.
2. Minimum course requirements for application: 10 credits from MATH 120, MATH 124, MATH 125, MATH 126; CSE 142 or CSE 160; one from STAT 220, STAT 221, STAT 311, IND E 315; three from CHEM 142, CHEM 152, CHEM 162, PHYS 114, PHYS 115, PHYS 116, PHYS 121, PHYS 122, PHYS 123, BIOL 118, BIOL 180, BIOL 200, PSYCH 202; 5 credits English composition; all courses completed prior to application deadline.
3. Grade requirements: minimum 2.50 cumulative GPA in courses required for application

Factors evaluated include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Graduation Requirements

180 credits

General Education Requirements (88 credits)

1. *Written and Oral Communication (8 credits)*: 5 credits English composition from the University list; HCDE 231. University-required additional 5 writing credits are built into the major core requirements
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (30 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 30 credits
3. *Natural World (50 credits)*:
 - a. *Mathematics* (minimum 15 credits; see list of qualifying courses on HCDE [website](#))
 - b. *Science* (minimum 15 credits; see list of qualifying courses on HCDE [website](#))

Major Requirements (82 credits)

1. *HCDE Core (41 credits)*: HCDE 300, HCDE 301, HCDE 308, HCDE 310, HCDE 313, HCDE 318, HCDE 321, HCDE 322, HCDE 492, HCDE 493
2. *Engineering Fundamentals(minimum 12 credits)*: either CSE 142 or CSE 160; see department website for approved list of additional courses
3. *Experiential Learning (4 credits)*: See department website for list of approved courses
4. *HCDE Electives (25 credits)*
 - a. Standard Option: See department for list of approved HCDE electives
 - b. *HCI (Human-Computer Interaction) Option*: HCDE 419, and one course from at least three of the four HCI course areas – user interface, software, and technology; design; usability, and user research; and social and ethical dimensions. See department website for approved area courses. Students take additional approved HCDE elective courses to reach the overall electives requirements.
 - c. *Data Science Option*: CSE 143, HCDE 411, CSE 491, and at least one in each of the three course areas: machine learning; data management; and statistics. See department website for approved area courses. Students take additional approved HCDE elective courses to reach the overall electives requirements. CSE 143 satisfies the Engineering Fundamentals requirement and is not included in the minimum credit requirement.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Minor Requirements: Technical Japanese: Minimum 25 credits to include HCDE 461, HCDE 462, HCDE 463, plus 10 credits from the approved list of elective courses. For more information, contact the departmental adviser.

Student Outcomes and Opportunities

- *Expected Outcomes*: HCDE BS graduates contribute to society by applying design and engineering processes to solve problems through a deep understanding of people and their contexts. In particular, they are leaders in:
 - Investigating people and systems, using quantitative and qualitative methods, to identify opportunities for new systems and strengths and weaknesses of existing systems.
 - Designing, building, and evaluating systems according to a variety of perspectives, with an emphasis on understanding the relationships between social and technical elements of systems.
 - Bringing ideas to actualization through expertise in design strategy and processes, effective communication and collaboration skills, and ethical perspectives.
 - Identifying and learning new skills, perspectives, and tools that help them and others accomplish their goals.

The Department of Human Centered Design and Engineering prepares students to assume positions in industry, government, and non-profit organizations and to apply to graduate programs.

- *Instructional and Research Facilities:* Department facilities include the HCDE Design Laboratory and Laboratory for Usability Testing and Evaluation (LUTE).
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* HCDE undergraduates are required to complete at least one 3-credit internship. The supervised internship must be approved by the faculty internship adviser. As an internship substitution, students may elect to take part in a six-month co-op, sponsored by the Engineering Co-op program. Additionally, undergraduates work in research groups with HCDE faculty and graduate students.
- *Department Scholarships:* HCDE selects one recipient of a College of Engineering Scholarship annually. The criteria for this scholarship are the applicant's academic history and likelihood for success in the technical communication field.
- *Student Organizations/Associations:* Students in the HCDE degree program participate in student activities such as the HCDE Student Association, the Minority Science and Engineering Program (MSEP), and Women in Science and Engineering (WISE).

Of Special Note: The HCDE department is an inclusive, interdisciplinary academic community. Students generally call their professors by their first name and have the opportunity to work individually on projects and research supervised by HCDE faculty. Undergraduate students are encouraged to work in research groups and to attend conferences and professional meetings.

Graduate Programs

Graduate Program Coordinator
1428 Sieg Hall, Box 352315
(206) 543-1798
hcde@uw.edu

Master of Science in Human Centered Design and Engineering

The department offers a Master of Science in Human Centered Design and Engineering (MS HCDE) - an engineering degree. An evening program is offered through UW Educational Outreach, serving full time and part time students.

Upon completion of the HCDE MS degree, students assume leadership roles in human-centered design and engineering in academia, industry, government, and non-profits. HCDE MS graduates are able to:

- Evaluate and understand human needs as a basis for designing and engineering new technologies.
- Master conceptual frameworks that motivate interdisciplinary research and design in HCDE.
- Select and critically evaluate user research methods for a variety of stakeholders and product contexts.
- Create visual, interactive, experience, and systems designs and prototypes.
- Translate organizational requirements into interface and product solutions, while accounting for all stakeholder perspectives and working ethically and collaboratively.
- Communicate effectively in oral, written, and visual forms, while scaling communications to audience needs and sociotechnical contexts.

Admission Requirements

Faculty consider the following:

1. Undergraduate GPA
2. Undergraduate degree program and work experience
3. TOEFL score (if applicable)
4. Letters of recommendation
5. Statement of goals and career objectives. A limited number of prerequisite undergraduate courses may be required.

Degree Requirements

48 credits

1. Core courses (22 credits): HCDE 501, HCDE 503, HCDE 517, HCDE 518, HCDE 521 (1 credit required, max. 2), HCDE 592, HCDE 593
2. Specialized content areas (minimum 12 credits): minimum 4 credits in each of the three areas: research, design, and engineering. Research courses: HCDE 502, HCDE 516, HCDE 519; design courses: HCDE 508, HCDE 511, HCDE 520, HCDE 536; engineering courses: HCDE 530, HCDE 532, HCDE 537, HCDE 539. Students are encouraged to gain depth in any or all of the three areas by taking additional courses beyond the minimum.
3. Additional coursework to complete at least 48 HCDE credits. May include credits from electives, directed research groups, and optional internships. Students select electives based on specific academic, research, and professional goals.

Students must complete the MS HCDE program within three years of admission; most finish in less than two years.

Certificate in User-Centered Design (UCD)

An evening, graduate-level, one-year, four-course program for students who wish to explore a wide range of UCD issues. Involves sophisticated methods for planning and developing intuitive, user-friendly product designs. Students study the latest user research and design theories and practices for placing user needs at the forefront of each stage of the design process.

Focuses on usability studies, user-centered design theory and practice, visual communication and information visualization, and web design.

12 of the 13 credits earned for the UCD certificate may later count toward the MS in Human Centered Design and Engineering if students apply for Graduate Non-Matriculated Status prior to taking coursework.

Certificate Requirements

1. HCDE 517 (autumn)
2. HCDE 518 (winter)
3. HCDE 521 (winter only)

4. One of the following electives: HCDE 508, HCDE 511, HCDE 536, HCDE 537 (optional prerequisite for HCDE 537 is HCDE 532)

Doctor of Philosophy

An engineering degree. The program provides experience for students interested in studying the conception, design, implementation, use, evaluation, and effects of technologies.

HCDE's interdisciplinary faculty hold graduate degrees from fields such as computer science, industrial engineering, information studies, design, education, English, linguistics, public policy, and technology and society studies. The faculty's research and teaching focus on six areas of study: influencing awareness, thinking, and behavior; design for emergent collaborations and organizations; low resource and underserved populations; material and embodied technologies, and ubiquitous computing; data visualization and big data; and learning in professional and technical environments.

Early in the program, students may explore different topics and research areas through directed research groups and other independent projects.

Goals

- Prepare graduates for a career as researchers, teachers, and intellectual leaders in the discipline of HCDE
- Enable graduates to develop theoretical frameworks, apply investigative methods, and translate theory and research findings into technical or strategic innovations in the field of HCDE
- Foster development and dissemination of new knowledge in HCDE
- Foster development of an international, multi-cultural perspective and a diverse, inclusive student body and workforce in HCDE

Admission Requirements

Completion of either an undergraduate degree or a master's degree in HCDE or a relevant field (up to 30 credits of master's work may apply toward the 105-credit requirement). Applicants often come from a wide range of backgrounds.

Applicants must submit the following:

1. UW HCDE PhD admission forms
2. Official transcripts of all academic study
3. Evidence of a minimum 3.00 GPA
4. Three letters of recommendation
5. Curriculum vitae
6. Personal statement of objectives and research area of interest.

International students also submit a TOEFL iBT test score of at least 106 (including a speaking sub-score of 26), obtained within the last two years.

Degree Requirements

105 credits

1. 34 core credits (HCDE 541, HCDE 542, HCDE 543, HCDE 544, HCDE 545, HCDE 546, HCDE 547, HCDE 548); 2 credits (one each for HCDE 521 and HCDE 523); 12 credits of directed research (HCDE 596); HCDE 521, HCDE 523; 30 credits of approved electives to include HCDE 518 and one additional graded, graduate-level course in each of four thematic areas; minimum 27 dissertation credits
2. Preliminary examination
3. Committee chair selected within two quarters of passing preliminary examination
4. Course distribution and credit-hour requirements
5. Directed research
6. General examination
7. Dissertation proposal
8. Dissertation

Students are encouraged but not required to teach.

Students often explore different topics and research areas through directed research groups and other independent projects. By the end of the quarter following passing the preliminary examination (usually the end of the fourth quarter), students choose a dissertation adviser and focus on a research area for the dissertation. Students are often supported by a research assistantship.

Students who enter the PhD program with a previous graduate degree relevant to HCDE can petition to have up to 30 credits transferred toward this program.

Research Facilities

The department has well-equipped laboratories that effectively support its courses and research projects. Also, HCDE graduate students can utilize significant College of Engineering and University-level research facilities.

Financial Aid

A limited number of teaching and research assistantships and scholarships are available.

Industrial and Systems Engineering

Department Overview

G-7 Mechanical Engineering Building

Industrial and systems engineering (ISE) prepares students for careers in an increasingly diverse, dynamic, and technological world. Industrial engineers focus on the integration of humans, machines, materials, and information to achieve optimum performance of operating systems. This focus on the "big picture" makes industrial and systems engineering one of the most people-oriented and customer-focused of the engineering disciplines.

Industrial and systems engineering involves the study of engineering design, system integration, optimization, quality and reliability, supply chain management, virtual reality, and manufacturing.

Being an industrial engineer is about choices. Industrial engineers have the opportunity to work in many different kinds of businesses and nonprofit organizations. The most distinctive aspect of industrial engineering is the flexibility it offers. Many industrial engineers eventually move into supervisory or management positions where they continue to draw on their technical background. Demand for industrial engineers has grown dramatically over the past two decades.

Undergraduate Program

Adviser

G7 Mechanical Engineering, Box 352650

(206) 543-5041

ieadvise@uw.edu

Industrial and Systems Engineering offers the following program of study:

- The Bachelor of Science in Industrial Engineering degree (BSIE)

Bachelor of Science in Industrial Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering. Students requesting placement to Industrial Engineering must take AMATH 301, CSE 142, or CSE 160 from this list.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is competitive.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements for application: MATH 124, MATH 125, MATH 126; CHEM 142; PHYS 121, PHYS 122; A A 210; 5 credits English composition. All courses completed prior to application deadline. In addition, CHEM 152; PHYS 123; and CEE 220 or ME 230 completed with minimum 2.0 grades prior to autumn quarter
3. Minimum 60 credits completed by application deadline
4. Grade requirements: Minimum 2.0 grade in each course required for application; minimum 2.50 cumulative GPA in courses required for application

Students are encouraged to complete MATH 307, MATH 308, and CSE 142 prior to autumn quarter.

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Graduation Requirements

180 credits as follows:

General Education Requirements (91 credits)

1. *Written and Oral Communications (12 credits)*: 5-credits English composition from the University-approved list; ENGR 231; University-required 4 additional writing credits met by major core courses.
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (30 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 30 credits
3. *Natural World (49 credits)*
 - a. *Mathematics (24 credits)*: MATH 124, MATH 125, MATH 126, MATH 307, MATH 308; IND E 315
 - b. *Science (25 credits)*: CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

Major Requirements (89 credits)

1. *Engineering Fundamentals (28 credits)*: CSE 142, MSE 170, A A 210, E E 215, CEE 220, M E 230, IND E 250
2. *Industrial Engineering Core (24 credits)*: IND E 316, IND E 337, IND E 410, IND E 411, IND E 494, IND E 495
3. *Technical Electives (37 credits)*: At least one class from approved courses in each of the following areas: operations research, statistics, production/operations, design, and general engineering. See adviser for list of approved technical electives.
4. *Grade Requirements*: Minimum 2.00 cumulative GPA in all engineering courses with no grade below 1.0 in these courses.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Industrial and systems engineering graduates are proficient in mathematics, sciences, engineering fundamentals, and the use of computers; use a broad knowledge of industrial engineering methods and tools associated with operations research, quality engineering, and human factors; apply engineering design methods and tools to represent, integrate, and solve problems, including the ability to recognize problem context and integrate knowledge and skills from allied disciplines; communicate effectively; and possess the professional characteristics of leadership, ethics, and the ability to motivate and work with others.

IE prepares students to serve as the efficiency experts of organizational change. Students are encouraged to take a systems view when solving problems, recognize the organizational and societal impact of technical decisions, develop good oral and written communication skills, participate in teams, and take initiative. Industrial engineers draw upon specialized knowledge and skills in math, the physical sciences, and social sciences together with the principles and methods of engineering analysis and design.

- *Instructional and Research Facilities*: Industrial and systems engineering provides designated computing facilities for undergraduate students. Research facilities include the Human Interface Technology Laboratory, the Production Systems Laboratory, the Manufacturing Laboratory, and the Center for Engineering Learning and Teaching.

- Honors Options Available: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major).. See adviser for requirements.
- *Research, Internships, and Service Learning*: Students have the opportunity to pursue cooperative and internship programs at the College level through the College's Engineering Co-op Program (www.engr.washington.edu/coop/).
- *Department Scholarships*: ISE offers scholarships to outstanding undergraduate students. All applicants to the BSIE program are considered for these scholarships. Awards are made based on both merit and financial need.
- *Student Organizations/Associations*: Students are actively involved in the UW student chapter of the Institute of Industrial Engineers (IIE); the ISE National Honor Society, Alpha Pi Mu; and the IE Student Advisory Board.

Graduate Program

Graduate Program Coordinator
G7 Mechanical Engineering, Box 352650
(206) 543-5041
ieadvise@uw.edu

The department offers graduate programs leading to the Master of Science in Industrial Engineering (M.S.I.E.) and doctor of philosophy (Ph.D.). Graduate courses and research programs are offered in manufacturing, operations research, large-scale assembly, experimental statistics, production planning, quality control, reliability engineering, computer-integrated manufacturing, simulation, supply chain, human factors, virtual reality, and human interface technology.

Master of Science in Industrial Engineering

Admission Requirements

For consideration, applicants are expected to have a bachelor's degree in engineering, mathematics, or science, with a minimum 3.00 GPA.

Degree Requirements

41 credits

1. *Coursework Only Program*:
 - a. 21 graded credits in industrial engineering (500 level or above) courses
 - b. 17 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
 - c. 3 credits of industrial engineering seminar: IND E 591, IND E 592, IND E 593
2. *Thesis Program*:
 - a. 18 graded credits in industrial engineering (500 level or above) courses
 - b. 11 graded credits in technical electives (a maximum of 9 technical elective credits may be taken at the 400 level)
 - c. 9 credits of master's thesis (IND E 700)

- d. 3 credits of industrial engineering seminar: IND E 591, IND E 592, IND E 593

Doctor of Philosophy

Admission Requirements

Applicants should have, or be close to completing, a master's degree in any discipline of engineering with a minimum 3.00 GPA.

Degree Requirements

90 credits

1. 3 credits of industrial engineering graduate seminar: IND E 591, IND E 592, IND E 593 (1, 1, 1)
2. 60 credits of coursework, with at least 18 credit hours of 500-level courses. A master's degree from the UW or another institution may substitute for 30 of these 60 credits.
3. General examination
4. Dissertation: 27 credits of dissertation (IND E 800) over a period of at least three quarters.
5. Final examination

Materials Science and Engineering

Department Overview

302 Roberts

Materials science and engineering is an interdisciplinary field that addresses the structure, processing, and property relationships in materials for engineering applications. Basic principles of chemistry and physics are applied to provide an understanding of the structure of materials and the manner in which the structure determines the properties. Scientific processing methods are then applied to yield the necessary properties, which then can be integrated with, and designed to accommodate the needs of, modern technology.

Advances in materials enable technological progress in many fields. Historically, this connection between materials and technology has been so intimate that major periods in civilization have been named after the dominant material used in that era (e.g., Bronze Age, Iron Age). In the past few decades, at the core of the progress in such diverse fields as transportation, communication, electronics, energy and environment are significant advances in materials. Materials science and engineering is a broad and growing discipline.

Materials Science and Engineering at the University of Washington has recently experienced rapid expansion into new research areas, including polymers, hybrids, biomaterials, biomimetics, nanomaterials, photonic and magnetic materials. These areas have applications in current and emerging industries, and complement existing strength in ceramics, metals, electronic materials, and composites.

Undergraduate Program

Adviser
302A Roberts, Box 352120
(206) 543-2600
mse@uw.edu

The Department of Materials Science and Engineering offers the following programs of study:

- The Bachelor of Science in Materials Science and Engineering degree
- The Bachelor of Science in Materials Science and Engineering degree with an option in nanoscience and molecular engineering
- A minor in materials science and engineering

Bachelor of Science in Materials Science and Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is competitive.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152; PHYS 121, PHYS 122; 5 credits English composition. All courses completed prior to application deadline. In addition, AMATH 301 or CSE 142; MATH 307; and MSE 170 completed with minimum 2.0 grades prior to autumn quarter
3. Grade requirements: Minimum 2.0 grade in each course required for application; minimum 2.50 cumulative GPA in courses required for application

Students are encouraged to complete A A 210, CEE 220, HCDE 231, MATH 308, and PHYS 123 prior to autumn quarter.

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Admission to the Nanoscience and Molecular Engineering Option (NME): Admission is by self-selection and normally occurs after completion of NME 220 and NME 221, completion of the major prerequisite courses, and formal admission to the MSE major. Transfer students should indicate an interest on their major application and discuss their interests/background in the application personal statement.

Graduation Requirements

Minimum 180 credits to include:

General Education Requirements (87-92 credits)

1. *Written and Oral Communications:* 8 credits, to include one 5-credit English composition course from the University list; ENGR 231. University-required 4 additional writing credits are met by major core courses.
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (24 credits):* Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 24 credits
3. *Natural World (55-60 credits):*
 - a. *Mathematics (24-25 credits):* MATH 124, MATH 125, MATH 126, MATH 307, MATH 308; one from MATH 309, MATH 324, IND E 315, or MATH 390/STAT 390
 - b. *Science (31-35 credits):* CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123; two additional natural science courses from the department's approved list

Major Requirements (93credits)

1. *Engineering Fundamentals (24 credits):* CSE 142 or AMATH 301, MSE 170, A A 210, CEE 220; 8 credits of additional engineering elective courses from the department's list of approved courses.
2. *Materials Science and Engineering Core (54 credits):* MSE 310, MSE 311, MSE 312, MSE 313, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362, MSE 399, MSE 431, MSE 442, MSE 491, MSE 492, MSE 499 (4)
3. *Technical Electives (15 credits):* See department advising office for list of acceptable courses.
4. *Grade Requirement:* Minimum 2.00 departmental cumulative GPA

Major Requirements for Nanoscience and Molecular Engineering Option (97 credits)

1. *Engineering Fundamentals (24 credits):* CSE 142 or AMATH 301, MSE 170, A A 210, CEE 220; 8 credits of engineering elective courses from the department's list of approved courses.
2. *Materials Sciences and Engineering Core (54 credits):* MSE 310, MSE 311, MSE 312, MSE 313, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362, MSE 399, MSE 431, MSE 442, MSE 491, MSE 492, MSE 499 (4). The senior project (MSE 499) must be in an NME area.
3. *Nanoscience and Molecular Engineering Courses (19 credits):* NME 220, NME 221, NME 321, NME 421; additional approved nanoscience and molecular engineering electives to reach 19 credits. See adviser for list of approved electives.
4. *Grade Requirements:* Minimum 2.00 departmental cumulative GPA

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy contact the department adviser or refer to the department website (<http://www.mse.washington.edu/current/undergrad/continuation>)

Minor

Minor Requirements: 30 credits as follows: MSE 170, MSE 321, MSE 322, MSE 331, MSE 333, MSE 342, MSE 351, MSE 352, MSE 362. Minimum 2.0 grade of 2.0 required for each course.

The following courses serve as prerequisites for the departmental courses in the minor: MATH 124, MATH 125, MATH 126, MATH 307, and MATH 308 or MATH 318; CHEM 142 or CHEM 145, CHEM 152 or CHEM 155; PHYS 121, PHYS 122, PHYS 123; MSE 170; English composition. Students should take these courses before beginning the minor program.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:*

Undergraduate students are offered both broad core and in-depth courses. The broad core provides the needed background and understanding of all types of engineering materials, including metals, ceramics, polymers, electronic materials, and composites. The curriculum provides an opportunity to use basic knowledge in science and engineering fundamentals to synthesize and design materials for engineering applications. The undergraduate curriculum emphasizes hands-on experience, oral and written communication, and teamwork, and encourages participation in research. Graduates with a degree in materials science and engineering find employment in a broad range of industries including aerospace, biomedical, electronic manufacturing, materials processing, and transportation.

The Bachelor of Science in Materials Science and Engineering program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, and the department has adopted the following student outcomes:

- a. An ability to apply knowledge of mathematics, science and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability
- d. An ability to function on multi-disciplinary teams
- e. An ability to identify, formulate and solve engineering problems
- f. An understanding of professional and ethical responsibilities
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
- i. A recognition of the need for, and an ability to engage in life-long learning
- j. Knowledge of contemporary issues

- k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
 - l. An ability to apply advanced science (such as chemistry and physics) and engineering principles to ceramics, metals, polymers and composite materials systems
 - m. An integrated understanding of the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing and performance related to material systems
 - n. An ability to apply and integrate knowledge from each of the four major elements of the field to solve materials selection and design problems
 - o. An ability to utilize experimental, statistical and computational methods consistent with the goals of the program
 - p. Experience in laboratory work and in research and/or design problem solving
 - q. Preparation, as appropriate to the student and the area of interest, to enter graduate degree programs.
- *Instructional and Research Facilities:* Facilities include equipment for electron and optical microscopy, x-ray diffraction, high-temperature heat treatment and mechanical testing, specialized processing equipment, including hot and cold isostatic presses, nitrogen reaction furnaces, and automated TGA, DTA analysis systems. Equipment for analyses of particle size, surface areas, and pore size is also available. Students have liberal access to University computing facilities.
 - *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
 - *Research, Internships, and Service Learning:* Materials Science and Engineering students interested in paid internship experiences should contact the Engineering Co-op and Internship Program, 301 Loew Hall, Box 352180, (206) 543-8711, coop@enr.washington.edu.
 - *Department Scholarships:* In addition to need-based aid provided through the University's Office of Student Financial Aid, companies and individuals with interest in developing materials science and engineering students have provided scholarships for students admitted to the program. Specific information and application forms are available from the academic counselor in 302 Roberts.
 - *Student Organizations/Associations:* Keramos (materials honor society); American Ceramic Society (ACerS); ASM/TMS (the joint student chapter of ASM International and TMS); Society for the Advancement of Materials and Process Engineering (SAMPE).

Of Special Note:

Combined BS/MS Degree Program

Students earn both the BS and MS degrees in five years. This program, available to students after they are admitted to the department, is described below.

Graduate Program

Graduate Program Adviser
302 Roberts, Box 352120
(206) 543-2600

The department offers programs of study leading to the Master of Science in Materials Science and Engineering (MS) and the doctor of philosophy (PhD) in both materials science and engineering or materials science and engineering/nanotechnology.

The primary goals of the master's and doctoral programs are to prepare students for industrial employment and research/development careers and to generate new knowledge. Specific objectives are as follows:

- Deepen knowledge and capabilities broadly and in a chosen specialty area.
- Master and develop state-of-the-art research techniques appropriate to specialty.
- Contribute new knowledge of lasting value to the field by creative and independent research.
- Broaden candidate's knowledge of field and societal issues.
- Learn to work effectively with colleagues and contribute to professional community.

Combined Bachelor of Science/Master of Science

Admission Requirements

Students may apply to enter the combined BS/MS program any time after being accepted into the MSE department as an undergraduate major. Requirements include:

1. Overall minimum 3.00 GPA in the last 90 credits before application
2. Minimum 15 credits of MSE courses completed with a minimum 3.40 GPA
3. Statement of interest in and goals for the MS degree
4. Approval by faculty adviser

Students accepted into the combined BS/MS program must also submit a Graduate School application for formal admission.

Degree Requirements

36 credits as follows:

Students combine their BS senior project requirement with the MS thesis and begin research starting summer or autumn quarter of their senior year. Thesis and non-thesis options are available to earn the MS degree.

1. Core courses (9 credits): MSE 510, MSE 525, MSE 541
2. Elective courses (9 credits): MSE 500 level, or approved related courses
3. Seminar (3 credits): MSE 520
4. Research (9 credits): thesis (MSE 700); or non-thesis (MSE 600)

5. Additional coursework or research (6 credits)

Master of Science (Applied Program)

Admission Requirements

1. Minimum 3.00 undergraduate GPA in the last 90 graded quarter hours or the last 60 graded semester hours.
2. GRE general test
3. Background in engineering and the physical sciences.
4. Program prerequisites which may be satisfied after entry:
 - a. Fundamentals of materials science and engineering equivalent to MSE 170
 - b. Crystallography equivalent to MSE 331
 - c. Materials properties equivalent to MSE 351 and MSE 362
 - d. Kinetics equivalent to MSE 322
 - e. Thermodynamics equivalent to the level of MSE 421

Degree Requirements

36 credits, as follows:

1. Required core courses (9 credits): MSE 570, MSE 525, MSE 541
2. Elective courses (9 credits): MSE 500 level, or approved related courses
3. Seminar (3 credits): MSE 520
4. Non thesis (MSE 600) or thesis (MSE 700) (9 credits)
5. Additional coursework or research (6 credits)

Doctor of Philosophy

Admission Requirements

1. Minimum 3.00 GPA in the most recent 90 graded quarter hours (60 graded semester hours).
2. GRE general test

Prerequisite Knowledge:

1. Fundamentals of materials science and engineering equivalent to MSE 170
2. Crystallography equivalent to MSE 331
3. Materials properties equivalent to MSE 362 and MSE 351
4. Kinetics equivalent to MSE 322
5. Thermodynamics equivalent to MSE 421 (for students who do not have two undergraduate thermodynamics courses).

Degree Requirements

Minimum 90 credits

1. Core courses (9 credits): MSE 510, MSE 525, MSE 541
2. Elective credits (9 credits): MSE 500 level, or approved related courses
3. MSE 520 (6 credits)
4. General examination
5. MSE 800 (36 credits)
6. Dissertation (30 credits)
7. Final examination

Financial Support

Doctoral students are eligible for a variety of competitive financial awards while they pursue their MSE degrees. Awards include teaching and research assistantships and a broad spectrum of internal and external fellowships. Almost all doctoral students receive some financial support. Further details are on the departmental website and in the Graduate Student Handbook.

Mechanical Engineering

Department Overview

143 Mechanical Engineering Building

Mechanical engineering is one of the broadest and oldest of the engineering disciplines and therefore provides some of the strongest interdisciplinary opportunities in the engineering profession. Power utilization (and power generation) is often used to describe the focus of mechanical engineering. Within this focus are such diverse topics as thermodynamics, heat transfer, fluid mechanics, machine design, mechanics of materials, manufacturing, stress analysis, system dynamics, numerical modeling, vibrations, turbomachinery, combustion, heating, ventilating, and air conditioning. Degrees in mechanical engineering open doors to careers not only in the engineering profession but also in business, law, medicine, finance, and other non-technical professions.

Undergraduate Program

Adviser

143 Mechanical Engineering Bldg., Box 352600

(206) 543-5090

meadvise@uw.edu

The Department of Mechanical Engineering offers the following program of study:

- The Bachelor of Science in Mechanical Engineering (BSME) degree
- The Bachelor of Science in Mechanical Engineering (BSME) degree with an option in mechatronics
- The Bachelor of Science in Mechanical Engineering (BSME) degree with an option in nanoscience and molecular engineering

Bachelor of Science in Mechanical Engineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Other Current UW Students and Transfer Students

Current UW students without Engineering Undeclared status and transfer students may apply. Admission is capacity constrained.

1. Admission is for autumn quarter only. Application deadline: April 5
2. Minimum course requirements: MATH 124, MATH 125, MATH 126; CHEM 142; PHYS 121, PHYS 122; A A 210; 5 credits English composition. All courses completed prior to application deadline. In addition, CHEM 152, CEE 220, and ME 230 completed with minimum 2.0 grades prior to autumn quarter
3. Minimum 60 credits completed by application deadline
4. Grade requirements: Minimum 2.0 grade in each course required for application; minimum 2.50 cumulative GPA in courses required for application

Students are encouraged to complete MATH 307, MATH 308, PHYS 123, and ME 123 prior to autumn quarter.

Factors considered include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Nanoscience and Molecular Engineering Option (NME)

Admission is by self-selection and normally occurs upon completion of NME 220, all mechanical engineering prerequisites, and formal admission to the mechanical engineering major. A small number of advanced students (either UW or transfer) may be admitted. Admission is based on academic record including grades in NME 220, mechanical engineering courses taken, and prior experience/work in the field of nanoscience or molecular engineering. Students indicate an interest on their application and discuss their interests and background in the essay.

Graduation Requirements

180 credits

General Education Requirements (85 credits)

1. *Written and Oral Communication*: 12 credits, to include one 5-credit English composition course from the University list; HCDE 333 (or department-approved alternative).
2. *Visual, Literary, & Performing Arts (VLPA), Individuals & Societies (I&S), and Diversity (DIV) (24 credits)*: Minimum 10 credits in VLPA, minimum 10 credits in I&S, minimum 3 credits in DIV (can overlap with VLPA and I&S courses), plus additional credits in either VLPA or I&S to bring total to 24 credits
3. *Natural World (49 credits)*:
 - a. *Mathematics (24 credits)*: MATH 124, MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352), MATH 309 (or AMATH 353 or MATH 324)
 - b. *Science (25 credits)*: CHEM 142, CHEM 152; PHYS 121, PHYS 122, PHYS 123

Major Requirements (95-102 credits)

1. *Engineering Fundamentals (31 credits)*: A A 210; AMATH 301; CEE 220; E E 215; IND E 315 (or MATH 390/STAT 390); M E 123; M E 230; MSE 170
2. *Mechanical Engineering Core Courses (45 credits)*: M E 323, M E 331, M E 333, M E 354, M E 355, M E 356, M E 373, M E 374, M E 395, M E 495
3. *Mechanical Engineering Option Courses (19-26 credits)*
 - a. Standard Option (19 credits): See department for approved list of engineering electives.
 - b. Mechatronics Option (19-21 credits): ME 471, M E 473, M E 477, M E 494; two of M E 469, M E 470, M E 478, M E 480, PHYS 334, PHYS 335
 - c. Nanoscience and Molecular Engineering Option (26 credits): NME 221, NME 321, and NME 421; M E 410, M E 411; 13 credits of approved nanoscience and molecular engineering electives. See department for approved list.
 - d. Biomechanics Option (19 credits): ME 411 and ME 419; 6+ credits of biomechanics electives and remaining credits of supporting electives. See department for approved lists.
4. Minimum 2.00 cumulative GPA

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*:
 1. *Success in the Profession*. The department's goal is success for its graduates in industry, research, and academic careers by virtue of skills and attributes learned in the program. Graduates succeed in their professional and academic positions by:
 - a. using fundamental science and analysis to solve engineering problems,
 - b. successfully executing engineering designs, and
 - c. performing effectively in design teams, in the use of management tools, and through effective oral, written, and graphical communication.
 2. *Contribution to Society*. Graduates should be critical thinkers in the tradition of the broad liberal arts education. They succeed in this goal by being able to:

- a. think critically, in the sense of broadly educated individuals (i.e., be informed evaluators/consumers of information),
- b. perform independent, informed analysis on issues inside and outside of technology, and
- c. continue lifelong learning.

The BSME program is accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700, and the department has adopted the following student outcomes:

- a. An ability to apply knowledge of mathematics, science, and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multi-disciplinary teams
- e. An ability to identify, formulate, and solve engineering problems
- f. An understanding of professional and ethical responsibilities
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- i. A recognition of the need for, and an ability to engage in, life-long learning
- j. Knowledge of contemporary issues
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Each student's success is measured by demonstration of the following learning outcomes:

- 12. Ability to apply this knowledge to the formulation and solution of mechanical engineering problems
- 13. Ability to design thermal and mechanical components to achieve a desired goal. Ability to develop, conduct, and analyze experiments or tests that may aid in this design process.
- 14. An understanding of the necessary professional abilities of a practicing engineer including ethical conduct, teamwork in the pursuit of a goal, and effective communication
- 15. Ability to conduct computer-based design and analysis in engineering applications
- 16. Exposure to a general education program that aids in the understanding of and increases the appreciation for the "non-technical" world
- 17. Realization of the business environment in which engineering is practiced.
- 18. Awareness and necessity of continuing education, graduate study, and other lifelong learning experiences
- 19. Interest groups within the faculty provide instruction in four areas: design; energy and fluids; mechanics, materials and manufacturing; and systems and dynamics. Departmental thrust areas for graduate and undergraduate research include: environment; healthcare; information technology; and manufacturing. Several on-going senior capstone design projects provide both undergraduate and graduate students with

hands-on, interdisciplinary, team-driven opportunities that encompass such diverse topics as Formula SAE car; human-powered submarine, mechatronics, and fuel cell technology.

- *Instructional and Research Facilities:* The department has well-equipped laboratories for pursuing research in various disciplinary fields in mechanical engineering and for fabricating specialized research equipment. These include experimental stress analysis; materials testing/characterization; synthesis and simulation of electromechanical control systems; foundry, welding, and other metal fabrication operations; computer facilities for CAD/CAM/CIM and CFD research; wind tunnels for boundary-layer and high-speed flow analysis; combustion systems performance, exhaust emissions control, and combustion engines; acoustics, vibration, and dynamic testing and measurements and modal analysis; radiation, conduction, and convection (including multiphase) heat-transfer analysis, and a bioengineering flow facility. Visit the department website to view faculty research areas.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* The department participates in [the College of Engineering Co-op Program](#). [The Center for Career Services](#) also lists internship opportunities.
- *Department Scholarships:* The department offers approximately forty scholarships each year. Scholarship applications are available on the College of Engineering website. The deadline for scholarship applications is April 1. Sophomores may apply for scholarship consideration before being admitted to the department.
- *Student Organizations/Associations:*
 - American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
 - American Society of Mechanical Engineers (ASME)
 - Pi Tau Sigma - Mechanical Engineering Honor Society (PTS)
 - Society of Automotive Engineers (SAE)
 - Society of Manufacturing Engineers (SME)
 - Society of Naval Architects and Marine Engineers (SNAME)
 - Society of Women Engineers (SWE)

Graduate Program

Graduate Program Coordinator
143 Mechanical Engineering Bldg, Box 352600
(206) 543-5090
megrad@uw.edu

The department offers graduate programs leading to the degrees of Master of Science in Mechanical Engineering (MSME) and doctor of philosophy (PhD). The department also provides authorized options leading to the College-wide Master of Science in Engineering (MSE) degree. These degrees provide balanced combinations of formal instruction and independent research or design experience. Although there are thesis and non-thesis options for the MSME, completion of a thesis is highly recommended.

Individual projects may be drawn from a wide spectrum of topics, which include mechanical and energy conservation systems, heat transfer, combustion, fluid mechanics, applied mechanics, computational mechanics, computer-aided design and manufacturing, production systems, materials behavior, robotics, controls, vibrations, and applications of mechanical engineering science to a variety of such

interdisciplinary fields as bioengineering, ocean engineering, environmental engineering, nanotechnology, micro electro-mechanical systems, and acoustics. Flexible requirements for coursework provide opportunities both for a broad scientific and professional background and for specialty training.

Master of Science in Mechanical Engineering

Admission Requirements

1. Minimum 3.00 GPA for the most recent 90 quarter hours or 60 semester hours of graded undergraduate coursework guarantees consideration, but the department prefers a minimum overall 3.20 undergraduate GPA.
2. Quality and difficulty of courses taken and universities and colleges attended.
3. *GRE General Test*: Minimum GRE scores of 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing
4. Three letters of recommendation
5. Statement of purpose
6. Official transcripts from all colleges/universities attended
7. Professional experience, if applicable
8. *English requirements for foreign nationals*: TOEFL scores for foreign nationals whose native language is not English, with a minimum score of 580 for the paper examination and 237 for the computer-based examination

Degree Requirements

42 credits

1. Thesis-option students register for 12 credits of thesis research and 30 credits of related numerically graded coursework. Non-thesis option students take all 42 credits in numerically graded courses.
2. Course grades 2.7 or above.
3. Minimum 12 credits for the thesis option and 18 credits for the non-thesis option taken in 500-level mechanical engineering courses, including 6 credits of mathematical and engineering analysis requirements: M E 564 and M E 565.
4. Minimum 3 credits of computational or numerical analysis taken from the following list (or from an approved plan of individual study): M E 535, A A 543, A A 540, CEE 504, E E 578, AMATH 581, and AMATH 584.
5. Remaining credits (18 for thesis-option and 24 for non-thesis option) may be from other departments, and may include a maximum of 9 credits (12 credits for non-thesis) at the 400-course level (excluding M E 498 and M E 499).
6. Non-thesis option students may substitute up to 6 credits of M E 599 Special Projects (not to be confused with the class M E 599) for 6 credits of classroom courses. Must be taken for a numerical grade.

For thesis-option students, special projects courses such as M E 599 and M E 600 do not count toward the 42-credit total unless the project is recommended by the student's faculty supervisor. Seminar requirement: Full-time students register for a seminar course every quarter while in the master's program, but seminars do not count toward the 42 credits of numerically graded coursework and thesis research.

Doctor of Philosophy

Admission Requirements

1. Minimum 3.00 GPA for the most recent 90 quarter hours or 60 semester hours of graded undergraduate coursework guarantees consideration, but the department prefers an overall 3.20 minimum undergraduate GPA and a minimum 3.50 MS GPA.
2. Quality and difficulty of courses taken and universities and colleges attended
3. *GRE General Test*: Minimum GRE scores: 450 Verbal (350 if English is not a native language), 650 Quantitative, and 4.0 Analytical Writing.
4. Three letters of recommendation
5. Statement of purpose
6. Official transcripts from all colleges/universities attended
7. Professional experience, if applicable
8. *English requirements for foreign nationals*: TOEFL scores for foreign nationals whose native language is not English, with a minimum score of 580 for the paper exam and 237 for the computer-based exam

Degree Requirements

90 credits

1. *Advisory Committee*: During the first year of post-master's study, the student selects a two- to three-person advisory committee from the Mechanical Engineering Department.
2. *Coursework*: Post-master students complete two to three graduate courses per quarter their first year. Normally includes a sequence in advanced applied mathematics.
3. *Seminar Requirement*: Mechanical engineering (M E 520) autumn quarter of matriculation year. Otherwise, students may register for engineering seminar courses such as M E 518, M E 523, M E 591, AMATH 501, IND E 591, IND E 592, IND E 593, MSE 520. Seminar is taken quarterly throughout the entire PhD program.
4. *Research*: Post-master students conduct initial research their first year of study, even if the student holds a teaching assistantship.
5. *Qualifying Examination*: Taken within one calendar year after entry into the program.
6. *Supervisory Committee*: At least three members must be Mechanical Engineering faculty, two of whom must be core Mechanical Engineering faculty. Replaces the first-year advisory committee.
7. *Dissertation Proposal*: Approved by the committee chair before the general examination.
8. *Dissertation Research*: Minimum 27 credits of dissertation research over a period of at least three quarters – at least two quarters after the general examination.
9. *Reading Committee*: Three members from the Supervisory Committee; must include at least two core Mechanical Engineering faculty.
10. *Final Examination*
11. *Dissertation Defense*

Research Facilities

The department has well-equipped laboratories for pursuing research in various disciplinary fields in mechanical engineering and for fabricating specialized research equipment. These include experimental

stress analysis; materials testing/characterization; synthesis and simulation of electromechanical control systems; foundry, welding, and other metal fabrication operations; computer facilities for CAD/CAM/CIM and CFD research; wind tunnels for boundary-layer and high-speed flow analysis; combustion systems performance, exhaust emissions control, and combustion engines; acoustics, vibration, and dynamic testing and measurements and modal analysis; radiation, conduction, and convection (including multiphase) heat-transfer analysis, and a bioengineering flow facility. See department website to view faculty research areas.

Financial Aid

Offered to full-time graduate students as funds permit. Funds, however, are limited and the assignment of assistantships and fellowships is highly competitive. Aid may be in the form of a research assistantship for sponsored programs, a fellowship provided by the University or industry, or a teaching assistantship.

College of the Environment

College Overview

Dean

Lisa Graumlich
209 Ocean Sciences

Associate Deans

Bruce Nelson, Research
Julia Parrish, Academic Affairs and Diversity

Rapidly changing interactions between the Earth's environment and human activities drive the research and teaching at the College of the Environment. By connecting some of the world's leading educators and researchers with students, practitioners, and citizens, the College cultivates communities that work with and learn from each other as they tackle the environmental challenges of the twenty-first century.

For decades the UW has been recognized as home to one of the strongest constellations of environmental and intellectual talent in the world. In fulfillment of a vision for a bold, resourced, enduring, and effective environmental hub, the UW launched the College of the Environment in July 2009. The College fosters existing and new collaborations between faculty, staff, and students who are engaged in the study of the Earth's dynamic land, water, and atmosphere systems; the development and application of engineering and technological advances; and the impact of policy and human dimensions on the environment and the management of natural resources.

Offering more than 20 degree programs, ranging from bachelor to doctoral, and granting more than 450 degrees annually, the College is comprised of the following core units:

- School of Aquatic and Fishery Sciences
- Department of Atmospheric Sciences
- Department of Earth and Space Sciences
- Program on the Environment
- School of Environmental and Forest Sciences
- School of Marine and Environmental Affairs
- School of Oceanography
- Friday Harbor Laboratories
- Joint Institute for the Study of the Atmosphere and Ocean
- Washington NASA Space Grant Consortium
- Washington Sea Grant Program

College Facilities

The College of the Environment main office is in the Ocean Sciences Building, Suite 200, located at 1492 NE Boat Street. For locations of all College of the Environment buildings, see the [Academics-at-a-Glance](#) page for links to campus maps showing the College's school and departmental buildings.

The College's facilities and field stations include the following, among others: Center for Sustainable Forestry at Pack Forest, Friday Harbor Laboratories, Pacific Northwest Seismic Network, Research Vessel Thomas G. Thompson, and Wind River Crane Canopy Research Center.

Undergraduate Program

The College of the Environment offers the following undergraduate degree options:

Bachelor Degree Programs

Bachelor of Science:

- Aquatic and Fishery Sciences
- Atmospheric Sciences
- Bioresource Science and Engineering
- Earth and Space Sciences (degree options areas: biology, environmental, geology, and physics)
- Environmental Science and Resource Management (degree option areas: landscape ecology and conservation, restoration ecology and environmental horticulture, sustainable forest management, and wildlife conservation)
- Marine Biology
- Oceanography

Bachelor of Arts:

- Environmental Studies

Minors

- Aquatic and Fishery Sciences
- Arctic Studies
- Atmospheric Sciences
- Climate Science
- Earth and Space Sciences
- Environmental Science and Resource Management
- Environmental Studies
- Oceanography
- Restoration Ecology

Admission

The College does not have admission requirements beyond those required for admission to the University of Washington. Most of the majors within the College are open admission and can be declared at any time by students in good academic standing, except for the major in Bioresource Science and Engineering within the School of Environmental and Forest Sciences, which has a competitive admission process.

General Education Requirements

Minimum 85 credits as follows:

- *Written & Oral Communication*: One 5-credit English composition (C) course from the approved University list with a minimum 2.0 grade; 10 additional writing credits.
- *Quantitative & Symbolic Reasoning (QSR)*: 10 credits. See departmental lists for specific quantitative and symbolic reasoning requirements.
- *Areas of Knowledge*
 - *Visual, Literary, & Performing Arts*: 10 credits. Includes courses such as literature, art, music, and drama which stress the essential qualities of individual forms of expression. First- and second-quarter language courses may not be counted toward the VLPA requirement. (May substitute first-year language courses for VLPA requirements by completing a third quarter of a three-course sequence. Language courses at the second-year level and beyond may be counted toward the VLPA requirement.)
 - *Individuals & Societies (I&S)*: 20 credits, with at least 10 credits out of major*. Includes courses in subjects such as history, economics, psychology, and sociology which stress the social nature of mankind, and the development and analysis of societies and social institutions.
 - *Natural World (NW)*: 20 credits, with at least 10 credits out of major*. See departmental list for specific Natural World requirements.
 - *Additional Areas of Knowledge*: 10 credits

* Definition of "out of major": Course must have an out-of-major prefix and may not overlap with courses required for the major. This includes cross-listed courses.

Graduate Program

The College of the Environment offers the following graduate degree options:

- **Master's Degree Programs**
 - Master of Science:
 - Aquatic and Fishery Sciences
 - Atmospheric Sciences
 - Earth and Space Sciences
 - Forest Resources
 - Oceanography
 - Science for Teachers
 - Other Master's Degrees:
 - Master of Environmental Horticulture
 - Master of Forest Resources
 - Master of Marine Affairs
 - **Doctoral Degree Programs**
 - Doctor of Philosophy:
 - Aquatic and Fishery Sciences

- Atmospheric Sciences
 - Earth and Space Sciences
 - Forest Resources
 - Geologic Sciences
 - Geophysics
 - Oceanography
- **Graduate Certificate Programs**
 - Astrobiology
 - Climate Sciences
 - Environmental Management

Science for Teachers Program Overview

The Master of Science in Science for Teachers (MSST) is a graduate degree in science developed specifically for teachers and administered by the College of the Environment. Because science is moving at ever-increasing speeds, with new breakthroughs, innovations and technologies, keeping pace requires science educators to engage in hands-on, high-level, real-life science. The MSST program has three core components: practicing science through an independently-designed research project, deepened disciplinary content knowledge, and the development of an interdisciplinary skill set. These components work together to give teachers the opportunity to experience directly how the three dimensions of the Next Generation Science Standards (cross-cutting concepts, science and engineering practices, core disciplinary ideas) are integrated and realized in cutting-edge contemporary science.

Graduate Program

Adviser

Ocean Sciences Building, Room 506

1492 NE Boat Street, Box 355355

(206) 221-4879, (206) 543-4558

uwsst@uw.edu

<http://coenv.washington.edu/students/graduate-students/prospective-students/degree-programs-advisers/master-of-science-for-teachers/>

Master of Science (Science for Teachers)

The College of the Environment offers the Master of Science in Science for Teachers (MSST), a graduate degree in science developed specifically for teachers. The MSST program provides a unique opportunity to conduct scientific research with world-renowned UW faculty and research professionals as a mechanism to strengthen and broaden content knowledge and scientific skill sets. This degree is designed to:

- Move science teachers through the skills that are fundamental to today's scientific practice – experimental design, data manipulation, data visualization, and science communication
- Create a flexible and personally-tailored elective set within the student's discipline of choice
- Culminate in the design and implementation of an individualized and independent scientific research project

The flexible course structure is especially designed to fit the needs of K-12 teachers. Course work can be taken throughout the UW, and faculty research mentors range across Colleges of the Environment, Arts and Sciences, Public Health, and Medicine. MSST is intended to be completed in two years and may be compatible with part-time work or teaching. Students may take additional time to complete their degree if needed.

The Master of Science in Science for Teachers does not lead to teacher certification.

Admission Requirements

Admission to the Master of Science (Science for Teachers) degree program is based on evaluation of required application materials in competition with other applicants. Required materials include Graduate Record Examination general test scores, three letters of recommendation, official academic transcripts, minimum GPA of 3.0 required for last two years of study, a bachelor's degree in a science field (or demonstrated equivalency), and experience working in an educational setting. Applicants must apply directly to, and be accepted by, the University's Graduate School. Applications are accepted for Autumn Quarter only.

Degree Requirements

36 total credits as follows:

1. 18 credits at the 500-level or higher
2. Minimum 2.7 grade in 18 credits at the 400-level or higher
3. Minimum 3.00 GPA
4. Core courses based on shared skills sets, with a secondary focus on developing student cohorts:
 - o SCI T 501; SCI T 502; SCI T 503; SCI T 600 (9-10 credits)
5. Statistics course (5 credits) at the 300-500 level
6. An elective pathway that the student and Graduate Program Coordinator develop based on the disciplinary needs of the student.

Financial Aid

The Master of Science (Science for Teachers) program does not provide funding to students. Applicants in need of support are encouraged to contact the UW Office of Student Financial Aid to explore options for grants, loans, scholarships, and work-study; to apply for College of the Environment Scholarships; and to investigate outside sources of funding.

Aquatic and Fishery Sciences

School Overview

116 Fishery Sciences

The School of Aquatic and Fishery Sciences (SAFS) encompasses multi-disciplinary programs at the interface between the traditional fields of natural history, environmental biology, and natural resource management. Primary foci are the management of sustainable fisheries of commercially important species; biocomplexity and ecosystem-based management; and sustainable aquaculture. In addition, human-induced effects on natural ecosystems (including habitat change and restoration, impacts of climate change, emerging diseases, the effects of invasive species, and processes affecting endangered species and declining populations) are major areas of research. In pursuit of these objectives, a variety of basic sciences are used, including ecology and evolution, population biology, behavior, physiology, microbiology, and genetics. The scope of aquatic systems ranges from watersheds, rivers and lakes, to estuarine and near-shore shelf, open ocean systems and culture facilities. Graduates of the School of Aquatic and Fishery Sciences are uniquely qualified for careers in universities as well as other educational settings, natural resources management agencies at the local to international levels, environmental consulting, and non-profit organizations with an environmental focus.

Undergraduate Program

Adviser

116 Fishery Sciences, Box 355020
(206) 543-7457

safsadv@uw.edu

The School of Aquatic and Fishery Sciences (SAFS) offers the following programs of study:

- The Bachelor of Science, with a major in aquatic and fishery sciences
- A minor in aquatic and fishery sciences
- An interdisciplinary minor in marine biology
- An interdisciplinary minor in quantitative science

The school's undergraduate program has been substantially modified in recent years to reflect student and faculty interests in ecology and conservation biology, as well as more traditional fields such as stock assessment and fishery management. Faculty dedication to teaching, substantial benefit gained in close faculty contact within a relatively small program, and significant experiential training and research have made SAFS an appealing major that has doubled in recent years. The bachelor of science degree provides an underpinning in sciences such as biology, chemistry, and mathematics/statistics, then adds a core curriculum within aquatic sciences. Students study within areas of individual interest, grouped in three primary areas: aquatic ecology, conservation and management of aquatic resources, and biology and culture of aquatic animals.

Bachelor of Science

Suggested First- and Second-Year College Courses: Recommended courses for first year students: English composition; calculus; CHEM 120 or CHEM 142, and CHEM 220; BIOL 180; and FISH 250

and/or FISH 101. Recommended courses for second year students: BIOL 200 and BIOL 220; Q SCI 381; FISH 310 and/or FISH 311; and any additional courses that meet the College general education requirements. Students should start FISH core courses as soon as they meet the appropriate prerequisites.

Department Admission Requirements

Students in good academic standing may declare this major at any time, including on their application for admission to the UW. After notification of admission and before registration, new students should visit or email the Student Services Office for help in planning their programs.

Graduation Requirements

180 credits

General Education Requirements

All majors must satisfy the College of the Environment general education requirements.

Major Requirements

1. *Foundation Courses (50-55 credits)*
 - a. *Mathematics (15 credits)*: either MATH 124 and MATH 125, or Q SCI 291 and Q SCI 292; Q SCI 381
 - b. *Chemistry (9-10 credits)*: either CHEM 120 or CHEM 142; either CHEM 152, CHEM 220, CHEM 223, or OCEAN 295
 - c. *Biology (15 credits)*: BIOL 180, BIOL 200; either BIOL 220 or FISH 270/OCEAN 270/MARBIO 270
 - d. *Physics (4-5 credits)*: either PHYS 114 or PHYS 121
 - e. *Two of the following (7-10 credits)*: either PHYS 115 or PHYS 122; either PHYS 116 or PHYS 123; OCEAN 210; GEOG 205; ATM S 211; OCEAN 230/ESS 230; OCEAN 285; FISH 330/ENVIR 330; ENVIR 313/ESS 315. See adviser for other acceptable courses in this category.
2. *Core (minimum 29 credits)*
 - a. FISH 290; FISH 300/OCEAN 300/MARBIO 300; FISH 310; FISH 311/BIOL 311
 - b. Minimum 15 credits from three of the following: FISH 312, FISH 323, FISH 324, and FISH 340/BIOL 340
3. *Electives (minimum 16 credits, four courses)*: 400-level courses from within the School of Aquatic and Fishery Sciences for the major, excluding FISH 453/OCEAN 453, and FISH 477/BIOL 477/OCEAN 477
 - a. Maximum 3 credits total from FISH 479/BIOL 479/OCEAN 479, FISH 492/FHL 492/MARBIO 492, FISH 498, FISH 499
 - b. Maximum 5 credits from each of FISH 489 and FISH 491
4. *Capstone (7-13 credits)*: FISH 493, FISH 494, FISH 495
5. Minimum 2.00 cumulative GPA in all core, elective, and capstone courses applied to the major.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minor

Aquatic and Fishery Sciences

Minor Requirements: Minimum 28 credits to include three courses (two of which must be at least at the 300 level) from FISH 101, FISH 250, FISH 310, FISH 311, FISH 312, FISH 323, and FISH 324; Q SCI 381 or Q SCI 482; minimum two upper-division FISH courses totaling at least 8 credits. Maximum 11 credits may overlap with a student's major.

Marine Biology

The minor in marine biology is sponsored jointly by the School of Aquatic and Fishery Sciences, the School of Oceanography, and the College of Arts and Sciences, and is designed to immerse students in the study of marine organisms and ecosystems, starting in the freshman year. Because the experience of marine sciences cannot be taught entirely within the classroom, the minor is structured to provide ample opportunity for fieldwork and research within the coursework. A description of the minor can be found [under the Interdisciplinary Undergraduate Program](#) section of the catalog.

Quantitative Science

Students interested in quantitative skills applied to biological and ecological fields should consider minoring in quantitative science, an interdisciplinary minor supported by the School of Aquatic and Fishery Sciences and the School of Environmental and Forest Sciences. More information may be found on the [Center for Quantitative Science website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Aquatic and fishery sciences is a life science major designed to provide students a broad framework of knowledge and sets of skills for employment in a variety of areas (e.g., natural resource management, environmental consulting, fish or aquatic wildlife biology, aquaculture). In addition, students receive excellent preparation for graduate study in a number of life science fields. Expected student outcomes include:
 1. Skills in written and oral communication, data analysis, field and laboratory skills. Skill sets have been integrated into all core and flagship courses.
 2. Exposure to career paths in the field and interaction with professionals. Skills gained allow students to obtain an entry-level aquatic scientist position or admission to graduate school.
 3. Emphasis in one of three focus areas (aquatic ecology, conservation and management, aquatic biology and culture); students get a broad overview, then may specialize in one of the three areas.
 4. Strong encouragement to pursue multiple internship and research experiences, including opportunities like FHL research apprenticeships and Alaska Ecological Research Program.
 5. Understanding not only of the science, but also the socio-political-economic environment and its impact on the field of aquatic and fishery sciences.

6. All students participate in a capstone experience that requires them to demonstrate acquired skill sets (including public presentation in an undergraduate research symposium).

SAFS graduates pursue careers in the private sector (environmental consulting firms, private companies), the public sector (state and federal agencies, non-profit organizations, non-governmental agencies, education), and many continue into graduate programs in either research or policy. The undergraduate degree prepares students for either direct employment in a number of fields within public and private sectors, or for competitive entry into applicable graduate programs worldwide.

- *Instructional and Research Facilities:* The School of Aquatic and Fishery Sciences is housed in several buildings on the University of Washington campus. In addition, the school maintains various facilities off campus, including field research stations in Washington State and Alaska.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major).
- *Research, Internships, and Service Learning:* SAFS scientists work closely with employers in both the public and private sectors, leading to opportunities for undergraduates to receive both internship and research experience. Scientists from area agencies (NOAA, National Marine Fisheries, Alaska Fisheries Sciences Center, National Marine Mammal Lab, the U.S. Forest Service, the Student Conservation Association, and the Seattle Aquarium) come to the school to attend weekly SAFS departmental seminars; undergraduates are encouraged to attend. The School of Aquatic and Fishery Sciences is second only to the UW Medical School in federal research dollars brought to the UW campus, providing many paid hourly student positions within the department.
- *Department Scholarships:* Scholarships are awarded on the basis of academic merit, financial need, and other factors. The annual application process for continuing students begins in spring; check with the Office of Student Services for applications and deadlines. All undergraduates, both freshmen and transfers, are considered for recruitment scholarships if they have declared AFS as their major on their application to the University of Washington.
- *Student Organizations/Associations:* SURF (Society for Undergraduate Resources in Fisheries) organizes social, career, and educational activities for undergraduates in aquatic and fishery sciences. SURF also prints t-shirts, welcomes new students to the program, represents the program at events, and collaborates with student groups in other related departments on events.

Of Special Note:

- The School of Aquatic and Fishery Sciences has sent a small group of students and three faculty members to two Alaska Salmon Field Stations for a six-week course in aquatic ecology. These students receive education in ecology, limnology, population modeling, field techniques, scientific writing, and presentation skills.

Graduate Program

Graduate Program Coordinator
116 Fishery Sciences, Box 355020
(206) 616-5893
safs@uw.edu

The School of Aquatic and Fishery Sciences, established in 1919, offers courses and conducts research on the conservation, management, and effective use of natural resources. Education and research in the school include studies of aquatic ecology; ichthyology; population dynamics; management of free-ranging stocks; restoration ecology; and effects of human activities on freshwater and marine ecosystems. SAFS is recognized internationally for its graduate programs, especially in the area of quantitative fisheries management, all research programs are well respected.

Students may apply for admission into programs leading to the master of science or doctor of philosophy. Students who apply for the PhD program must hold a master's degree prior to beginning their doctoral studies. All students who receive a master's degree from the school and wish to pursue a PhD are reviewed by the Recruitment, Admissions, and Scholarship Committee before being accepted into the PhD program.

Master of Science

Admission Requirements

1. A bachelor's degree from an institution of recognized standing with a minimum 3.00 GPA in the last two years (90 quarter credits or 60 semester credits) of college work
2. Typically at least a 500 on both the verbal and quantitative portions of the GRE and a 5 on the analytic portion (a 500 if taken before October 2002)
3. If an international student, a minimum TOEFL score of 580 on written examination or 237 on computerized examination, or 70 on Internet-based examination

Degree Requirements

45 credits as follows:

1. *School of Aquatic and Fishery Sciences Core Courses:*
 - a. Q SCI 482
 - b. At least two of the following, for 2 credits each: FISH 510, FISH 511, FISH 512, FISH 513, FISH 514, FISH 578, or QERM 597
 - c. FISH 521
 - d. FISH 522
 - e. 18 credits of thesis research: FISH 700
2. *Additional Course Requirements:* At least 12 credits of coursework at the 400 or 500 level, in addition to the SAFS core courses listed above. 4 of the 12 credits must be in 500-level courses. At least 9 of the additional 12 credits must be numerically graded.

Doctor of Philosophy

Admission Requirements

1. Minimum 3.00 GPA for last two years (90 quarter credits or 60 semester credits) of graded college work
2. GRE scores of 500 on the verbal and quantitative sections and 5 on the analytical section (500 if before October 2002)
3. If an international student, a minimum TOEFL score of 580 on written examination or 237 on computerized examination, or 70 on Internet-based examination

Admission to the PhD Program after Receiving an MS Degree from the School of Aquatic and Fishery Sciences

Students who wish to continue study toward the doctoral degree after receiving a master's from the School must apply to the Graduate Program Coordinator by way of the Student Services Office; the application is considered by the Recruitment, Admissions, and Scholarship Committee and a recommendation is then sent to the director for concurrence or denial. Applications must be submitted by the sixth week of the quarter in which the master's degree is conferred. For more information, refer to the SAFS website.

Bypassing the Master's Degree

Students admitted to the school at the pre-master's level may, under exceptional circumstances, proceed directly to post-master's study. Application should be made to the Graduate Program Coordinator via the Student Services Office for consideration by the Recruitment, Admissions and Scholarship Committee. More information is available on the SAFS website.

Students who bypass the master's degree must complete all PhD requirements within ten years of beginning graduate study, including MS coursework if used to fulfill any PhD requirements.

Degree Requirements

Minimum 90 credits, as follows:

1. *SAFS Core Courses*: Same as those required of MS students. Must be taken as part of the doctoral program if they or their equivalents have not been taken during an MS program.
 - a. Q SCI 482
 - b. At least two of the following, for 2 credits each: FISH 510, FISH 511, FISH 512, FISH 513, FISH 514, FISH 578, or QERM 597
 - c. FISH 521
 - d. FISH 522
 - e. 27 credits of doctoral dissertation: FISH 800 (a maximum of 10 dissertation credits may be taken in any one academic quarter)
2. *Additional Course Requirements*: At least 48 credits of coursework at the 400 level or above, including dissertation credits, are required in addition to the required core courses listed above. Of those, at least 9 credits must be numerically graded.

Financial Aid

General information on graduate student support is available from the Office of Student Financial Aid, 105 Schmitz. The majority of first-year graduate students are offered research assistantships by appropriate faculty members, depending on the availability of research funding. The School of Aquatic and Fishery Sciences also has a limited number of fellowship opportunities for outstanding entering students. Other students may have their studies supported by the agency for which they work or they may be international students with scholarships from their home countries.

Graduate applicants are urged to discuss their financial needs with professors in their potential major fields during the early stages of the graduate application process. The graduate applicant is automatically considered for any fellowships, research assistantships, or teaching assistantships available from the School of Aquatic and Fishery Sciences when the admission application is submitted.

Atmospheric Sciences

Department Overview

416 Atmospheric Sciences-Geophysics Building

Atmospheric sciences is a wide-ranging discipline that includes topics as diverse as weather forecasting, global warming, air quality, Pacific Northwest weather and climate, mountain weather, marine weather, El Niño, the ozone hole, ice ages, and the weather of Mars. It considers problems that are both scientifically challenging and critical for the welfare of modern society. These problems are addressed with theory, measurements, and computer simulations.

Undergraduate Program

Adviser

416 Atmospheric Sciences-Geophysics Building, Box 351640
(206) 543-4576

advise@atmos.washington.edu

The Department of Atmospheric Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in atmospheric sciences with options in meteorology, climate, chemistry, and data science
- A minor in atmospheric sciences
- The minor in Climate Science is offered jointly with the Department of [Atmospheric Sciences](#), the Department of [Earth and Space Sciences](#), and the School of [Oceanography](#).

Bachelor of Science

Suggested First- and Second-Year Courses: English composition; ATM S 220; MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123; CSE 142 or CSE 160. The first upper-division core course is ATM S 301, which is offered autumn quarter only. Any lower-division atmospheric sciences courses except ATM S 220 count as electives and not as part of the major.

Department Admission Requirements

1. Minimum course requirements: English composition; MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123
2. Grade requirements: Minimum 2.0 grade for each course required for admission; minimum 2.50 cumulative GPA in courses required for admission

Major Requirements

Minimum 97-108 credits as follows:

1. *Foundaiton requirements* (30 credits): MATH 124, MATH 125, MATH 126; PHYS 121, PHYS 122, PHYS 123

2. *Core requirements* (28-29 credits): STAT 390 (or Q SCI 381 for options in meteorology, climate, chemistry); ATM S 220 (2), ATM S 301, ATM S 321, ATM S 340, ATM S 341, ATM S 370, ATM S 431.
3. *Options* (39 to 49 credits):
 - a. *Meteorology (42-45 credits)*
 - i. *Requirements (33 credits)*: AMATH 301; ATM S 358, ATM S 441, ATM S 442, ATM S 444, ATM S 451, ATM S 452; CSE 142 or CSE 160
 - ii. *Advanced Mathematics (9-12 credits)*: MATH 324; either AMATH 351 and AMATH 353, or MATH 307, MATH 308, and MATH 309
 - b. *Climate (39-49 credits)*
 - i. *Requirements (27-29 credits)*: AMATH 301; ATM S 350; ATM S 358, ATM S 380, ATM S 487; CSE 142 or CSE 160; either ESS 431 or ESS 433; either OCEAN 423 or OCEAN 450
 - ii. *Electives (12-20 credits)*: minimum four courses from an approved list. See adviser for approved list of electives.
 - c. *Chemistry (44-48 credits)*
 - i. *Requirements (35 credits)*: ATM S 458, ATM S 480; CHEM 142, CHEM 152, CHEM 162, CHEM 223, CHEM 224, CHEM 321
 - ii. *Electives (9-13 credits)*: minimum three courses from an approved list. See adviser for approved list of electives.
 - d. *Data Science (39-49 credits)*
 - i. *Requirements (31-35 credits)*: CSE 143 or CSE 163; one of CSE 416/STAT 416, STAT 435, or INFO 371; SOC 225 (3); ATM S 358; either MATH 307, MATH 308, MATH 309, or AMATH 351, AMATH 353, MATH 324; either CSE 414 or INFO 430; either CSE 412, HCDE 411, or INFO 474
 - ii. *Prerequisites for requirements (8-14 credits)*: See adviser for list of prerequisites
4. Minimum 2.0 grade in courses applied to the major

Pre-graduate Program for Physical Science, Mathematics, and Engineering Majors

The following elective course sequence is suitable preparation for students interested in pursuing graduate study in atmospheric sciences: ATM S 301, ATM S 340, ATM S 441.

Minor

Minor Requirements: 25 credits to include ATM S 301 plus other approved courses. The minor may include a maximum of 6 independent study credits. Prerequisites include MATH 126 or MATH 136, and PHYS 123. Some courses may require further math or chemistry experience.

Minor in Climate Science: See description in the [Climate Science](#) listing in the Undergraduate Interdisciplinary Programs section of the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The degree program qualifies students for professional employment in weather forecasting, air-quality control and monitoring, and other

areas of atmospheric sciences and related fields. The baccalaureate degree also is appropriate preparation for graduate study in atmospheric sciences.

- *Instructional and Research Facilities:* Extensive computer resources are available in the departmental computer laboratory. The department also maintains an extensive collection of weather data in graphical and numerical electronic format. A study area is provided for undergraduates. An instrument laboratory is maintained with a wide range of observing and data collection systems. Students also have access to a machine shop and an electronics laboratory.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships are available either within the department or with outside organizations, providing a valuable opportunity to test a student's interests in various meteorological career paths and to extend the student's knowledge. A limited number of departmental scholarships are available each year, based on academic excellence or financial need. Employment opportunities are often available in one of the many departmental research groups, and some internships are paid.

Students majoring in atmospheric sciences may take advantage of a variety of opportunities to enhance their education. Undergraduate students are welcome at the department's many seminars and colloquia and are encouraged to join in the annual forecast contest. They may work on independent research projects under the guidance of a faculty member, or be an active participant in a field program.

- *Department Scholarships:* The Mindlin-Reed-Caldwell Memorial is awarded annually, based on both academic excellence and financial need.
- *Student Organizations/Associations:* Student Chapter of American Meteorological Society, Puget Sound American Meteorological Society Chapter, Weekly Weather Discussion for all majors.

Graduate Program

Graduate Program Coordinator
416 Atmospheric Sciences-Geophysics, Box 351640
(206) 543-4576
atmosadv@uw.edu

Rapid growth of research in atmospheric sciences began in the late 1940s in response to needs and opportunities in weather forecasting. While fundamental research to advance weather forecasting abilities continues as a core element, atmospheric sciences now address a broad range of problems of fundamental interest and importance. Examples include changes in climate that could result from increases in atmospheric CO₂ and other greenhouse gases, causes and impacts of air pollution, interactions between the atmosphere and ecosystems, and the application of remote-sensing techniques for monitoring and understanding weather, climate, and atmospheric composition.

Graduate students in the atmospheric sciences come from a variety of disciplines: physics, chemistry, engineering, atmospheric or geophysical sciences, and applied mathematics. Each of these backgrounds is valuable for specific subfields within the atmospheric sciences. However, students should have in common a sound background in the fundamentals of physics and applied mathematics and an interest in complex natural phenomena. The well-prepared graduate student may expect to begin research work rather quickly.

Master of Science

Admission Requirements

1. Graduate School application
2. Official copy of transcripts
3. Statement of interest(s) - one page essay, addressing reasons why the student wishes to pursue a graduate program in atmospheric sciences
4. Three letters of recommendation submitted online
5. For international applicants: TOEFL scores, sent by the testing service
6. Deadline: December 31, for admission the following autumn. Admission is for autumn quarter only.

Degree Requirements

36 credits

1. *Core classes (25-28 credits):* ATM S 501, ATM S 502, ATM S 532, ATM S 535, ATM S 558. One of the following sequences: ATM S 505, ATM S 509, ATM S 542; or ATM S 503, ATM S 504
2. Two-course dynamics sequence (ATM S 503, ATM S 504), intended for those whose research specialty is outside dynamic meteorology. Most students take the three-course sequence in dynamics (ATM S 505, ATM S 509, ATM S 542).
3. Minimum 27 credits from graded courses numbered 500 or above; including at least 3 credits in approved applied mathematics courses and 24 in core atmospheric sciences courses. 9 credits for the master's thesis. Students intending to pursue a PhD should take all required courses shown above.

Doctor of Philosophy

Admission Requirements

1. Admission to the MS track
2. Application to the PhD program through one of the three following options:
 - a. MS thesis in atmospheric sciences or a closely related discipline, completed before entering the department, submitted the first week of autumn quarter of the student's second academic year.
 - b. MS thesis approved by the MS Supervisory Committee.
 - c. Manuscript of a peer-reviewed journal article on which the student is lead author.

Degree Requirements

Minimum 90 credits

1. *Coursework*
 - a. ATM S 501, ATM S 502
 - b. ATM S 505, ATM S 509, ATM S 542 (Students whose anticipated research has minimal connection with atmospheric dynamics, such as laboratory or fieldwork in atmospheric chemistry or cloud microphysics, may take ATM S 503 and ATM S 504 in place of ATM S

505, ATM S 509, and ATM S 542. See Graduate Program Coordinator before enrolling in ATM S 503.)

- c. ATM S 532, ATM S 558
 - d. ATM S 535
 - e. Each of the following, every quarter coursework is taken: ATM S 520, either ATM S 521 or ATM S 523, and either ATM S 700 or ATM S 800 (up to 10 credits each quarter)
 - f. *Electives*: 8-11 credits in ATM S courses in student's areas of interest; and at least 3 credits in non-ATM S coursework
 - g. *Applied math*: Either AMATH 501, AMATH 503, AMATH 581, AMATH 583, or AMATH 584
2. General examination
 3. Dissertation
 4. Final examination

Data Science Option

Minimum 90 credits

1. *Coursework*
 - a. ATM S 501, ATM S 502
 - b. ATM S 505, ATM S 509, ATM S 542 (Students whose anticipated research has minimal connection with atmospheric dynamics, such as laboratory or fieldwork in atmospheric chemistry or cloud microphysics, may take ATM S 503 and ATM S 504 in place of ATM S 505, ATM S 509, and ATM S 542. See Graduate Program Coordinator before enrolling in ATM S 503.)
 - c. ATM S 532, ATM S 558
 - d. ATM S 535
 - e. Each of the following, every quarter coursework is taken: ATM S 520, either ATM S 521 or ATM S 523, and either ATM S 700 or ATM S 800 (up to 10 credits each quarter)
 - f. *Electives*: 5-8 elective credits in area of interest
 - g. 9-15 credits from UW eScience Institute Graduate Data Science Option list, these courses may count towards 5-8 elective credits required.
 - h. *Applied math*: Either AMATH 501, AMATH 503, AMATH 581, AMATH 583, or AMATH 584
 - i. CHEM E 599F (2 credits)
2. General examination
3. Dissertation
4. Final examination

Advanced Data Science Option

Minimum 90 credits

1. *Coursework*

- a. ATM S 501, ATM S 502
 - b. ATM S 505, ATM S 509, ATM S 542 (Students whose anticipated research has minimal connection with atmospheric dynamics, such as laboratory or fieldwork in atmospheric chemistry or cloud microphysics, may take ATM S 503 and ATM S 504 in place of ATM S 505, ATM S 509, and ATM S 542. See Graduate Program Coordinator before enrolling in ATM S 503.)
 - c. ATM S 532, ATM S 558
 - d. ATM S 535
 - e. Each of the following, every quarter coursework is taken: ATM S 520, either ATM S 521 or ATM S 523, and either ATM S 700 or ATM S 800 (up to 10 credits each quarter)
 - f. *Electives*: 2-5 elective credits in area of interest
 - g. 11-13 credits from UW eScience Institute Graduate Data Science Option list.
 - h. *Applied math*: Either AMATH 501, AMATH 503, AMATH 581, AMATH 583, or AMATH 584
 - i. CHEM E 599F (4 credits)
2. General examination
 3. Dissertation
 4. Final examination

Assistantships

Nearly all graduate students are supported by either research assistantships or fellowships. Students are usually a teaching assistant during at least one quarter, in the second year of study. Students are supported full-time during the summer.

Earth and Space Sciences

Department Overview

070 Johnson Hall

Earth and space sciences seeks to further the understanding of the Earth, the solar system, and their histories. The scope extends from the center of Earth to the rim of the solar system, and activities cut across traditional disciplines of physics, chemistry, biology, geology, and mathematics. The discipline examines Earth's interior structure, chemistry, motion, and dynamics; geologic hazards; processes affecting the surface environment and climate; the surrounding space environment; planetary processes; and geobiology.

Undergraduate Program

Adviser

070 Johnson Hall, Box 351310

(206) 616-8511

advising@ess.washington.edu

The Department of Earth and Space Sciences offers the following programs of study:

- The Bachelor of Science degree with a major in earth and space sciences, with options in biology, geology, physics, and environmental earth sciences
- The Bachelor of Arts degree with a major in earth and space sciences
- A minor in earth and space sciences
- A minor in climate science (offered jointly with the Department of [Atmospheric Sciences](#) and the School of [Oceanography](#))

The Bachelor of Science degree is designed for students interested in geology and geophysics, and a career path in graduate studies or in the private sector where field and technology experiences and problem-solving skills are an important asset. The biology option enables B.S. students interested in paleontology and paleobiology to emphasize biology courses. The physics option allows for an emphasis in physics and geophysics. The environmental earth sciences option is designed for students interested in environmentally focused courses and careers. The Bachelor of Arts degree is designed for students who wish to obtain a broad understanding of earth sciences as a background for careers such as science journalism, environmental law, K-12 teaching, or environmental policy.

Bachelor of Science

Suggested First- and Second-Year Courses: MATH 124, MATH 125, and MATH 126 or ESS 310; PHYS 121, PHYS 122, PHYS 123 or PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119; CHEM 142.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

93-106 credits

1. *Science Core (35 credits):*
 - a. *Basic Supporting Science (20 credits):* MATH 124, MATH 125 or equivalent; PHYS 114/PHYS 117 or PHYS 121; CHEM 142. (Students pursuing the ESS physics option must take PHYS 121.)
 - b. *ESS Required 200-Level Core Courses (15 credits):* ESS 211, ESS 212, ESS 213. (Students in the ESS physics option may substitute ESS 205 for one of these.)
2. *One of the four ESS Options below (minimum 58-71 credits, depending on option):*
 - a. *Biology Option (58-68 credits)*
 - i. *Supporting Science (24-25 credits):* CHEM 152, CHEM 162; either both BIOL 180 and BIOL 200 or BIOL 240; and one of BIOL 220 or BIOL 240, PHYS 115/PHYS 118, PHYS 122, MATH 126 or ESS 310, STAT 290, STAT 311 or STAT 390.
 - ii. *ESS Required 300-Level Core Courses (15 credits):* three of ESS 311, ESS 312, ESS 313, ESS 314, ESS 316
 - iii. *ESS Upper-Division Courses (19-28 credits):* ESS 400, ESS 401, or ESS 449/BIOL 475; ESS 418; 12 credits from ESS 400-level courses, 400-level BIOL or BIOC courses from approved list (see website for current list), or any ESS 300-level core course (ESS 311, ESS 312, ESS 313, ESS 314, ESS 316) not taken as a required course, above. May not include independent study or seminar courses numbered ESS 489 through ESS 499. At least 3 credits from ESS-prefix courses.
 - b. *Geoscience Option (59-64 credits)*
 - i. *Quantitative Skills (4-5 credits):* MATH 126, ESS 310, STAT 290, STAT 311, STAT 390, or Q SCI 381
 - ii. *Supporting Science (8-10 credits):* PHYS 115/PHYS 118 or PHYS 122; and one of CHEM 152, AMATH 351, MATH 307, MATH 308, PHYS 116/PHYS 119, or PHYS 123
 - iii. *ESS Geoscience 200-level Core (3-5 credits):* One of ESS 201, ESS 202, ESS 203, ESS 204, ESS 205, or ESS 230
 - iv. *ESS Required 300-Level Core Courses (10 credits):* two of ESS 311, ESS 312, ESS 313, ESS 314, ESS 316
 - v. *ESS Upper-Division Courses (34 credits):* ESS 400 or ESS 401; ESS 418; 18 credits from ESS 400-level courses, from an approved list of courses outside ESS, or any ESS 300-level core course (ESS 311, ESS 312, ESS 313, ESS 314, ESS 316) not taken as a required course, above. May not include independent study or seminar courses numbered ESS 489 through ESS 499
 - c. *Geology Option (64-71 credits)*
 - i. *Supporting Science (16-20 credits):* MATH 126 or ESS 310; PHYS 115/PHYS 118 or PHYS 122; and two from the following: PHYS 116/PHYS 119 or PHYS 123, CHEM 152, either AMATH 351 or MATH 307, MATH 308, and either STAT 290, STAT 311, or STAT 390
 - ii. *ESS Required 300-Level Core Courses (15 credits):* ESS 311, ESS 312, ESS 316

- iii. *ESS Geology Core (7-10 credits)*: one course from ESS 439, ESS 441, ESS 455, ESS 456, or ESS 463; and one course from ESS 425, ESS 426, ESS 427, ESS 447, ESS 454, ESS 457, or ESS 482
 - iv. *ESS Upper-Division Courses (26 credits)*: ESS 400 or ESS 401; ESS 418; 10 credits from ESS 400-level courses, ESS 313, or ESS 314. May not include independent study or seminar courses numbered ESS 489 through ESS 499.
- d. *Physics Option (63-66 credits)*
- i. *Supporting science (34-37 credits)*: MATH 126, MATH 308, MATH 324 or MATH 136, MATH 324; PHYS 122, PHYS 123, PHYS 227, PHYS 228, PHYS 321, PHYS 322.
 - ii. *ESS required 300-Level Core Courses (10 credits)*: two of ESS 311, ESS 312, ESS 313, ESS 314, ESS 316
 - iii. *ESS Upper-Division Courses (19 credits)*: ESS 418; 15 credits from ESS 400-level courses or any ESS 300-level core course (ESS 311, ESS 312, ESS 313, ESS 314, ESS 316) not taken as a required course, above. May not include independent study or seminar courses numbered ESS 489 through ESS 499
3. Minimum 2.00 cumulative GPA for all ESS-prefix courses

Bachelor of Arts

Suggested First- and Second-Year College Courses: Q SCI 291, Q SCI 292 or MATH 124, MATH 125; PHYS 114/PHYS 117 or PHYS 121; CHEM 142.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

Major Requirements

88-90 credits

1. *Supporting Science (30 credits)*:
 - a. *Basic Supporting Science (20 credits)*: CHEM 142; Q SCI 291, Q SCI 292 or MATH 124, MATH 125; PHYS 114/PHYS 117 or PHYS 121.
 - b. *Additional courses*: 10 credits from department's approved list of courses in science and mathematics. See adviser for current list.
2. *ESS Courses (43-45 credits)*:
 - a. *Required courses (18-20 credits)*: Two of ESS 211, ESS 212, ESS 213. One additional course from ESS 201, ESS 205, ESS 210, ESS 211, ESS 212, or ESS 213. One of ESS 311, ESS 312, ESS 313, ESS 314, or ESS 316.
 - b. *Elective Courses*: 25 upper-division credits (300 and 400 level) with at least 10 credits at the 400 level (may not include independent study or seminar courses numbered ESS 489 through ESS 499.)
3. *Concentration (15 credits)*: 15 credits from one concentration area: business, education, interdisciplinary science, law and policy, or science communication (see department for approved list). Courses counted toward this requirement cannot be used for any other major requirements. Courses not on the approved list may count toward this requirement if approved in advance by ESS Advising.

4. Minimum 2.00 cumulative GPA for all ESS-prefix courses.

Minor

Minor Requirements: 30 ESS credits with at least 15 at the upper-division level (300- or 400-level) of which at least 3 credits must be at the 400-level (may not include independent study or seminar courses numbered ESS 489 through ESS 499.) All courses must be completed with a minimum grade of 2.0.

Minor in Climate Science: See description in the [Climate Science](#) listing in the Undergraduate Interdisciplinary Programs section of the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Students who graduate with an undergraduate degree in Earth and Space Sciences (ESS) have achieved these learning goals:
 1. Have a general knowledge of the basic areas of solid earth geology and geophysics, geobiology, surface processes, space physics, and analogues of processes within the solar system.
 2. Be proficient in one of the core disciplines through the completion of requirements in one of four options: standard (geology), (geo)biology, (geo)physics, or environmental.
 3. Think critically and obtain quantitative predictions using skill sets that involve multiple disciplines and all core sciences.
 4. Have obtained hands-on experience from extensive fieldwork and/or laboratory experience.
 5. Have the ability to communicate scientific information clearly and precisely, both orally and in writing.
 6. Have the ability to read, understand, and use scientific literature.
- *Instructional and Research Facilities:* See below, at end of graduate program requirements.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors in the major). See adviser or department website for requirements.
- *State Licensing Endorsement Available:* Students interested in pursuing State Licensing for Geologists can receive guidance in course selection that meets state requirements for the geologist licensing examination (see adviser for requirements or visit department website).
- *Research, Internships, and Service Learning:* Job and internship possibilities are posted in the department and forwarded by email to all undergraduate students.
- *Department Scholarships:* A limited number of departmental scholarships are available. Scholarship applications are invited from all undergraduate students in the major during spring quarter. The awards are applicable to the following academic year.
- *Student Organizations/Associations:* Geo Club organizes field trips and social gatherings. Information about meetings and events is forwarded to undergraduate majors by email.

Graduate Program

Graduate Program Coordinator
070 Johnson Hall , Box 351310
206-616-8511
advising@ess.washington.edu

The department offers graduate programs leading to the Master of Science (M.S.) degree and the Doctor of Philosophy (PhD) degree in both geological sciences and geophysics. The programs emphasize a rigorous quantitative approach in conjunction with detailed in-situ and/or laboratory observations to address significant problems that lead to a better understanding of the Earth and its environment.

Major areas of interest are the internal and surface structures and materials of the Earth and planets; dynamic processes within the earth, oceans, atmosphere, and space environments; and their history and the interaction of life with these environments. The required curriculum is flexible to facilitate interdisciplinary research approaches. Earth and Space Sciences is also one of the core departments (with the Department of Atmospheric Sciences and the School of Oceanography) in the interdisciplinary graduate program on climate change and a participant in the astrobiology program.

Master of Science

Admission Requirements

1. GRE
2. TOEFL scores for international applicants. TSE scores not required.
3. One copy of official transcripts for all colleges and universities attended, in sealed envelopes. International transcripts in the original language, accompanied by a certified English translation.
4. Three letters of recommendation
5. Departmental application form
6. Personal resume and personal statement

Degree Requirements

36-45 credits

The department encourages interdisciplinary courses of study tailored to each student.

1. Courses determined in consultation with the student's advisory committee
2. ESS 594, each quarter offered in the first year
3. ESS 599, every quarter (except summer)
4. Two ESS introductory breadth courses (any 50X course)
5. Experiential learning
6. Data analysis course or research project with a significant data analysis component
7. Preliminary examination (see below)
8. Draft thesis or research paper
9. Final examination

With Thesis: 36 credits, of which 18 must be in courses at the 400 level or above and up to 9 may be for thesis (ESS 700). Final examination

Without Thesis: 45 credits, of which 18 must be in courses at the 400 level or above, to include a 5-credit research paper (ESS 600). Final examination

Preliminary Examination: Required for every graduate student. Provides one component the department uses to evaluate admission to the PhD program. Encourages students to develop and present a research project, and get an early, structured start on graduate research. Students must show knowledge of disciplines that underlie their general area of interest (e.g., geology, geophysics, mathematics, chemistry, biology).

Doctor of Philosophy

Admission Requirements

1. GRE
2. TOEFL scores for international applicants. TSE scores not required.
3. One copy of official transcripts for all colleges and universities attended, in sealed envelopes. International transcripts in the original language and accompanied by a certified English translation.
4. Three letters of recommendation
5. Departmental application form
6. Personal resume and personal statement

Degree Requirements

90 credits

The department encourages interdisciplinary courses of study tailored to each student.

Departmental requirements for graduate students in both geological sciences and geophysics.

1. Courses determined in consultation with the student's advisory committee
2. ESS 594, each quarter offered in the first year
3. ESS 599, every quarter (except summer)
4. Two ESS introductory breadth courses (any 50X course)
5. Experiential learning
6. Data analysis course or research project with a significant data analysis component
7. Preliminary examination (see below)
8. General examination
9. Draft dissertation
10. Dissertation defense

Preliminary Examination: An ESS requirement for every graduate student. Provides one component the department uses to evaluate admission to the PhD program. Encourages students to develop and present a research project, and get an early, structured start on graduate research. Students must show

knowledge of the disciplines that underlie their area of interest (e.g., geology, geophysics, physics, mathematics, chemistry, biology).

Research Facilities

Extensive laboratory facilities are available for a wide range of experimental/field work. These include a wet chemistry laboratory, a JEOL 733 Superprobe with EDS/WDS and a high resolution laser Raman spectrometer for mineral analysis, a thermal-ionization mass spectrometer, a multi-collector inductively-coupled-plasma mass spectrometer and associated clean laboratories for analysis of stable and radiogenic isotopes, a computer laboratory, a remote-sensing laboratory with an image-processing system with LANDSAT tape library and spectral reflectance equipment, and high temperature controlled atmosphere furnaces. Also, field equipment for electromagnetic induction studies; a high-pressure/temperature laboratory, including a laser-induced phonon spectrometer and diamond anvil cells for studying such rock and mineral properties as compression, sound velocities, and thermal conductivity; a permanent, regional seismic network; a portable telemetered seismic network for studying volcanoes and active faults in western North America; geodetic-quality global-positioning-system receivers; a cold laboratory for studying problems in snow-cover geophysics, glaciology, and sea-ice research; a geophysical-fluids laboratory; two cloud microphysics laboratories; a space physics and aeronomy laboratory for preparing ground-based, balloon, rocket, and satellite experiments; and a laboratory for the study of advanced plasma propulsion concepts. Additional facilities are provided by the Quaternary Research Center (which houses state-of-the art cosmogenic isotope and stable-isotope research laboratories, palynology, snow and ice research, and a periglacial laboratory) and the Burke Memorial Washington State Museum (which houses paleontological laboratories and extensive reference collections of invertebrate, vertebrate, and plant fossils, and minerals).

Financial Aid

Most graduate students receive support in the form of teaching or research assistantships, and endowed fellowships and scholarships.

Program on the Environment

Program Overview

Wallace Hall, Suite 12
3737 Brooklyn Ave NE
Seattle, WA 98195-5679
poe.washington.edu
poe@uw.edu

The Program on the Environment (PoE) is the home for Environmental Studies education at the University of Washington. Environmental Studies focuses on the interactions between humans and environments, drawing on an interdisciplinary approach to understand and address complex environmental issues.

The Environmental Studies program offers a BA major in Environmental Studies, a minor in Environmental Studies, and a Graduate Certificate in Environmental Management.

Building on a foundation of natural science, social science, and humanities courses, the curriculum offers students flexibility in choosing an individual course of study. Internship, research, and study abroad opportunities develop skills and leadership for careers in environmental policy, sustainability, conservation, education, or consulting.

Undergraduate Program

Adviser
12 Wallace Hall, Box 355679
(206) 616-1208
poeadv@uw.edu

The Program on the Environment offers the following programs of study:

- The Bachelor of Arts degree with a major in environmental studies
- A minor in environmental studies

Bachelor of Arts

Suggested First and Second-Year College Courses: ENVIR 100, ENVIR 200, ENVIR 250, and all foundational courses listed below.

Program Admission Requirements

Students in good academic standing may declare this major at any time.

General Education Requirements

All majors must satisfy the College of the Environment general education requirements.

Major Requirements

82-88 credits, as follows:

1. *Core Courses (20 credits)*: ENVIR 100, ENVIR 200, ENVIR 250, ENVIR 300
2. *Foundation Courses (31-35 credits)*
 - a. *Biology (5 credits)*: BIOL 180 and one course (or sequence) from among BIOL 200, BIOL 118/BIOL 119, BIOL 250/FISH 250/OCEAN 250, ENVIR 280
 - b. *Biological Systems (3-5 credits)*: on course from BIOL 200, BIOL 250/FISH 250/OCEAN 250, ENVIR 240, ENVIR 280
 - c. *Chemistry (5 credits)*: CHEM 120 or CHEM 142
 - d. *Earth Systems Literacy (3-5 credits)*: one course from ATM S 211, ATM S 212, or ESS 201, ESS 210, ESS 230/OCEAN 230, OCEAN 200, GEOG 205
 - e. *Statistics (5 credits)*: one course from Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311
 - f. *Economics (5 credits)*: one course from ENVIR 235/ESRM 235/ECON 235 or FISH 230/ECON 230
 - g. *Values and Cultures (5 credits)*: one course from ANTH 210, ANTH 211/ENVIR 211, ENVIR 239, GEOG 272, HSTAA 221/ENVIR 221, or ENVIR 243/PHIL 243
3. *Analytical Methods (3-5 credits)*: one course from ESRM 304, ESRM 430, ESS 421, OCEAN 452/FISH 452, GEOG 360, GEOG 471, Q SCI 482
4. *Environmental Perspectives and Experiences (18 credits)*: Minimum 18 credits from the list of approved courses (see department website or advising office for list). Minimum 3 credits in each of the six following categories: *perspectives*: human and social dimensions; natural sciences, and policy and decision making; *experiences*: bioregional; international; and fieldwork. Courses listed under both *perspectives* and *experiences* may count toward either, but not both. Environmentally related independent study courses, study abroad programs, and other courses not on the approved list may count toward this requirement if approved in advance by the Environmental Studies adviser.
5. *Capstone Experience (10 credits)*: ENVIR 490, ENVIR 491, ENVIR 492
6. *GPA Requirements*: Minimum 2.00 cumulative GPA for courses within the major.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Minor Requirement: 30 credits, including ENVIR 100; either ENVIR 200 or ENVIR 250. Five (5) credits from among ECON 235/ENVIR/235/ESRM235, HSTAA 221/ENVIR 221, and PHIL 243/ENVIR 243.

Remaining 15 credits drawn from the environmental perspectives course list (see program website adviser for list). At least one course (minimum 3 credits) in each environmental perspectives course category, i.e. natural sciences, human and social dimensions, and policy and decision making. Ten (10) of these 15 credits must be at the 300 or 400 level. Minimum 2.0 for each course presented for the minor.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The environmental studies major offers a rigorous, interdisciplinary, experiential curriculum designed to prepare future environmental leaders to respond to bioregional and global environmental opportunities and challenges. It takes advantage of the extraordinary environmental research at the UW, and makes that social, scientific, humanistic, and professional expertise accessible to students in innovative ways.
- Students completing the BA in environmental studies have developed skills in the following:
 1. **Earth Systems Knowledge:** Understand the structure, function, and integration of the Earth, its inhabitants, and its four major spheres: land, water, living things, and air.
 2. **Interdisciplinary Approach:** Apply an interdisciplinary approach to the study of the environment, integrating multiple kinds of information, tools, methods, and scholarship from a variety of disciplines, in order to analyze and construct arguments about complex environmental issues.
 3. **Experiential Learning:** Understand the connections between classroom and experiential learning and successfully practice multiple forms of hands-on, real world applications.
 4. **Communication:** Demonstrate proficiency in multiple modes of communication (writing for different audiences and purposes, using a range of disciplinary norms; oral presentations and public speaking; online publishing; and visual display of environmental information).
 5. **Public Policy and Decision Making:** Understand how uncertainty, risk, law, politics, ethics, economics, and culture interact with environmental public policy and decision making.
 6. **Teamwork:** Collaborate as members of teams, effectively working with multiple stakeholders from various backgrounds to address environmental issues.
 7. **History of Environmental Inquiry:** Understand and reflect critically on the intellectual and cultural history of environmental studies including the history of environmental preservation and conservation.
 8. **Temporal Scales:** Understand various temporal scales inherent in environmental studies and situate themselves on the continuum of geologic time, evolutionary history, human environment history, and decision making for future generations.
 9. **Spatial Scales:** Understand various spatial scales inherent in environmental studies spanning the continuum from the local/bioregional to the international/global.
 10. **Diversity:** Understand how environmental perspectives, policies, and decisions are related to issues of diversity, privilege, and power.
 11. **Technical Knowledge:** Be familiar with some of the technological tools commonly used to address environmental challenges.
 12. **Professional Development:** Understand how their education will serve them as environmental professionals.
- *Instructional and Research Facilities:* The Program on the Environment office in Wallace Hall Suite 12 includes a commons area for student and faculty events and presentations, four study areas, and a computer lab. Because PoE is an interdisciplinary program, students access resources, laboratories, and field stations across a range of UW departments, colleges, and schools.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* All environmental studies majors complete a senior capstone experience, which includes an internship with a community-based organization or

government agency, an undergraduate research project, and/or international fieldwork or study abroad.

- *Student Organizations/Associations:* SAGE (Student Association for Green Environments) is a club to spread awareness for environmental issues on and off campus and to promote events for a greener, sustainable environment. SAGE is committed to community engagement and education and creating professional development opportunities for environmental studies students.

School of Environmental and Forest Sciences

School Overview

107 Anderson

The School of Environmental and Forest Sciences, through teaching, research, and outreach, generates and disseminates knowledge for the stewardship of natural and managed environments and the sustainable use of their products and services. Its vision is to provide internationally recognized knowledge and leadership for environmental and natural resource issues.

Founded in 1907, the school holds a position of national and international leadership in instruction and research. Its location in one of the world's largest forested regions provides students access to a unique urban-to-wildland world-class laboratory in which to study. Approximately 400 undergraduate and 175 graduate students are enrolled, taught by more than 50 faculty members. Students enjoy small classes and close association with faculty, as well as the diversity and superior facilities of a large research university.

The school's programs focus on the sustainability and functionality of complex natural resource and environmental systems, using an integrated, interdisciplinary approach across multiple scales involving the urban-to-wildland gradient. Its programs serve society generally, and natural resource professions in particular, with graduates well equipped to contribute to discussions and solutions to resource problems facing the region and the world. Interdisciplinary research and outreach centers and cooperatives include the Center for International Trade in Forest Products (CINTRAFOR), the Water Center, the UW Botanic Gardens, which include the Center for Urban Horticulture and the Washington Park Arboretum, the Olympic National Resources Center (ONRC), the Stand Management Cooperative (SMC), and the Precision Forestry Cooperative. For current information on these centers and cooperatives, visit www.sefs.washington.edu/centersPrograms/.

Office of Student and Academic Services

Director, Student and Academic Services
130 Anderson
sefsadv@uw.edu

The Office of Student and Academic Services in the School of Environmental and Forest Sciences assists prospective students with admission to the school and advises current students, including interpretation of school and University requirements and assistance in course planning. At the graduate level, faculty advisers assist students in choosing a course plan to help build an appropriate academic background for their research areas.

The office also helps to sponsor a career fair winter quarter. Students are strongly urged to seek summer employment and internship positions relevant to their career goals.

Research Programs

Areas of research are closely tied to the school's graduate program research areas. These include bioresource science and engineering; forest ecology; forest soils; forest systems and bioenergy;

restoration ecology and environmental horticulture; social sciences; sustainable resource management; and wildlife science.

Outreach Programs

The school, through its interdisciplinary centers and through collaboration with UW and external partners, undertakes and promotes continuing public and professional education for citizens of the state.

Facilities

The school occupies three central Seattle campus buildings: Alfred H. Anderson Hall, the Hugo Winkenwerder Forest Sciences Laboratory, and Julius H. Bloedel Hall. In addition, the Center for Urban Horticulture, a part of the UW Botanic Gardens, is located near the Union Bay natural area on the east side of the Seattle Campus. The center maintains a library that serves students, faculty, landscape professionals, and the public. The center's herbarium supports fieldwork in environmental horticulture, restoration ecology, and dendrology. Containing representative plant material from all parts of the United States, the collection includes dried, mounted specimens of shrubs, hardwood trees, and conifers. Another herbarium, complete in plants native to the Pacific Northwest and maintained by the Burke Museum and Department of Biology, is available for use by the school's students.

The school's laboratory facilities represent an extensive array of modern equipment for research, including optical equipment, electronic instrumentation for a wide variety of uses, gas chromatographs, spectrophotometers, and physical-test equipment. Specific laboratories are designed to study soil chemistry and soil physics, hydrology, polymer chemistry, tree physiology, genetics, wood and extractives chemistry, physics of fibrous composites, applied mechanics, wood process technology, silviculture, ecology, paleoecology, pathology, entomology, wildlife, landscape management systems, horticultural physiology, and horticultural plant materials.

The school computing facilities include computer systems and staff dedicated to specific research areas, a computer student laboratory, and a local area network with several servers offering access to the Internet and local printers.

Field Facilities

School field facilities include two major forested areas covering more than 4,000 acres, an arboretum, a natural area, and several cooperative research centers and stations. These lands offer a wide variety of terrestrial and aquatic characteristics favorable to a full range of scientific investigations. They also provide a natural-science laboratory for the many disciplines in the school concerned with the research and teaching of natural resources science and management.

The 4,200-acre Charles Lathrop Pack Experimental Forest is located 65 miles south of the University, near Eatonville, Washington, and is home to the Center for Sustainable Forestry at Pack Forest. Broad forest and soil diversity in this area has led to extensive biological, management, and engineering research. A full-time resident staff manages the facility, harmonizing its public-education objectives with academic and research objectives. Rustic but comfortable facilities which provide housing and support to research programs are also used extensively for conferences both within and outside the University. The Center for Sustainable Forestry is charged with discovering, teaching, and demonstrating the concepts of sustainable forestry, with special emphasis on the school's strategic themes of sustainable forest enterprise and sustainable land and ecosystem management in an urbanizing world.

The Olympic Natural Resources Center (ONRC) is a 19,000-square-foot research and education facility located on the west side of the Olympic Peninsula. The mission of the center is to conduct research and

education on natural-resources management practices that integrate ecological and economic values. Innovative management methods that integrate environmental and economic interests into pragmatic management of forest and ocean resources are demonstrated. Both a forest management program and a marine program are in place to study the relationship between the terrestrial and marine environment.

The Lee Memorial Forest, approximately 160 acres, is located about 22 miles northeast of the University, near Maltby. This forested property provides valuable academic and research opportunities near the campus. Characterized by forest types and soils common to Western Washington lowlands, Lee Forest is used extensively for short field trips and for long-term research and demonstration projects especially related to changing land uses.

The Allan E. Thompson Research Center and the Joe E. Monahan Findley Lake Reserve and Research Area in the Cedar River watershed are used by the school in cooperation with Seattle Public Utilities for studies in forest ecology and soil science in representative low and high elevation forest ecosystems.

The UW Botanic Gardens include the Center for Urban Horticulture, which has offices, laboratories, public-education resources, and field sites for teaching and research along the shore of Union Bay. Its 10-acre Union Bay Gardens emphasize unusual ornamental and native woody landscape plants. The 60-acre Union Bay Natural Area, a former landfill, now a naturalized habitat, is used by University classes and the public to study principles and practices of restoration ecology. The Douglas Research Conservatory is a modern plant-growing facility with greenhouses, growth chambers, nursery, and classrooms. The Otis Douglas Hyde Herbarium is dedicated to plants of urban and environmental horticultural significance. The Miller Seed Vault stores seeds of Washington's rare and endangered native plants in support of restoration and research projects. The Elisabeth C. Miller Library is the Northwest's foremost public horticultural library, with books, journals, and other materials available to the gardening public, students, and professional horticulturists. The Center for Urban Horticulture also conducts courses, lectures, and special events for the public and professionals as part of the school's outreach program. Cooperative programs are in place with Washington State University/King County Cooperative Extension, whose horticulture program is housed at the center.

The UW Botanic Gardens' largest facility is the Washington Park Arboretum, a 230-acre collection of trees and shrubs in a naturalistic setting on the south shore of Lake Washington. Managed in cooperation with the City of Seattle Department of Parks and Recreation, the arboretum contains some 5,200 different kinds of woody plants that are available for research and academic study, making it the third most diverse arboretum in the United States. Displays and programs educate students and visitors about woody plants' diversity, natural ecology, and urban landscape use, as well as conserving endangered natural and cultivated plants. Classes in botany, dendrology, horticulture, wildlife, and landscape architecture make use of the collections, while the grounds are used for studies in soil science, ecology, and other research projects, including many independent student projects. The arboretum, established in 1934, offers numerous formal and informal classes for the general public and, in addition, serves the community as a public park and open space.

Undergraduate Program

Adviser
116 Anderson
(206) 543-3077
sefsadv@uw.edu

The School of Environmental and Forest Sciences offers the following programs of study:

- Bachelor of Science degree with a major in environmental science and terrestrial resource management. Within this major, options in landscape ecology and conservation, restoration

ecology and environmental horticulture, sustainable forest management, and wildlife conservation are offered.

- Bachelor of Science degree with a major in bioresource science and engineering.
- Minors in ecological restoration (available through Bothell, Seattle, and Tacoma campuses), and environmental science and terrestrial resource management.

Bachelor of Science

Suggested First- and Second-Year School Courses:

- *Environmental Science and Terrestrial Resource Management:* ENGL 131 (or other 5-credit English composition course); COM 220; BIOL 180, BIOL 200, BIOL 220; CHEM 120, CHEM 220; any 5-credit VLPA course; MATH 120 or Q SCI 291; ESRM 210.
- *Bioresource Science and Engineering:* CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238; ECON 200; ENGL 131 (or other 5-credit English composition course); HCDE 231; CHEM E 260; MATH 124, MATH 125, MATH 126, MATH 307; PHYS 121, PHYS 122, PHYS 123; Q SCI 381; BSE 150; BSE 201, BSE 202, BSE 248, and BSE 450.

Department Admission Requirements

- *Environmental Science and Terrestrial Resource Management:* Students in good academic standing may declare this major at any time.
- *Bioresource Science and Engineering:* Students may apply for freshman admission or upper-division admission. Applications are available by visiting the school website. Prospective upper-division BSE applicants should have most pre-engineering coursework completed before applying (see suggested sequencing at: www.sefs.washington.edu/academicPrograms/undergrad/bse/BSEflier.pdf), especially MATH 126 and CHEM 238. See adviser for further information. Admission is competitive; completion of requirements does not guarantee admission. Students may also apply to the chemical engineering degree program through the College of Engineering advanced admission program (see College of Engineering section for advanced admission entrance and continuation requirements).

Graduation Requirements

Environmental Science and Terrestrial Resource Management

180 credits, to include:

1. *General Education Requirements (70 credits)*
 - a. *Written Communication (12 credits):* 5 credits English composition (ENGL 131 preferred); and seven additional credits.
 - b. *Quantitative and Symbolic Reasoning (20 credits):* Q SCI 291, Q SCI 292, Q SCI 381; ESRM 250.
 - c. *Natural World (30 credits):* BIOL 180, BIOL 200, and BIOL 220; CHEM 120 and CHEM 220, or CHEM 142 and CHEM 152; ESRM 210 or ESS 210 or ESS 230/OCEAN 230 (5 credits only) or ESS 201 or ATM S 211.
 - d. *Visual, Literary, & Performing Arts (VLPA) (10 credits):* Any 200-level COM course; five additional credits from the University VLPA list.

- e. *Individuals & Societies (I&S) (10 credits)*: ENVIR 235/ECON 235 or ECON 200 or ECON 201; and five additional credits, which are satisfied by core courses shown below.
2. *Major Requirements (62 credits)*:
 - a. *Core Courses (17 credits)*: ESRM 200, ESRM 201, ESRM 300, ESRM 304.
 - b. *Restricted Electives (minimum 45 credits)*: 300- or 400-level courses from within the School of Environmental and Forest Sciences for the major; 35 credits may come from one of the specified option course lists); minimum 25 credits must be at the 400-level.
 - c. All ESRM courses must be completed with a minimum 2.0 grade to count toward major requirements.
3. *Free electives*: As needed to bring minimum total to 180 credits.

Environmental Science and Terrestrial Resource Management voluntary program options:

All requirements for any of the four voluntary options are the same as for the major shown directly above.

1. *Natural Resource and Environmental Management Option (minimum 45 credits)*: ESRM 323; ESRM 331, ESRM 350; ESRM 381; ESRM 400; ESRM 426; ESRM 470. Minimum one course each from three approved lists. See adviser for approved lists.
2. *Restoration Ecology and Environmental Horticulture Option (minimum 45 credits)*: Courses selected from an approved list. See adviser for approved list.
3. *Sustainable Forest Management Option (minimum 45 credits)*: ESRM 323; ESRM 331; ESRM 368; ESRM 400; ESRM 426 or ESRM 447; ESRM 428; ESRM 430; ESRM 461; ESRM 470. Minimum one course each from three approved lists. See adviser for approved lists.
4. *Wildlife Conservation Option (minimum 46 credits)*: ESRM 350; ESRM 351; ESRM 441; ESRM 450; ESRM451/Q SCI 451; ESRM 458; Q SCI 482; and one from ESRM 452, ESRM 453, ESRM 459. Capstone (10 credits): ESRM 462, ESRM 463, and ESRM 464; or ESRM 494 and ESRM 496; or ESRM 494 and ESRM 495.

Bioresource Science and Engineering

1. *General Education Requirements (105 credits)*
 - a. *Written Communication (12 credits total, 4 of which are satisfied by major requirements, shown below)*: 5 credits English composition (ENGL 131 preferred); HCDE 231 (3 credits).
 - b. *Natural World (NW) (68 credits)*: MATH 125, MATH 126, MATH 307 (or AMATH 351), MATH 308 (or AMATH 352); Q SCI 381 or IND E 315 or STAT 390. CHEM 152, CHEM 162; CHEM 237, CHEM 238; PHYS 121, PHYS 122, PHYS 123; A A 260; 10 credits from the University NW list (outside the major).
 - c. *Visual, Literary, & Performing Arts (VLPA) (10 credits)*, chosen from the University VLPA list.
 - d. *Individuals & Societies (I&S) (20 credits, totally, 5 of which are satisfied by BSE requirements, shown below)*: ECON 200; 10 credits chosen from the University I&S list (outside the major).
2. *Major Requirements (74 credits)*
 - a. *Bioresource Science (59 credits)*: BSE 150, BSE 201, BSE 202, BSE 248, BSE 391, BSE 392, BSE 406, BSE 420, BSE 421, BSE 422, BSE 426, BSE 430, BSE 436, BSE 480,

BSE 481, BSE 497. All required BSE courses must be completed with a minimum 2.0 grade.

- b. *Engineering Electives (15 credits minimum)*: Taken from a list of approved engineering electives.
 - c. *Business Option (additional 12 credits minimum)*: ESRM 320, ESRM 321, and one course from approved list.
3. *Free Electives*: To bring minimum total to 180 credits.

Minors

Ecological Restoration

Minor Requirements: 25 credits as follows:

1. *Introduction to Restoration Ecology (5 credits)*: Either ESRM 362/ENVIR 362, BES 362, or TESC 362.
2. *Capstone (10 credits)*: One of the following sequences: ESRM 462/ENVIR 462, ESRM 463/ENVIR 463, ESRM 464/ENVIR 464; or BES 462, BES 463, BES 464; or TESC 462, TESC 463, TESC 464.
3. *Electives*: 10 credits from approved list of electives maintained by each campus.
4. Minimum 2.00 cumulative GPA for courses presented for the minor.
5. Minimum 15 credits from outside the student's major.
6. Minimum 15 credits completed through the UW.

Environmental Science and Terrestrial Resource Management

Minor Requirements: Minimum 25 ESRM credits, 20 of which must be upper division. Maximum 5 credits from BSE courses allowed.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Forest resources emphasizes interactions between biotic and human systems at landscape to regional scales. It also provides a knowledge base to answer critical questions about how individual organisms and biotic systems respond to perturbations and stresses imposed by human activities, as well as how the environment affects human behavior and institutions. This knowledge enables the design of methods for the conservation, restoration, and sustainable use of biotic systems, and is critical for environmental decision making.

The goal of the bioresource science and engineering curriculum is to provide students with the training, tools, and experiences needed to be successful professionals in the paper and allied industries. At the same time, it provides a comprehensive education so graduates can effectively work and live in the world's complex society.

The goal of the environmental science and terrestrial resource management curriculum is to present fundamental knowledge and problem-solving experiences that enable students to understand the interdisciplinary dimensions of natural resource and environmental sciences and management. The structure of this curriculum provides great flexibility for students to pursue specialized fields through the formal program options, which include: landscape ecology and conservation; restoration ecology and environmental horticulture; sustainable forest management; and wildlife conservation; or to construct individual coursework to fit their educational goals.

Career opportunities abound in the area of environmental science and terrestrial resource management in both private and public sectors. One example is the projected need in the U.S. Forest Service, where it is estimated that one-third of the workforce will be retiring within the next five years.

- *Instructional and Research Facilities:* See the main school page for details.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements or visit www.sefs.washington.edu/academicPrograms/undergrad/honors.shtml.
- *Research, Internships, and Service Learning:* The Office of Student and Academic Services regularly receives internship announcements, which are forwarded to all SEFS students via email and placed in the office's Career Corner. Students are strongly encouraged to pursue these opportunities, which include work experience with federal, state, and private organizations in environmental science, forestry, engineering, conservation, wildlife, horticulture, and other related fields.

Undergraduate research opportunities are available. Students should contact faculty members in their areas of interest. There are also foreign study and field opportunities within the College. Some are formal study with faculty members, others are through other agencies. Contact the Office of Student and Academic Services for more information.

- *Department Scholarships:* For majors, the School of Environmental and Forest Sciences has a strong scholarship program that provides in-state tuition to students, based on merit or need. Application information can be found at www.sefs.washington.edu/academicPrograms/scholarship/index.shtml.

The Washington Pulp and Paper Foundation provides scholarships for students enrolled in the bioresource science and engineering curriculum. For information, contact Professor Rick Gustafson in Bloedel 364 or visit the foundation website at: depts.washington.edu/wppf/.

- *Student Organizations/Associations:* The School has student organizations which organize student symposia, field trips, parties, slide shows and talks, public service projects, and other social activities. Current SEFS student organizations can be found at www.sefs.washington.edu/people/organizations.shtml.

Of Special Note: Some classes include field trips or require laboratory supplies or material duplication at student expense.

Graduate Program

Graduate Program Adviser
130 Anderson, Box 352100
(206) 543-7081
sefsadv@uw.edu

Graduate programs in forest resources accommodate a wide range of education and career objectives. A student may concentrate on development of advanced professional skills and knowledge or on exploration of forest-related science.

Programs lead to the degrees of Master of Environmental Horticulture, Master of Forest Resources in forest management, master of science, and doctor of philosophy. Graduate students may center their study in one of the special fields within the school's divisions.

Master of Environmental Horticulture

Admission Requirements

1. Academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted without sufficient course background in the intended program of study)
 - c. Adequate GRE scores (156 Verbal; 148 Quantitative; 5.0 Writing recommended)
 - d. *International applicants only*: minimum 580 TOEFL score (237 computer-based test, 92 internet-based, and 7 IELTS tests)
2. Knowledge of intended area of study
 - a. Statement of objectives in pursuing further education
 - b. Ideally work or field experience in planned area of study
3. References: three recommendations total
 - a. Recommendations from references familiar with applicant's academic ability and potential
 - b. Recommendations from employers in field related to applicant's educational goals
4. Application deadline: December 1 for admission the following autumn quarter.

Degree Requirements

45 credits

1. SEFS 500, SEFS 503, SEFS 549, SEFS 561, and ESRM 590 (14 credits); and 18 credits of restricted electives.
2. *Internship/independent research*: SEFS 601. Public presentation and written professional paper. (9 credits minimum)
3. *Electives* (4 credits)

Master of Forest Resources - Forest Management

Admission Requirements

1. Academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted without sufficient course background in the intended program of study).
 - c. Adequate GRE scores (156 Verbal; 148 Quantitative; 5.0 Writing recommended)
 - d. *International applicants only*: Minimum 580 TOEFL score (237 computer-based test, 92 internet-based, and 7 IELTS tests)
2. Knowledge of intended area of study
 - a. Statement of objectives in pursuing further education.

- b. Ideally work or field experience in planned area of study
- 3. References: three recommendations total
 - a. Recommendations from references familiar with applicant's academic ability and potential
 - b. Recommendations from employers in field related to applicant's educational goals
- 4. Application deadline: December 1 for admission the following autumn quarter.

Degree Requirements

48 credits

- 1. SEFS 500, SEFS 509, SEFS 526 (7 credits)
- 2. *Directed electives*: 36 credits distributed among the following four areas, with at least two courses in each area: forest biology/ecology, forest management, forest measurements, forest policy and administration. See adviser for list of approved courses.
- 3. *Capstone project*: SEFS 600 or SEFS 601 (5 credits)

Master of Science

Admission Requirements

- 1. Academic readiness for the program
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted without sufficient course background in the intended program of study)
 - c. Adequate GRE Scores (153 Verbal; 144 Quantitative; 4.0 Writing recommended)
 - d. *International applicants only*: minimum TOEFL score of 580 (237 computer-based test, 92 internet-based test)
- 2. Knowledge of intended area of study
 - a. Statement of objectives in pursuing further education
 - b. Ideally work or field experience in planned area of study
- 3. References: three recommendations total
 - a. Recommendation from references familiar with applicant's academic ability and potential
 - b. Recommendations from employers in field related to applicant's educational goals

Degree Requirements

Minimum 45 credits

- 1. *Orientation*: SEFS 500 (1 credit)
- 2. *Analysis of Research Problems*: SEFS 509 (3 credits)
- 3. *Disciplinary Knowledge*: minimum 10 credits from list of approved courses
- 4. *Research Design and Quantitative Analysis*: minimum 8 credits from list of approved courses
- 5. *Current Topics*: 2 credits (500 level), topics vary from year to year
- 6. *Thesis Research*: SEFS 700 (9 credits minimum)

7. *Electives*: (12 credits)

Doctor of Philosophy

Admission Requirements

1. Academic readiness for the program.
 - a. Minimum 3.00 GPA in last 60 semester or last 90 quarter hours
 - b. Type and level of courses completed (generally students are not admitted without sufficient course background in the intended program of study)
 - c. Adequate GRE Scores(153 Verbal: 144 Quantitative; 4.0 Writing recommended)
 - d. *International applicants only*: Minimum 580 TOEFL score (237 computer-based test, 92 internet-based test)
2. Knowledge of intended area of study
 - a. Statement of objectives in pursuing further education. PhD applicants should have earned a master's degree; most apply for the master's and then continue on to the PhD.
 - b. Ideally work or field experience in planned area of study
 - c. Publications written by the student related to planned area of study
3. References: three recommendations total
 - a. Recommendations from references familiar with applicant's academic ability and potential
 - b. Recommendations from employers in field related to applicant's educational goals
4. Application deadline: December 1 for admission the following autumn quarter.

Degree Requirements

90 credits

1. Same as for master of science degree (above) with one additional course in each category
 - a. Disciplinary knowledge
 - b. Research design and quantitative analysis
 - c. Current topics
2. Qualifying examination
3. General examination
4. Dissertation research: SEFS 800 (27 credits minimum)
5. Final examination

Financial Assistance

A limited number of appointments for teaching and research assistantships provide a stipend, tuition waiver, and benefits. Teaching and research assistant responsibilities are half-time, allowing for a full academic load. Students may contact faculty directly about available research assistantships.

Fellowships without teaching or research obligations are also available. All applicants who meet the priority deadline are considered for fellowship funding.

Marine and Environmental Affairs

School Overview

3707 Brooklyn Avenue Northeast

The School offers an interdisciplinary program of study leading to the Master of Marine Affairs degree. Marine affairs concerns management and policy questions on the uses of the coastal and offshore regions of the ocean and their resources. The core curriculum includes courses in marine affairs, economics, law, marine sciences, and public affairs, with emphasis on human dimensions of the environment.

Graduate Program

Graduate Program Coordinator
3707 Brooklyn NE, Box 355685
(206) 543-4326, (206) 543-7004
uwsmea@uw.edu

Master of Marine Affairs

Students learn creative approaches to resolving marine problems and conflicts, charting rational use of living and non-living marine resources, and managing human activities on the coasts, at sea, and in estuaries, wetlands, and large inland bodies of water.

The program prepares students for professional careers in policy making, management, teaching, and research. Students gain familiarity with relevant aspects of the social, technological, and environmental sciences.

Completion of the MMA program normally requires two academic years. In the first year, students develop a comprehensive understanding of the marine affairs field and acquire analytic skills. In the second year, students develop competence in a topical area of interest (e.g., ocean and coastal management, ports and marine transportation, marine environmental protection, marine resources management, ocean and coastal tourism and recreation), and prepare a thesis, complete a capstone project, or complete additional coursework for the courses-only option. . Studies may be adjusted to accommodate prior experience and academic background.

Admission Requirements

1. Graduate Record Examination general-test scores
2. Departmental supplementary information form
3. Three letters of recommendation
4. Official academic transcripts
5. Statement of career objectives
6. Students are normally admitted for autumn quarter only.

Degree Requirements

59 credits as follows:

- **Core Curriculum (29 credits minimum)**
 1. Introduction to Marine Affairs: SMEA 500 , SMEA 501, SMEA 502
 2. Economics: SMEA 536. If SMEA 536 is waived, students must still take at least one economics course at the 400 or 500 level.
 3. Marine Law: SMEA 515
 4. Policy Analysis: SMEA 519
 5. Policy Processes: one of SMEA 507 or SMEA 521
 6. Marine Science: SMEA 591. If SMEA 591 is waived, students must still take at least one 400- or 500-level science course
 7. Research (Quantitative) Skills: The required skill level is equivalent to intermediate statistics, including an understanding of point estimates, confidence intervals, and regression equations. Students not at this level take one appropriate course. Recommended courses include SMEA 584, Q SCI 381, or STAT 311. One additional course in research skills (minimum 3 credits) for students in the thesis track.
 8. Marine and Environmental Affairs Advising: SMEA 600 (1 credit in winter and spring required the first year.
- **Electives (Minimum number of elective credits to meet 59-credit total):** To include at least 6 credits from a minimum two SMEA courses.
- **Thesis and Thesis Presentation (15 credits minimum):** SMEA 700
- **Capstone Credits and Presentation (9 credits):** SMEA 650

Financial Aid

The School offers a limited number of positions for graduate student appointments as research assistants. Applicants are urged to investigate outside sources of funding.

Oceanography

School Overview

108 Oceanography Teaching Building

Oceanography - study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere - is prompted both by the intellectual desire to understand how the oceans move and how life develops in a salty, cold environment, and the need to use wisely the ocean's resources for the benefit of humanity. As an interdisciplinary science, oceanography integrates the basic principles of biology, chemistry, geology, physics, geophysics, mathematics, botany, zoology, meteorology, and geography. Applications of high technology to oceanographic instrumentation and vessels, increasingly sophisticated computers, satellite remote sensing, and innovative methodologies are rapidly opening new possibilities for exploration and study. Oceanography is divided into four areas of emphasis:

Biological Oceanography examines the processes governing the distribution, abundances, and production of plants, animals, and nutrients in the oceanic ecosystem. Emphasis is on investigations of bacteria, phytoplankton, zooplankton, and benthic organisms.

Chemical Oceanography investigates the complex chemistry, distribution, and cycling of dissolved substances, nutrients, and gases in seawater, the mechanisms controlling them, and their origins and fates.

Marine Geology and Geophysics studies marine sediments (their formation, transport, and deposition); ocean basin formation (plate tectonics); processes governing shoreline formation; and the origin, structure, and history of the oceanic crust and upper mantle.

Physical Oceanography endeavors to understand and predict motions in the sea from millimeters through tidal and current scales to the great ocean gyres, the distribution of physical properties (temperature, salinity, sea ice), and air-sea interaction and its implications for climate.

Undergraduate Program

Adviser

108 Oceanography Teaching Building, Box 357940
(206) 543-5039

student@ocean.washington.edu

The School of Oceanography offers the following programs of study:

- Bachelor of Arts degree with a major in oceanography
- Bachelor of Science degree with a major in oceanography
- Specializations include biological, chemical, or physical oceanography, or marine geology and geophysics
- A minor in oceanography
- A minor in marine biology (offered jointly with the Departments of [Biology](#) and [Aquatic and Fishery Sciences](#))

- A minor in climate science (offered jointly with the Departments of [Atmospheric Sciences](#) and [Earth and Space Sciences](#))
- A minor in arctic studies (offered jointly between the [Jackson School of International Studies](#) and the [School of Oceanography](#))

Bachelor of Arts

Suggested Pre-College Courses: Interest in natural sciences and a good record in high school science courses, particularly mathematics. One year each of biology, chemistry, physics, and earth sciences recommended.

Suggested First- and Second-Year College Courses: MATH 124; CHEM 120 or CHEM 142 and CHEM 152; BIOL 180, BIOL 200; ESS 210 or ESS 211; PHYS 121; either OCEAN 215 or CSE 160; OCEAN 200, OCEAN 201, OCEAN 210, OCEAN 220, OCEAN 285, OCEAN 286, and OCEAN 295; and English composition.

Department Admission Requirements

Students in good academic standing may declare this major at any time.

General Education Requirements

All majors must satisfy the College of the Environment general education requirements. University-required additional writing credits may include OCEAN 220, OCEAN 443, and OCEAN 445.

Major Requirements

Minimum 104 credits

1. Core requirements (79 credits): PHYS 121; MATH 124, MATH 125; CHEM 120 or CHEM 142; BIOL 180, BIOL 200; ESS 210 or ESS 211; OCEAN 200, OCEAN 201, OCEAN 210, either OCEAN 215 or CSE 160, OCEAN 220, OCEAN 285, OCEAN 286, OCEAN 295, OCEAN 310, OCEAN 320, OCEAN 330, OCEAN 351
2. Elective foundational science (5 credits): one of PHYS 122, MATH 126, CHEM 152, BIOL 220, or OCEAN 270
3. 300- or 400-level oceanography coursework that may include the senior thesis sequence, selected in the student's area of specialization, in consultation with a faculty adviser (minimum 10 credits)
4. Upper-division science, mathematics, or engineering, selected in the student's area of specialization, in consultation with a faculty adviser (10 credits)

Bachelor of Science

Suggested Pre-College and First- and Second-Year College Courses: Same as for Bachelor of Arts degree (shown above)

Department Admission Requirements

Students in good academic standing may declare this major at any time.

General Education Requirements

Same as for the Bachelor of Arts degree (shown above).

Major Requirements

Minimum 116 credits

1. *Core requirements(79 credits):* PHYS 121 ; MATH 124, MATH 125; CHEM 120 or CHEM 142; BIOL 180, BIOL 200; ESS 210 or ESS 211; OCEAN 200, OCEAN 201, OCEAN 210, either OCEAN 215 or CSE 160, OCEAN 220, OCEAN 285, OCEAN 286, OCEAN 295, OCEAN 310, OCEAN 320, OCEAN 330, OCEAN 351.
2. *Senior thesis sequence (8 credits):* OCEAN 443, OCEAN 444, OCEAN 445
3. *Elective foundational science (5 credits):* one of PHYS 122, MATH 126, CHEM 152, BIOL 220, or OCEAN 270
4. 300- or 400-level oceanography coursework selected in the student's area of specialization, in consultation with a faculty adviser (9 credits)
5. Upper-division science, mathematics, or engineering, selected in the student's area of specialization, in consultation with a faculty adviser (15 credits)

Students with introductory science and mathematics courses equivalent to those listed are encouraged to contact the Oceanography adviser.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor

Minor Requirements: 26 credits

1. OCEAN 200, OCEAN 210
2. One of the following sequences: OCEAN 285, OCEAN 286, and OCEAN 320; or OCEAN 295 and OCEAN 330; or one of ESS 210 or ESS 211 and OCEAN 310
3. 9 credits of OCEAN electives, chosen from 300- and 400-level oceanography courses

Minor in Arctic Studies: See entry for [Arctic Studies](#) in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Minor in Marine Biology: See entry for [Marine Biology](#) in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Minor in Climate Science: See entry for [Climate Science](#) in the Interdisciplinary Undergraduate Programs section of the General Catalog.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The degree offers students a solid foundation in biological, chemical, geological, and physical oceanography, together with more specialized expertise in one of those options. Expertise is gained through team-based field and laboratory research during the sophomore and junior years, then by independent research on a thesis topic during the senior year. Emphasis is on building skills with the tools and techniques of shipboard oceanographic research and data analysis and interpretation. Students engage in fieldwork and data collection, learn to analyze and interpret that data, and prepare scientific reports. Additionally students acquire familiarity with the specialized instruments of oceanographic research.

The program prepares students to enter the profession directly or to pursue graduate studies. Oceanographers seek to produce a new understanding of an ocean system and to explore the potential consequences to the marine environment of human activities. They collect samples and data, analyze and interpret them, and prepare and disseminate the results. They work at sea, on land, in laboratories, and with computers. Most are employed in education and research institutions and federal, state and local government agencies. Other employers include environmental consulting firms and private companies extracting and harvesting marine products. A degree can also serve as a background for a career in teaching, administration, marine affairs, computing, or environmental studies.

- *Instructional and Research Facilities:* The school has extensive laboratory facilities equipped with highly specialized instruments and computers for teaching and research. The school operates two research vessels: the 274 foot R/V *Thomas G. Thompson*, used chiefly for open ocean research throughout the world, and the 65 foot R/V *Clifford A. Barnes*, used for research in coastal waters and estuaries of Washington. Undergraduate students have ample opportunities to gain research experience in the laboratories of faculty and to do oceanographic research in Puget Sound.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* Special opportunities for oceanography majors are provided by involving students in undergraduate research projects and part-time employment.
- *Department Scholarships:* See adviser for availability.
- *Student Organizations/Associations:* The Student Oceanographic Society (SOS) provides peer advice, organizes field trips, sponsors alumni career panels, and holds social gatherings.

Graduate Program

Graduate Student Services
108 Ocean Teaching, Box 357940
(206) 543-5039
student@ocean.washington.edu

The school provides instruction and research opportunities at the graduate level: biological, chemical, and physical oceanography, and marine geology and geophysics. The program emphasizes independent research in conjunction with basic and specialized courses. Interdisciplinary research is encouraged, and students work across scientific boundaries. Coursework during the first two years is required in each option; specialized coursework is structured to fit the student's background and objectives. Foreign-language proficiency is required only when deemed crucial to scholarly research.

Master of Science

Includes coursework in the student's area of interest and the other oceanography options, as well as completion of an approved research project and oral presentation of the results. Thesis and non-thesis programs are offered; most students select the non-thesis option.

Admission Requirements

1. One official copy of transcript(s) from all colleges or universities attended
2. Minimum 3.00 GPA or B for last 90 quarter (60 semester) credits
3. GRE scores
4. TOEFL scores for international students
5. Statement of goals and objectives, which may include any or all of the following: how or why applicant became interested in oceanography, significant accomplishments, summary of research experience, research area(s) of special interest, ultimate goals, extracurricular activities and interests.
6. Three letters of recommendation on School of Oceanography forms. Recommendations should be from faculty or scientists familiar with the applicant's academic achievements and research experience. Applicants out of school for some time may include recommendations from employer(s), should include at least one letter from academic faculty.

Degree Requirements

36 credits

1. *Thesis program*: Minimum 36 quarter credits (27 course credits and 9 credits of thesis). *Non-thesis program*: Minimum 36 quarter credits of coursework.
2. Minimum 18 credits numbered 500 and above. (In a thesis program, 9 credits may be OCEAN 700.)
3. Numerical grades in at least 18 quarter credits taken through the UW. Minimum cumulative 3.00 GPA
4. Minimum three full-time quarters of residence credit. Part-time quarters may be accumulated to meet this requirement.
5. Final master's examination

Biological Oceanography Option: OCEAN 530 , OCEAN 531 , OCEAN 532 , OCEAN 533. Minimum 3 credits of advanced biological oceanography courses.

Chemical Oceanography Option: OCEAN 520. Minimum three advanced chemical oceanography courses.

Marine Geology and Geophysics Option: OCEAN 540 , OCEAN 541 , OCEAN 545

Physical Oceanography Option: OCEAN 500 , OCEAN 510 , OCEAN 511 , OCEAN 512 , OCEAN 513 , OCEAN 514 , OCEAN 515 , OCEAN 517. Three courses in applied mathematics.

Out-of-Option Requirement: Minimum one 3-credit, numerically graded, 500-level course from each option outside the student's own (9 credits). See department website for list of suitable courses.

Doctor of Philosophy

Strong emphasis on research following completion of course requirements and the general examination. Upon successful completion of the general examination, the student undertakes an original research investigation, described in the dissertation and defended during the final examination.

Admission Requirements

1. One official copy of transcript(s) from all colleges or universities attended
2. Minimum 3.00 GPA or B for last 90 quarter (60 semester) credits
3. GRE scores
4. TOEFL scores for international students
5. Statement of goals and objectives (to be defined in online application), which may include any or all of the following: how or why applicant became interested in oceanography, significant accomplishments, summary of research experience, research area(s) of special interest, ultimate goals, extracurricular activities and interests.
6. Three letters of recommendation on School of Oceanography forms (available in online application). Recommendations should be from faculty or scientists familiar with the applicant's academic achievements and research experience. Applicants out of school for some time may include recommendations from employer(s), but should be made to include at least one letter from academic faculty.

Degree Requirements

Minimum 90 credits

1. Half the total program, including dissertation credits, in courses numbered 500 and above. Minimum 18 credits of coursework at the 500 level and above completed prior to the general examination.
2. Minimum three years (nine full-time quarters) of resident study, two through the UW. At least three full-time quarters (not necessarily continuous) taken through the UW and completed prior to the general examination. Residence requirement cannot be met solely by part-time study. Minimum two academic years of resident study completed before the general examination.
3. An appropriate master's degree from an accredited institution may be applied toward one year of resident study through the UW.
4. Numerical grades in at least 18 quarter credits of coursework taken through the UW. Minimum 3.00 cumulative GPA.
5. General examination
6. Dissertation, credit for which should be at least one-third of total credits.
7. Final examination, usually devoted to the defense of the dissertation and the field with which it is concerned

Biological Oceanography Option: OCEAN 530, OCEAN 531, OCEAN 532, OCEAN 533. Minimum 9 credits of advanced biological oceanography courses.

Chemical Oceanography Option: OCEAN 520. Minimum six advanced chemical oceanography courses.

Marine Geology and Geophysics Option: OCEAN 540 , OCEAN 541 , OCEAN 545

Physical Oceanography Option: OCEAN 500 , OCEAN 510 , OCEAN 511 , OCEAN 512 , OCEAN 513 , OCEAN 514 , OCEAN 515 , OCEAN 517. Three courses in applied mathematics.

Out-of-Option Requirement: Minimum one 3-credit, numerically graded, 500-level course from each option outside the student's own (9 credits). See department website or adviser for list of suitable courses. Students complete this breadth requirement prior to receiving an MS degree.

Financial Aid

Normally all students pursuing a graduate degree are supported by research or teaching assistantships, or by fellowships and scholarships from national or private sources. Most appointments continue through the summer when students are engaged in research.

Quantitative Science

Program Overview

The Center for Quantitative Science is an interdisciplinary program administered by the College of Environment with cooperation from the School of Aquatic and Fishery Sciences and the School of Environmental and Forest Sciences. It provides high-quality instruction in mathematical and applied statistical methods for undergraduate students who major in the biological and ecological sciences, renewable resources management, and environmental studies. The center provides instruction in an atmosphere that emphasizes the use of quantitative methods to better understand a variety of scientific phenomena. Faculty represent various applied scientific disciplines within the [School of Environmental and Forest Sciences](#) and the [School of Aquatic and Fishery Sciences](#).

Adviser
006 Anderson Hall, Box 352100
(206) 543-1191
cqs@uw.edu

Students in environmental, biological, ecological, and resource management majors may wish to complete a minor in quantitative science to document their understanding of the mathematical and statistical methods used in these competitive and increasingly quantitative fields.

Undergraduate Program

The Center for Quantitative Science offers the following program of study:

- A minor in quantitative science

Minor

Minor Requirements: A minimum of 27 credits, as follows:

1. *Core courses (24-25 credits):* Q SCI 291, Q SCI 292 (or MATH 124, MATH 125); Q SCI 381, Q SCI 482; Q SCI 483 (or Q SCI 403/STAT 403)
2. *Electives (3-5 credits):* Selected from an approved list of electives, a partial list of which includes Q SCI 210/ENVIR 210, Q SCI 403/STAT 403 (if not taken as part of core courses, above), Q SCI 454/FISH 454, Q SCI 480/STAT 480, Q SCI 483 (if not taken as part of core courses, above), Q SCI 486/STAT486. See adviser for possible additional qualifying courses.
3. A minimum 2.0 grade is required in each course taken as part of the minor.

Quaternary Research Center

Program Overview

19 Johnson

Quaternary studies focus on the processes that presently shape the natural environment and have operated over approximately the past two and a half million years (Quaternary period). A knowledge of Quaternary events facilitates an understanding of earth history in relation to the modern environment and has predictive value with regard to present-day and future environmental changes.

Quaternary research is typically interdisciplinary, and thus commonly involves related interests of two or more academic units. The Quaternary Research Center was established in 1967 to foster such interdisciplinary studies on a cooperative basis.

The center has the following goals:

1. To understand environments and climate changes of the past two and a half million years in the context of modern surface processes, which include historical changes, prehistoric postglacial environments, and Ice Age events.
2. To serve as a catalyst in fostering interdisciplinary studies in the fields of atmospheric sciences, archaeology/anthropology, botany, engineering, fisheries, forestry, geology, geophysics, oceanography, pedology, and zoology.
3. To provide a scientific perspective on the scale of modern and man-made environmental changes, including climate changes, in the context of recent earth history.
4. To conduct a curriculum jointly with other disciplines in the training of graduate students in Quaternary-oriented studies.
5. To seek applications of quaternary studies to modern environmental problems that help predict consequences of policy decisions.

Graduate Program

Students associated with the center obtain their degrees through cooperating departments. Students interested in graduate work at the center should apply to the department of their choice but plan to do their research in a Quaternary-related subject.

Research Facilities

QRC Resource Center

A specialized collection includes books, monographs, theses, journals, and maps; and a large, diverse reprint collection. Searches for library material can be conducted via the QRC [web page](#).

Cosmogenic Nuclide Laboratory

John Stone, Director

Analyzes rare radionuclides produced by cosmic ray bombardment of the Earth's surface. These nuclides are useful for surface exposure dating and the study of geomorphic rates and processes. Current projects include work on Quaternary glaciations of Antarctica, Europe, and North America; dating of landslides and volcanic eruptions; and studies of erosion in both tectonically active and ancient, stable landscapes. The laboratory has sample preparation facilities and clean labs for extraction of Al-26, Be-10, and Cl-36. For additional information, visit the laboratory's [website](#).

Geochemistry Library

Ronald S. Sletten, director

Analyzes of natural waters, soil, and sediment. Instrumentation includes ICP-OES, ICP-MS, laser diffraction particle size analyzer, and total organic/inorganic carbon analyzer for water samples. The library also conducts C-13 CP-MAS-NMR for natural organic and pulsed field gradient PFG-NMR for diffusion studies of water in porous media. Primary research foci are weathering, elemental cycling, and studies of permafrost soils. Current projects include investigation of biocomplexity of carbon cycling in Arctic soils in Greenland and physicochemical soil processes in Antarctica and Alaska.

Periglacial Laboratory

Bernard Hallet, Director

Research focuses on diverse processes at the interface between glaciology and geomorphology fundamental to understanding landscapes and soils in alpine and polar regions. The laboratory does experimental research on periglacial processes with special attention to complex phenomena associated with freezing soils and rocks. The laboratory also serves as a base of support for extensive field work involving electronic instrumentation to monitor surface processes in the Arctic, Antarctica, the Himalayas, southeast Tibet, and other regions across the globe.

Stable Isotope Laboratory

Eric J. Steig, Director

The main center for stable isotope studies for the QRC. Current emphasis is development of high-resolution climate records covering the last ten millennia, from ice cores in the Canadian Arctic, Greenland, and Antarctica. Facilities include off-line and online preparation systems for D/H and $^{18}\text{O}/^{16}\text{O}$ on water $^{13}\text{C}/^{12}\text{C}$ on carbonates and organic materials, and $^{15}\text{N}/^{14}\text{N}$ on nitrate and organics. Additional information is available on the laboratory's [website](#).

The Information School

School Overview

370 Mary Gates Hall
Box 352840

Dean

Anind Dey

Associate Deans

Carole Palmer, Research
Matthew Saxton, Academics
Joseph Tennis, Faculty Affairs

Never in our society's history has there been such a great need to manage so much information quickly and efficiently. The Information School is dedicated to preparing a rising generation of information leaders to embrace the challenges associated with the way we create, find, store, manipulate, and share information.

The School offers four degree programs, leading to the Bachelor of Science in Informatics, Master of Library and Information Science, Master of Science in Information Management, and PhD in Information Science. The School also offers a certificate program, continuing education opportunities for professionals, and service courses for undergraduates in information fluency, research strategies, and technology. Graduates of the School assume a variety of professional roles in the public, private, and non-profit sectors, with positions that span from information architects to children's librarians, from web developers to information technology (IT) managers, from network and information assurance professionals to researchers and faculty in the information field.

The community is highly interdisciplinary, bringing together a variety of social science traditions, including: library and information science, computer science, sociology, communication, philosophy, and engineering. Most research addresses topics in the following broad categories:

- Data Science
- Digital Youth
- Health and Well-Being
- Human-Computer Interaction
- Indigenous Knowledge
- Information and Society
- Learning Sciences
- Library and Information Science
- Sociotechnical Information Systems

The School's work remains focused on the human impact of information. The research and curriculum of the school examines information systems and technology from a **user-centered perspective**. By retaining a focus on the human impact of information systems and technology, the School builds on its community values of trust, transparency, and mutual respect.

History

Originally established in 1911, the Information School has the oldest library and information science program west of the Mississippi, and continues to offer the most highly-regarded American Library Association-accredited library and information science degree in the Western United States.

In 1998, the University set out to transform the School by charging it with a new mission, to become what it is today: a broad-based information school that meets the challenges and opportunities of the information age. With the addition of three new degree programs, a new dean, faculty, and state of the art facilities, the Information School became the University's sixteenth independently organized school/college in 2001.

The School explores the cutting edges of the information field, in theory and practice. It nurtures the best of both worlds: traditional library values and preparedness for ever-changing information frontiers.

Vision

The School envisions a world where more effective use of information helps everyone discover, learn, innovate, solve problems, have fun, and make a better world. Information changes lives.

Mission

The School prepares information leaders through researching the problems and opportunities of information, designing solutions to information challenges, and making information work.

Informatics students design, build, implement, and secure information systems that meet human, organizational, and societal needs.

Students have a strong people focus and they excel as user experience designers, business analysts, data managers, information architects, web developers, and information assurance professionals.

Undergraduate Program

Adviser
420 Mary Gates Hall
Box 352840
(206) 543-1794
informatics@uw.edu

The Information School offers both a major and minor in Informatics. The Informatics major, a Bachelor of Science degree, offers students the opportunity to earn transcriptable options in human-computer interaction, information architecture, information assurance and cybersecurity, biomedical and health informatics, and data science.

Bachelor of Science

Suggested First- and Second-Year College Courses: INFO 101, INFO 200, an English composition course (selected from the University list), CSE 142, CSE 143, and STAT 221, STAT 311, STAT 390, STAT 293, or Q METH 201; courses that develop strong analytical, qualitative, and quantitative reasoning skills; courses that develop strong written and oral communication skills; courses that provide exposure to a variety of social science fields such as psychology, sociology, anthropology, or philosophy.

Program Admission Requirements

Regular Admission

1. INFO 200*; either CSE 142, CSE 143, CSE 154, CSE 160, CSE 163, INFO 180/STAT 180/CSE 180, or INFO 201; either STAT 221, STAT 311, STAT 390, or QMETH 201; one English composition course from the list on the iSchool website, with a minimum 2.0 grade in each course. Departmentally approved transfer equivalents may be used to substitute for prerequisite courses.
2. Minimum 2.00 cumulative college GPA.
3. Admission is capacity constrained, based on the following criteria:
 - a. Overall academic performance
 - b. Grades in courses required for admission to the major
 - c. Personal statement reflecting an interest in and commitment to becoming a major in this field
 - d. Other evidence of interest in and commitment to the field (e.g., work experience, internships).

Meeting the above criteria does not guarantee admission.

4. Admission for current upper-division UW students and transfer students occurs twice a year for autumn and winter quarters. The application process begins prior to the admitted quarter. Application deadlines:
 - a. First Friday of spring quarter for admission the following autumn quarter.
 - b. First Friday of autumn quarter for admission winter quarter.

Students apply online at www.ischool.uw.edu.

*Since equivalents to INFO 200 are not common, students who have transferred or will transfer to the UW can apply to the program and be admitted with the provision that they complete INFO 200 with a minimum 2.0 grade before the end of their first year in the program.

Freshman Direct Admission Program (FDAP)

1. Designed to recruit top high school students to the program and to the UW. Students who indicate an interest in the Informatics program are automatically considered for FDAP participation upon application to the UW. They are evaluated based on careful review of qualitative and quantitative factors, including high school GPA, SAT scores, personal statement, and any additional information provided in their application file. Students selected for FDAP are involved in the academic and social life of the Information School, participating in courses, activities, and research opportunities as appropriate during their freshman and sophomore years.
2. The number of early admission (FDAP) students does not exceed 10 percent of the number of majors admitted each year.

Major Requirements

86-92 credits

1. Courses required for admission (18-19 credits, as shown above)
2. Core courses (52-53 credits): INFO 201, INFO 290, INFO 300, INFO 330, INFO 340, INFO 350, INFO 360, INFO 380, INFO 490 (4), INFO 491 (4), CSE 143; one of CSE 373, INFO 442, INFO 443.
3. Areas of study (16-20 credits): Students may choose a transcriptable option in human-computer interaction (HCI), information architecture (IA), information assurance and cybersecurity (IAC), biomedical and health informatics, or data science. (See below.) Alternatively students may work with their adviser to select a minimum of four classes (16-20 credits) to create a customized program aligned with their personal interests or career goals.

General Education and Areas of Knowledge

1. English composition (5 credits)
2. Quantitative/Symbolic Reasoning (5 credits)
3. Writing courses (10 credits)
4. Natural World (20 credits)
5. Individuals & Societies (20 credits)
6. Visual, Literary, & Performing Arts (20 credits)
7. Diversity (3 credits)

Up to 15 credits of INFO-prefix courses from the University Areas of Knowledge list may be counted toward the UW Areas of Knowledge requirement (Natural World; Individuals & Societies; Visual, Literary, & Performing Arts).

Options

Human-Computer Interaction (HCI) Option (16-20 credits): Minimum four courses from the areas listed below, with the following distribution:

1. At least one course in two of the following areas: user interface software and technology; design; usability and user research; social and ethical dimensions. See department website for approved area courses.
2. At least one course from the approved area list from a participating department outside the Information School (Art, Computer Science, or Human Centered Design & Engineering). See department website for approved area courses.
3. Special topics courses such as INFO 498, CSE 190, HCDE 490, and HCDE 496 may be approved within any of the course areas below on an individual, per-course basis, depending on subject matter.

Course areas

1. Foundations: ART 383, CSE 440, HCDE 319
2. User Interface Software and Technology: CSE 441, INFO 344, HCDE 438

3. Design: ART 483, ART 484, INFO 424, HCDE 455
4. Usability and User Research: INFO 310, HCDE 317, HCDE 318
5. Social and Ethical Dimensions: INFO 444, INFO 447

Information Architecture (IA) Option (16-20 credits). Minimum four courses from an approved list. See department [website](#) for list.

Information Assurance and Cybersecurity Option (16-20 credits). See department [website](#) for list.

1. *Foundation Course:* INFO 310 or equivalent
2. Minimum three additional courses from an approved list (11-15 credits). Includes courses at participating departments on all three UW campuses. See program website for list: ischool.uw.edu/academics/informatics/degree-options. No more than one of these three may be a networking course (INFO 341, T INFO 250, or CSS 432).

Biomedical and Health Informatics Option (20 credits): BIME 300, BIME 435, INFO 468, INFO 478

Data Science Option (20 credits): INFO 370, INFO 371, INFO 445, INFO 474

Minor

Minor Requirements: Minimum 25 credits

1. INFO 200, INFO 201 (10 credits)
2. INFO 300-/INFO 400-level courses, providing depth in data, design, or development. Minimum 3 credits covering ethics, policy, and/or equity dimensions of information technology. See department for list of approved courses. (15 credits)
3. Minimum 2.00 cumulative GPA for courses applied to the minor.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Student Outcomes

- *Learning Objectives and Expected Outcomes:* The informatics program prepares students for a wide range of endeavors in the information field including information management and technology, research and information services, interactive system design, human-computer interaction, and information science.

Graduates of the informatics program are qualified for jobs in the information and technology industry and in business, public service, and other professions. Possible job titles include user experience designer, business analyst, consultant, usability engineer, data manager, information architect, web developer, network manager, project manager, and information assurance professional.

The program also provides strong preparation for graduate studies. Graduates are successfully placed in prestigious graduate schools and pursue a variety of programs, including information

and management science, information science, biomedical informatics, business and accounting, and information technology.

Informatics student-learning outcomes include the ability to assess people's information needs and behavior; ability to design information systems to meet people's information needs; ability to work with information technologies (e.g., database, networks, Internet-based, interface design); ability to evaluate the impact of information technologies on people; ability to communicate effectively; ability to manage projects; ability to build working systems; ability to organize and manage information; ability to work effectively individually and as part of a team; and ability to understand the research process and its implication for information systems design and use. All informatics courses are designed to produce these outcomes through a rigorous experiential learning approach that emphasizes group work, research, writing, oral presentations, and technology.

- *Instructional and Research Facilities:* Located on the third and fourth floors of Mary Gates Hall, the School offers an extensive software collection, a state-of-the-art computer classroom, an innovative Technology Exploration (TE) laboratory, and excellent network connectivity. Students have access to software applications including titles for database and text management, programming, graphics, multimedia production, web development, Internet exploration and collaboration, and office productivity. Students also have access to a large number of bibliographic databases and commercial information services.

The School also has a dedicated information science research facility at the Roosevelt Commons Building. The research space comprises 7,000 square feet of offices, workstations, research labs, and meeting spaces.

- *Honors Options Available:* With College Honors; With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). Distinction (Departmental Honors). See adviser for requirements.
- *Research, Internships, and Service Learning:* Internships are encouraged, but not required. Students participate in a variety of internships, paid and non-paid. A significant number of students also work part-time in Informatics or technology-related positions, and participate in public service.

Informatics students are extensively engaged in faculty research and internships. A significant percentage of informatics students participates in the University's Undergraduate Research Symposium each year. Students have co-authored publications with faculty, had their research accepted for presentation at national conference poster sessions, and been recognized with various awards, including the Mary Gates Research Training Endowment for three consecutive years (2001-03).

- *School Scholarships:* The Henry Scholarships, in the amount of approximately \$1500 each, are awarded to three second-year majors in recognition for academic achievement, leadership, and service to the School and in professional/student activities. Students to be considered for the award are nominated by the Information School faculty and Undergraduate Program Committee members. The merit-based awards, named after the founder of the school and first director, William Henry, are intended to recognize and honor student achievement.
- *Student Organizations/Associations:* Undergraduates participate in a number of the School's many student organizations, including the UW Informatics Undergraduate Association (IUGA) and the student chapter of the American Society of Information Scientists and Technology (ASIST).

Of Special Note:

Capstone Projects: Students often use their capstone projects to identify interest areas, develop skills, and prepare for future pursuits. Through capstone projects, students demonstrate the skills, understanding, and competencies they can successfully use to prepare for employment and graduate studies.

Information Sessions: Prospective students are encouraged to attend an Informatics information session. For a schedule of information sessions, visit the School website at school.uw.edu/events.

Graduate Programs

The School offers graduate programs leading to the Master of Library and Information Science (MLIS), the Master of Science in Information Management (MSIM), and the Doctor of Philosophy (PhD) in Information Science.

Master of Library and Information Science

MLIS Adviser
420 Mary Gates Hall, Box 352840
(206) 543-1794
mlis@uw.edu

Admission Requirements

Offered in two delivery modes: residential (on-campus, full-time two-year program) and online (part-time three-year program). Applicants must indicate for which program they are applying. Applications should also include:

1. Personal statement of educational and professional goals
2. Answers to supplemental questions
3. Current resume highlighting any relevant work experience; volunteer activities; and honors, awards, and presentations
4. Three letters of recommendation
5. Transcripts from each relevant institution attended
6. TOEFL score (for international students)

Degree Requirements

63 credits

1. *Core Curriculum (31 credits):* LIS 500, LIS 510, LIS 520, LIS 530, LIS 550, LIS 560, LIS 570, LIS 580, and one information technology core course.
2. *Electives (27 credits):* Options vary and allow students to design a problem of study specific to their interests and career goals.
3. *Capstone (5 credits):*
4. *Optional Internship: Directed Fieldwork: LIS 590*

Master of Library and Information Science, Law Librarianship

Designed to prepare lawyers with an existing JD degree to serve as law librarians in courts, federal and state units of government, law schools, corporations, and law firms.

Admission Requirements

1. Personal statement of educational and professional goals
2. Answers to supplemental questions
3. Current resume highlighting any relevant work experience; volunteer activities; and honors, awards, and presentations
4. Three letters of recommendation
5. Transcripts from each relevant institution attended
6. Earned JD prior to enrollment in the MLIS program
7. TOEFL score (for international students)

Degree Requirements

43 credits

1. *Core Curriculum (23 credits)*: LIS 500, LIS 510, LIS 520, LIS 526, LIS 530, LIS 550, LIS 587
2. *Law Librarianship Courses (16 credits)*: LIS 592, LIS 593, LIS 594, LIS 595. The final degree project is completed as part of LIS 595.
3. *Internship (4 credits)*: directed fieldwork (LIS 590)

Master of Science in Information Management

MSIM Adviser
420 Mary Gates Hall, Box 352840
(206) 543-1794
msim@uw.edu

Admission Requirements

1. Current resume highlighting any relevant work experience; volunteer activities; and honors, awards, and presentations
2. Three letters of recommendation
3. Personal statement of educational and professional goals
4. Official transcript from each relevant institution attended
5. GRE or GMAT scores. Applicants with an earned doctorate (PhD, MD, JD) are not required to submit GRE or GMAT scores.
6. Non-native English speakers must fulfil the English language proficiency requirement. See <http://www.grad.washington.edu/policies/memoranda/memo08.shtml>
7. Mid-career applicants must show five years of relevant work experience in management or technology.

Degree Requirements, Full-Time Option

65 credits minimum

1. *Core Curriculum*: IMT 500, IMT 535, IMT 55, IMT 570
2. *Capstone (5 credits)*: INFX 595, INFX 596
3. *Electives (24 credits)*: Students select a specialization specific to their interests and career goals, or choose more broadly from across specializations. Specializations include data science, information architecture, information security, user experience design, and information management and consulting.
4. *Internship*: Structured around IMT 590. While not required, internships are strongly encouraged. Internship credits fall under electives.

Degree Requirements, Mid-Career Option

47 credits minimum

1. *Core Curriculum (16 credits)*: IMT 500, IMT 535, IMT 550, IMT 570
2. *Capstone (optional 5 credits)*: INFX 595, INFX 596
3. *Electives (26 credits)*: Students select a specialization specific to their interests and career goals, or choose more broadly from across specializations. Specializations include data science, information architecture, information security, user experience design, and information management and consulting.

All students in the MSIM program may elect to complete one or more of the following specializations:

- a. *Date Science and Analytics (19-20 credit)*: Methods, tools, and frameworks for analyzing and deriving insight from large-scale, heterogeneous data.
- b. *Information Architecture and Organization (17-20 credits)* Assessing existing information structures and creating new systems to effectively structure information.
- c. *Information Management and Consulting (18-20 credits)*: Developing and managing information policies, strategies, innovations, projects, and initiatives in public, private, and non-profit institutions.
- d. *Information Policy and Society (13-17 credits)*: Strategies and processes for critical analysis, development, and management of information policies and social, cultural, and policy issues.
- e. *Information Security (9 credits)*: Quality, security, and appropriate use of information assets.
- f. *User Experience (20-21 credits)*: Designing, prototyping, and formally evaluating interactive information interfaces, systems, and experiences from a user-centered perspective.

For more information visit <https://ischool.uw.edu/academics/msim/curriculum/specializations>

Doctor of Philosophy in Information Science

Adviser

420 Mary Gates Hall, Box 352840

(206) 543-1794

ischoolphd@uw.edu

Admission Requirements

1. Current curriculum vitae highlighting any academic and/or work experience, honors, publications, presentations, and research experience
2. Three letters of recommendation
3. Personal statement of educational and professional goals
4. Official transcript from each relevant institution attended
5. GRE Scores. Applicants with an earned doctorate (PhD, MD, JD) are not required to submit GRE scores.
6. TOEFL score (for international students)

Degree Requirements

90 credits minimum

1. *Required courses:* INSC 500, INSC 501, INSC 570, INFC 571, INSC 572; two research practica; two teaching practica
2. Additional elective coursework selected in consultation with faculty advisers
3. 18 graded credits in courses at the 500 level and above (taken prior to general examination)
4. 60 credits taken prior to general examination
5. 27 dissertation credits (INSC 800)
6. Preliminary review determined by a School-based advisory committee at the end of the required first year of full-time study
7. General examination
8. Final examination

Financial Aid

For information on submitting the FAFSA, contact the UW Financial Aid Office, 105 Schmitz Hall. Information also available [online](#).

Graduate Assistantships and Scholarships

Financial aid options for full-time students may include graduate assistantships and scholarships. Graduate assistants generally work 220 hours per quarter, and receive a tuition waiver as well as a monthly salary and medical benefits. Prospective MLIS and MSIM students may apply during the admission process and throughout the year as other positions become available. Visit the Student Employment Opportunities page at ischool.uw.edu/jobs/students. All students admitted to the PhD program are guaranteed a minimum four years of funding.

MLIS and MSIM admission committees award a limited number of merit-based scholarships to incoming students. Continuing students also may apply for scholarships. All eligible applicants and students are encouraged to complete the FAFSA each year.

Additional scholarship and financial aid information:

MLIS, <https://ischool.uw.edu/future/mlis/financial-aid>

MSIM, <https://ischool.uw.edu/future/msim/financial-aid>

PhD, <https://ischool.uw.edu/future/phd/funding>

Special Research Facilities

An extensive software collection, a state-of-the-art computer classroom, an innovative Technology Exploration (TE) lab, a DataLab for Data Science and Analytics, and excellent network connectivity. Students have access to software applications including titles for database and text management, programming, graphics, multimedia, web development, Internet exploration and collaboration, and office productivity; also, access to bibliographic databases and commercial information services.

A dedicated information science research facility at the Roosevelt Commons Building.

A dedicated information science research facility in Bloedel Hall.

Continuing and Professional Education

The Information School, working with UW Professional and Continuing Education, offers classes, workshops, and certificate programs for continuing education and professional development. Current certificate programs include web technology solutions; information assurance and cybersecurity; and school library professional. Contact UW Professional and Continuing Education, 4311 11th Avenue NE, Box 354978, University of Washington, Seattle, WA 98105. Phone: (206) 543-2320 or see www.pce.uw.edu/.

Interdisciplinary Graduate Programs

Astrobiology

Program Overview

C319 Physics-Astronomy Building

Astrobiology - the study of life in the universe - investigates the wide range of multidisciplinary factors that may influence the origin and evolution of life on Earth and beyond. Such investigation demands intense interdisciplinarity, for which the astrobiology program at the UW is creating a community of scholars, investigators, and educators.

Astrobiology at the UW builds on the strengths of traditional academic structure to transcend the limits of specialization.

The graduate certificate program offers an interdisciplinary curriculum in cooperation with the PhD programs of participating departments. Participating graduate students gain personal and professional skills necessary to successfully engage in multidisciplinary collaborations.

Graduate Program

Graduate Program Coordinator
C304 Physics-Astronomy, Box 351580
(206) 685-2392
office@astro.washington.edu

Graduate Certificate Program

Participating UW academic departments: Aeronautics and Astronautics; Astronomy; Atmospheric Sciences; Biochemistry; Biology; Genome Sciences; Earth and Space Sciences, History (of Science), Microbiology; Oceanography

Admission Requirements

Students must be accepted for admission by the PhD program of one of the departments listed above.

Certificate Requirements

15 credits minimum

1. ASTBIO 501, ASTBIO 502
2. Three astrobiology-only seminar series (1 credit)
3. One approved cognate course (see program website for current list of cognate courses)
4. Research rotation in an area outside the student's home discipline (one quarter, 3 to 10 credits)

5. Minimum three workshops comprising the capstone experience (non-credit)
6. Astrobiology ethics seminar (variable credits)

Additional credits may be earned through:

- Other approved cognate courses
- Astrobiology public lecture series (1 credit)

Minimum cumulative 3.00 GPA for all required courses and minimum 2.7 grade for each elective course.

Biomolecular Structure and Design

N107 Foege, Box 355061

The department's graduate program educates doctoral students for careers involving teaching or research in the biomedical sciences. Graduates have a broad knowledge of biological structure at all levels, from the molecular to the human anatomical, with a major emphasis on the cellular level.

Students select research and teaching options. Research options provide training for a student in one or two of the following areas: cell and developmental biology, neurobiology, quantitative biology, cellular immunology, molecular biology, and macromolecular structure. Teaching options prepare the student to teach in one of the anatomical sub-disciplines: human anatomy, neuroanatomy/neurobiology, histology, embryology/developmental biology, cell biology, and macromolecular structure.

Graduate Program

Graduate Program Coordinator
G514 Health Sciences, Box 357420
206-543-5474

Master of Science

Admission Requirements

1. Minimum 3.00 GPA
2. Bachelor's degree in one of the following or a related area: chemistry, biology, physics, biochemistry, or biophysics.
3. GRE
4. Minimal course requirements for successful applicants:
 - a. Chemistry: general, organic, and physical
 - b. Physics: one year
 - c. Mathematics: one year of calculus; multivariable calculus and/or linear algebra strongly recommended
 - d. Biology and/or biochemistry: one year general biology plus one advanced course in biology or biochemistry
5. Undergraduate research experience strongly recommended
6. International students must have a minimum score on one test as follows: 7.0 IELTS; 92 TOEFL iBT; 237 TOEFLC; 580 TOEFL; 90 MLT.
7. International students planning to study with BMSD faculty in the Chemistry Department must have a minimum score on one test as follows: 26 on the speaking portion of the TOEFL iBT; 7.0 on the speaking portion of the IELTS; 70 on the Versant English Test; 55 on the TSE; 230 on the SPEAK test administered at the UW.

Degree Requirements

36 credits

1. *Required courses:* BIOC 530; BMSD 540, BMSD 541, BMSD 542; BMSD 520 taken every quarter
2. 12 graded elective credits covering at least three of the following four BMSD topics: biomolecular structure, techniques in biomolecular structure, molecular and cellular biology, and chemistry
3. At least one sequence of Biomedical Research Integrity workshops in the first or second year, offered summer quarter each year.
4. *Teaching:* serve as teaching assistant two quarters
5. *Research:* rotate through a minimum of two and a maximum of three participating laboratories during the first year. Students may also do an early rotation during summer quarter.

Biology Teaching

Program Overview

The Biology Teaching Group offers an interdisciplinary master of science degree for teachers. Although designed specifically for biology teachers in K-12 schools and community colleges, other life science educators, such as those in environmental learning centers, may find the program especially worthwhile. Each student performs an in-depth study of a biological science problem in the context of its relevance to the teaching of biological science.

Graduate Program

Graduate Program Coordinator
222 Hitchcock, Box 355320
(206) 543-1689

Master of Science

Admission Requirements

1. Secondary teaching certificate or evidence of professional involvement in K-12 or public education
2. Bachelor's degree in biology or closely related field. Students in related fields must have adequate preparation in science.
3. Minimum 3.00 GPA in the most recent 90 graded quarter credits (60 semester credits)
4. GRE test scores
5. Two or three letters of recommendation
6. Statement of professional experience and objectives

Degree Requirements

36 credits

1. Minimum 18 graduate-level credits; 18 graded credits (categories are not mutually exclusive)
2. All coursework at the 400 level or above
3. Minimum one course from each of the following areas: botany, genetics, microbiology, zoology; and from the College of Education. One course in biochemistry, unless already completed in prior academic work. Courses in biomedical history, fisheries, forest resources, environmental studies, and related fields may be appropriate.

Environmental Management

Program Overview

274 Mary Gates Hall

The graduate certificate in Environmental Management (EM) is an interdisciplinary program that prepares students to contribute to sustainable utilization and enhancement of the natural and human environment. Students acquire tools to solve real-world environmental problems via science, policy, and business. Keystone projects provide an opportunity for graduate students to gain practical experience working in an interdisciplinary team with students from a variety of disciplines, a faculty mentor, and in collaboration with a community partner. The EM program provides education and training opportunities for graduate students preparing for management careers in the non-profit, for-profit, and public sectors, as well as for those who contribute legal, scientific, and technical expertise to environmental decision making locally, nationally, and internationally. Key benefits include:

- Broadening knowledge, perspectives, and skills through core courses, keystone projects, and participation in a community of faculty and students from various departments that share the common goal of environmental stewardship and sustainability.
- Gaining practical experience crafting interdisciplinary solutions to real-world environmental issues and making connections with community partners outside the University.
- A record on the transcript from the Graduate School documenting completion of the interdisciplinary program.

The flexible curriculum is suitable for students from many backgrounds, such as engineering, physical and natural sciences, public policy, economics, geography, public health, and political science, to name a few. There is no other comparable interdisciplinary experience currently available to graduate students at the UW.

Graduate Program

Graduate Program Coordinator
274 Mary Gates Hall
Box 352802
(206) 221-6129
envirmgt@uw.edu

Graduate Certificate

Admission Requirements

1. Enrollment in a graduate and professional degree program in any school of the UW
2. Completion of a one-quarter upper-level or graduate-level course in applied quantitative methods (e.g., microeconomics, numerical modeling, applied statistical methods) or pure quantitative methods (e.g., mathematics or statistics); or social or natural science
3. Facility with written argument and communication, demonstrated in the letter of application

Courses and projects prepare students to contribute legal, scientific, social science, and technical expertise to environmental decision making at the local, national, and international scales. Students

broaden their knowledge and skills base beyond their home discipline; read material from other fields with critical facility; understand and appreciate the goals and analysis methods common to other fields; and appreciate, communicate with, and collaborate with experts from other fields, who have different perspectives and priorities.

Certificate Requirements

Minimum 20 credits

1. Three core courses (9+ credits): courses vary by year
2. Team-based keystone project (8 credits): ENVIR 511, ENVIR 512
3. Electives (3+ credits): selected in consultation with the Graduate Program Coordinator and approved by the EM director

Health Services Administration

Graduate Program

Graduate Program Coordinator - In-Residence and Executive Programs
H660 Health Sciences, Box 357660
(206) 543-8778
mhap@uw.edu

Health Services Administration offers two tracks for earning a Master of Health Administration (MHA) degree: a traditional day program (MHA) and an executive program (EMHA).

The MHA provides the educational foundation for careers in management, planning, consulting, and policy-making in ambulatory care organizations, hospitals, long-term care facilities, mental health care organizations, government agencies, planning agencies, and other organizational settings in the healthcare field.

The program develops leaders prepared to transform healthcare organizations and systems at the local, regional, and national level. Interdisciplinary priority is evidenced by faculty assembled from the graduate schools of Public Health, Foster School of Business, Public Affairs, Nursing, Medicine, and Law, as well as from healthcare administration leaders in the Seattle metropolitan area.

Concurrent degree programs combining health administration with business, medicine, law, public health, or public administration are also an option for in-residence students. Many can be completed in three years of intensive academic study.

For in-residence MHA students, the two-year academic experience is augmented by a career development program with opportunities for mentorships with regional healthcare leaders, an internship experience in a health facility or agency – typically under the preceptorship of the administrator or director of that organization.

The Executive Master of Health Administration (EMHA) is primarily for mid-career physicians and other clinical practitioners, as well as experienced health services managers, who have demonstrated interest or competency in administration or management. The team-based learning model positions students for leadership roles within such an environment. Executive students build critical competencies while benefiting from the expertise already held among the working professionals in the classroom. EMHA classes convene in Bellevue, Washington, for a three-day period (Thursday through Saturday) once each month for 24 months. Additionally, once each week faculty lead students in a web-based session, ideal for practicing professionals who plan to continue their careers while gaining a graduate degree.

Both the MHA and EMHA programs are fee-based and administered in collaboration with UW Professional & Continuing Education. Complete application details are at www.mha.uw.edu and www.executivemha.edu.

Financial Aid

Students enrolled in both the MHA and EMHA programs are eligible for federal financial aid, as well as most other types of financial support not funded by state tuition revenues. When exploring financial aid options, students should emphasize they are applying for a fee-based program. Financial aid questions should be directed to the UW Office of Student Financial Aid (206) 543-6101, osfa@uw.edu.

Individual PhD Program

Graduate Program Coordinator
311 Loew Hall, Box 352192
(206) 543-6398

The Graduate School maintains a PhD degree granting unit, the Individual PhD (IPhD) program, for exceptionally able students in high academic standing whose objectives for study are so truly interdisciplinary that they cannot be met within one of the University units authorized to grant the PhD degree. The program is intended for dissertation topics which require supervision from two or more programs through which the University offers the PhD. Each individual program is designed by a student with input and continued guidance from the student's Supervisory Committee.

The IPhD program is not intended to be:

- a. a mechanism for offering the PhD degree within units which do not have their own authorized PhD programs
- b. used as an alternative for students unable to gain admission to an established program
- c. sufficient justification alone for admission into the program on the basis of placing faculty from more than one department on a Supervisory Committee

Because the University's primary commitment is to established disciplinary and interdisciplinary programs, the IPhD program is quite small. Unusual student ability and motivation, as well as an increased level of attention from the entire Supervisory Committee, are required for successful completion of an IPhD degree. Admission standards are intended to exceed those of established PhD programs, and applications are reviewed at several levels.

Applications are considered once a year; admission is competitive. All decisions are final with no appeal procedures available. A rejected application can be submitted in revised form another year though a second rejection is possible. Applicants are therefore encouraged to pursue their objectives within the University's established PhD programs whenever feasible.

Doctor of Philosophy

Admission Requirements

1. MA or equivalent in a discipline or field directly related to the proposed PhD work
2. Application deadline for autumn quarter admission is February 1. See application procedures at www.grad.washington.edu/students/interdisciplinary/iphd/index.shtml.

Degree Requirements

Specific coursework and areas of concentration are determined by the student's interests within the framework of the approved proposal. The Supervisory Committee functions as for any doctoral program, signs the forms ordinarily transmitted by the sponsoring academic unit, and takes responsibility for conducting an annual review of the student's progress and submitting a report to the Standing Review Committee. IPhD students must meet all program requirements as stipulated in the IPhD Program Manual as well as Graduate School doctoral requirements as stipulated in the current UW General Catalog.

A student's PhD Supervisory Committee, which consists of at least three members of the UW's Graduate School faculty as well as a representative of the Graduate School (GSR), must include Graduate Faculty

members from at least two University units which offer the PhD degree. For additional information regarding Supervisory Committees, refer to Graduate School Memo 13 or the UW General Catalog.

Molecular and Cellular Biology

Program Overview

The Molecular and Cellular Biology program (MCB) applies the techniques of molecular and cellular biology to advance the understanding of basic biological sciences. The doctoral program broadly trains students to think about science in a rigorous and critical manner. Since scientific methods, equipment, and knowledge are changing rapidly, students learn to focus on important issues in an evolving research environment. The program is appropriate for students interested in future careers in research and teaching in academia as well as biotechnology and pharmaceutical companies.

Twelve departments across three schools have faculty members actively pursuing research in molecular and cellular biology. They include [Biochemistry](#), [Bioengineering](#), [Biological Structure](#), [Biology](#), [Environmental Health](#), [Genome Sciences](#), [Immunology](#), [Microbiology](#), [Pathobiology](#), [Pathology](#), [Pharmacology](#), and [Physiology and Biophysics](#).

At the Fred Hutchinson Cancer Research Center (FHCRC), the divisions of basic sciences and molecular medicine participate in the joint Molecular and Cellular Biology graduate program. Shared FHCRC facilities are available for electron microscopy, flow cytometry, tissue culture, and image analysis. A biotechnology center for DNA and protein synthesis and sequencing, animal facilities, a biological production facility that focuses on monoclonal antibody production, extensive libraries, and a biocomputing center provide further support.

MCB has relationships with the Institute for Systems Biology (ISB) as well as Seattle Biomed, thus allowing MCB students access to laboratories conducting research using a systems approach to biology or a global focus on infectious disease.

Faculty Interests

Over 250 faculty members from the UW, the FHCRC, the ISB, and Seattle Biomed research molecular and cellular biology and are skilled in training graduate students. Faculty research interests include cancer biology; genetics: genomics and evolution; microbiology, infection, and immunity; molecular structure and computational biology; and neuroscience.

Graduate Program

Graduate Program Coordinator
T466 Health Sciences, Box 357275
(206) 543-0253
mcb@uw.edu

Doctor of Philosophy

Admission Requirements

1. Baccalaureate or advanced degree by the time of matriculation; degrees emphasizing biology, physical or natural sciences, and mathematics preferred.

2. GRE scores. General Test. A Subject Test (e.g., biology, biochemistry, chemistry) is not required but recommended.
3. Letters of recommendation
4. Statement of purpose
5. Personal resume

Degree Requirements

90 credits

1. *Credit Requirements:* 21 graded credits of coursework with 9 credits of the CONJ series and 12 credits of graded elective courses. MSTP students receiving a PhD through the MCB program must have 18 graded credits, and should petition MCB directors to accept medical school courses in lieu of the remaining 3 credits.
2. *First Year:* Complete most course requirements, select a permanent adviser, and establish a doctoral Supervisory Committee. A typical first-year class schedule includes six five-week modules of the MCB conjoint series, three lab rotations, three quarters of literature review and one or more graded elective classes. Following the third rotation, students generally pursue research.
3. *Second Year:* Form doctoral Supervisory Committee by the end of December, define doctoral projects, take additional elective courses, participate as teaching assistant for a minimum of one quarter, complete either a second academic teaching assistantship or an alternative education experience, and hold first committee meeting.
4. *Third Year and Beyond:* Complete the general examination. Focus on dissertation research. Final examination and dissertation.

Financial Aid

The MCB Program provides a stipend plus tuition and health benefits for the first year of study. Then students choose a doctoral committee, and subsequent years of support are provided by the department of the committee chair. Students maintaining satisfactory academic progress receive funding for the duration of their graduate training.

Museology

Graduate Program

The two-year, full-time MA program attracts students from a wide range of backgrounds including, but not limited to, art history, technology, zoology, anthropology, international studies, education, and business administration. Coursework provides the foundational knowledge for museum work, regardless of a student's area of expertise, while also creating an opportunity for students to become subject-matter experts. Many classes are project-based and connect students with working museum professionals.

Box 359485

(206) 616-1437

(206) 616-8280

uwmuse@uw.edu

washington.edu/museology/

Master of Arts

Admission Requirements

1. Admission is for autumn quarter only. Application deadline: January 15
2. Baccalaureate degree from an accredited college or university in the U.S. or its equivalent from a foreign institution
3. Minimum 3.00 (or B) GPA in most recent two years of study
4. Applicants whose native language is not English must demonstrate English language proficiency.

Degree Requirements

Minimum 60 credits

The museology graduate program takes two years to complete, consisting of six quarters of academic study and research. During the first year, students carry on average between 10 and 15 credits each quarter; during the second year, the number of credits may vary depending on research, practicum, and internship work. Students may enroll part time with permission from the program director

1. *Core*: MUS 500, MUS 599, MUS 601, MUS 700 (minimum 24 credits)
2. *Research and Evaluation*: MUS 570 (required), MUS 574, MUS 575, MUS 576 (minimum 4 credits)
3. *Organizational Development*: MUS 560, MUS 562, MUS 566, MUS 568, and approved leadership courses in other academic units (minimum 8 credits)
4. *Public Engagement*: MUS 520, MUS 524, MUS 528, MUS 588, MUS 594 (minimum 8 credits)
5. *Collections Stewardship*: MUS 540, MUS 541, MUS 542 (minimum 3 credits)
6. *Electives*: outside museology (minimum 10 credits)
7. Additional credits from items 1 through 6, above, to reach minimum 60 credits

Specialization in Museum Evaluation

Optional specialization that integrates strengths of mentoring, fieldwork, academic, and client-centered experiences. See program website for additional information.

Museology also offers a graduate certificate in museum studies for graduate students in other UW degree programs. To qualify, students take a specified minimum set of key courses in areas that emphasize either collection research and management, or museum administration and interpretation, to include hands-on work experience. The certificate program is not currently accepting applications.

Near and Middle Eastern Studies

Program Overview

The interdisciplinary PhD program in Near and Middle Eastern Studies is designed for students who wish to pursue research with a comparative perspective in Near Eastern languages and literature: Arabic, Hebrew, Persian (or Dari or Tajik), Turkish and Central Asian Turkic languages; Near Eastern linguistics; Islamic topics, namely, Islamic law, history, institutions, theology, and mysticism; comparative religion: (Judaism, Christianity, and Islam); and interdisciplinary investigations of modern topics using the social sciences. The program, administered by an interdisciplinary Graduate School faculty group, includes courses offered in the Department of Near Eastern Languages and Civilization, the Jackson School of International Studies, and other departments on campus. Students must take courses in both the humanities and social sciences.

Graduate Program

Graduate Program Coordinator
311 Loew Hall, Box 352192
(206) 543-6398

Doctor of Philosophy

Admission Requirements

1. MA or equivalent in a discipline or field directly related to the proposed PhD work
2. Third-year competence in a regional language, and reading knowledge of a second language pertinent to PhD research
3. Application deadline for autumn quarter admission is February 1. Application procedures are at www.grad.washington.edu/students/interdisciplinary/nme/application.shtml.

Degree Requirements

Minimum 90 credits

Specific coursework and areas of concentration determined by the student's interests within the framework of the degree and satisfactory progress requirements listed below.

1. Within 18 months of admission, demonstration of a general knowledge of history and culture in one of the following general fields: Islamic civilization; Arabic, Hebrew, Persian, Turkish, or Central Asian Turkic languages and literature; the modern Middle East; or comparative religion either through previous degree work or through examination.
2. Within three years of admission, completion of two advanced courses in the humanities, one in the Department of Near Eastern Languages and Civilization (NELC), and two advanced courses in the social sciences, one in the Department of History. These courses are in addition to work the student may have done at the BA and MA level.
3. Within three years of admission, completion of a graduate seminar. Two graduate seminars if none was taken at the MA level.

4. Study in three languages, two regional and one "Western" European other than English, such as French, German, Italian, Russian, or Spanish. The Supervisory Committee decides whether a fourth language is required and whether it is European or regional. Before the general examination (see below), the student completes the language requirements including the second-year level in a regional language different from the two languages offered at the time of admission if both were not regional languages.
5. Disciplinary method and theory requirements: ANTH 550 and POL S 491, or their equivalents in appropriate disciplines, strongly encouraged for all students conducting fieldwork or working with documents, whether social science or humanities focused, and for all social science-oriented students.

For students doing humanities-oriented research but not conducting fieldwork, two method and theory courses in the appropriate discipline or disciplines (e.g., comparative literature, philosophy).

6. Disciplinary core courses: Two disciplinary core courses in appropriate fields.

PhD Examinations and Dissertation

1. Preliminary examinations, three written and an oral.
2. General examination
3. Final examination, the PhD thesis defense

Annual Review: A subcommittee of the Near and Middle Eastern Studies program faculty meets each spring to review the progress of all students in the PhD program.

Neuroscience

Understanding the brain represents both a major scientific challenge and a wonderful research opportunity. Investigations into the mechanisms of neural function require an interdisciplinary approach using the knowledge base and techniques of anatomy, applied mathematics, biochemistry, engineering, molecular biology, physiology, pharmacology, and the behavioral sciences, among others.

Neuroscientists must use these different approaches in their research and training to make inroads toward solving major questions in neuroscience.

The UW's interdisciplinary graduate program in neuroscience encompasses laboratories of more than 140 faculty members in over 20 departments within the School of Medicine, College of Arts and Sciences, and College of Engineering, as well as at affiliate institutions across Seattle.

The program allows students to obtain broad training in the neurosciences through mentored research and a curriculum comprising required core courses as well as electives. Students also gain supervised teaching experience. Graduates of the program are prepared for a variety of careers involving academic, research, industrial, and public policy positions.

Graduate Program

Graduate Program Coordinator
T471Health Sciences, Box 357270
(206) 685-1647
neurogrd@uw.edu

Doctor of Philosophy

Admission Requirements

1. Baccalaureate or advanced degree; degrees emphasizing biology, physical or natural sciences, and mathematics preferred.
2. GRE scores: general test required; subject test not required
3. Minimum three (3) letters of recommendation
4. Statement of purpose and curriculum vitae detailing research experience and commitment to graduate study in neuroscience
5. Online application submitted by December 1 deadline. Applications received after December 1 may be considered at the discretion of the directors.

Applications received after the deadline are considered at the discretion of the directors.

Students who have emphasized either biological or physical sciences in their undergraduate careers are invited to apply. Applicants are requested to send a copy of their academic record, GRE scores (including, if possible, scores on a subject test such as chemistry, physics, molecular and cellular biology, psychology, or biology), and three letters of recommendation from the persons who can best evaluate their potential for success in graduate study. New students enter the graduate program September 15. Applications received on or before the deadline are given full consideration. Applications received after the deadline are considered at the discretion of the directors.

Degree Program Requirements

90 credits

1. *Credit Requirements:* 18 graded credits of coursework with NEURO core curriculum and 10 credits of graded/ungraded approved elective courses
2. *First Year:* NEURO 501, NEURO 502, NEURO 503, NEURO 504, NEURO 527, NEURO 545, NEURO 559, three 10-week laboratory rotations, and three quarters of the seminar series
3. *Second Year:* Form doctoral Supervisory Committee, define doctoral projects, take additional elective courses, participate in a teaching internship for a minimum of two quarters (or equivalent), and hold first committee meeting. Complete general examination and three quarters of the seminar series.
4. *Third Year and Beyond:* Focus on dissertation research. Schedule final examination.

Financial Aid

The NEURO program provides funding for students in good academic standing for the duration of their graduate training.

Nutritional Sciences

Department Overview

305 Raitt

The Nutritional Sciences Program embraces a holistic view of the study of foods and nutrition, inclusive of social, behavioral, and environmental sciences. The interdisciplinary perspective applied to studying foods and nutrients, dietary behaviors, food and policy environments, and food systems reveals complex problems spanning personal, public, and planetary health, and leads to novel and innovative solutions. The program offers an undergraduate major (BA) and minor; graduate degrees including the MS, MPH, and PhD; and graduate-level training leading to the Registered Dietitian (RD) or Registered Dietitian Nutritionist (RDN) professional credential.

Undergraduate Program

Adviser

305 Raitt, Box 353410

(206) 221-8526

ugnutr@uw.edu

Nutritional Sciences offers the following undergraduate programs

- A bachelor of arts in food systems, nutrition, and health
- A minor in nutrition

Bachelor of Arts

Suggested First-and Second-Year Courses: anthropology, economics, environmental science, geography, nutrition, political science, public policy, sociology, sciences, statistics, composition or writing, distribution of general education courses as well as coursework that develops analytical, critical thinking, and communication skills.

Department Admission Requirements

1. NUTR 200
2. English composition (5 credits) with minimum 2.0 grade
3. Minimum 45 credits
4. Minimum 2.00 cumulative GPA
5. Upon completion of the above, students may declare the major at any time.

Major Requirements

84-85 credits

1. Science Literacy (10 credits)
 - a. BIOL 118 (preferred), or BIOL 180, or BIOL 161/BIOL 162 (through AP credits) (5 credits)

- b. CHEM 120, or CHEM 142, or CHEM 145 (5 credits)
2. Interdisciplinary Breadth (15 credits)
 - a. ECON 200, or FISH 230/ECON 230, or ESRM 235/ECON 235/ENVIR 235 (5 credits)
 - b. Approved courses representing areas that influence food systems. See adviser or website for current approved list. (10 credits)
3. Research Methods and Technologies (9-10 credits)
 - a. *Statistics*: BIOST 310, or QMETH 201, or Q SCI 381, or STAT 220, or STAT 221, or STAT 311 (4 or 5 credits)
 - b. *Methods*: ANTH 403, or BIO A 420, or ENVIR 250, or GEOG 425, or SOC 300 (5 credits)
4. Food Systems Core (30 credits with a minimum cumulative 2.00 GPA): NUTR 200, NUTR 302, NUTR 303, NUTR 402, NUTR 412, NUTR 493
5. Upper-Division Electives (20 credits): Organized around concentration areas. See adviser or website for current approved list.

Satisfactory Progress and Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Minor in Nutrition

Provides a foundation of knowledge in nutrition, food systems, and population health, Presents a multidisciplinary perspective on the broad field of nutritional sciences, including the interplay of food and nutrition, human behavior, business, culture, and the environment.

Minor Requirements: 25 credits

1. Core (5 credits): NUTR 200, NUTR 400
2. Electives (20 credits): selected from an approved list. See [website](#) for approved list.
3. Minimum 13 credits from School of Public Health
4. Minimum 15 credits upper-division courses
5. Minimum 15 credits outside student's major requirements
6. Minimum 15 credits in residence through the UW
7. Minimum 2.00 cumulative GPA for courses applied toward the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Food Studies, Nutrition, and Health, an interdisciplinary liberal arts major, exposes students to a complex and comprehensive model of the intersections and relationships among food, policy, labor, social justice, economics, the environment, culture, and health to prepare them to address issues such as domestic and global food and nutrition security.
- *Instructional and Research Facilities*: The School of Public Health includes over 30 research centers.
- *Honors Options Available*: See adviser for details.

- *Research, Internships, and Service Learning:* Experiential learning is available through service-learning, hands-on laboratories, and real world problem-solving activities throughout the core courses. See adviser for details.
- *Department Scholarships:* See adviser for details.
- *Student Organizations/Associations:* See adviser for details.

Graduate Program

Graduate Program Coordinator
305 Raitt, Box 353410
(206) 543-1730
nutr@uw.edu

Nutritional Sciences, an interdisciplinary program in the School of Public Health, offers Master of Science (MS), Master of Public Health (MPH), and Doctor of Philosophy (PhD) degrees. The program is designed for students who wish to pursue (1) advanced training in nutritional science or clinical research, (2) nutritional epidemiology and diet-disease interactions, or (3) public health nutrition practice.

The Graduate Coordinated Program in Dietetics (GCPD) combines the MS, MPH, and PhD programs with a supervised practice experience (internship equivalent), which gives students eligibility to take the national registration examination to become a Registered Dietitian (RD). The GCPD includes additional coursework and a nine-month practice experience at regional community, clinical, and food service facilities.

Admission Requirements for All Graduate Programs

1. Bachelor's degree in any field. Most applicants to the PhD program hold a master's degree in nutrition or a related discipline.
2. Completion of the following courses before entering: nutrition (completed at time of application), general chemistry, organic chemistry, biochemistry (two quarters or 1 semester), physiology
3. Additional requirements for international applicants whose native language is not English: TOEFL scores: 580 paper or 92 iBT
4. The following prerequisite courses, if taken more than 10 years before entering, must be retaken: nutrition, biochemistry, human physiology.
5. Minimum 3.00 GPA for final 90 quarter credits (60 semester). Applicants with a GPA below 3.00 may be considered if their overall application has exceptional strengths.
6. GRE (general examination) scores
7. Additional requirements for the GCPD program: courses - psychology, microbiology, food science (with laboratory), management of nutrition services; courses that must be retaken if completed more than 10 years before entering – microbiology, management of nutrition services, food science with laboratory; other requirements – National Background Check, ServSafe Manager Certificate. For GCPD prerequisites, appropriate professional use of each course may suffice as meeting the requirement.

Master of Public Health

Prepares students for careers in governmental agencies, academic institutions, healthcare systems, non-profit organizations, and other community settings by providing interdisciplinary coursework and training in public health and nutritional sciences.

Degree Requirements

64 credits

1. *Public Health Core:* BIOST 508, ENV H 511, EPI 511, HSERV 511, HSERV 579
2. *Nutritional Sciences Core:* NUTR 500, NUTR 513, NUTR 520, NUTR 521, NUTR 522, NUTR 529, NUTR 531, NUTR 562
3. *Additional Requirements:* NUTR 526, NUTR 532, NUTR 595
4. *Electives:* courses numbered 500 and above with School of Public Health prefixes – BIOST, ENV H, EPI, G H, HIHIM, HSERV, HSMGMT, NUTR, PABIO, PHG, SPH (2 credits)
5. *Capstone or Thesis:* NUTR 596 or NUTR 700 (9 credits)

Master of Science

Prepares students to use evidence-based approaches in contributing to the field of nutritional sciences and its application in healthcare delivery and community settings.

Degree Requirements

45 credits

1. *Public Health Core:* BIOST 508, EPI 511, HSERV 579
2. *Nutritional Sciences Core:* NUTR 500, NUTR 513, NUTR 520, NUTR 521, NUTR 522, NUTR 529, NUTR 531, NUTR 562
3. *Electives:* courses numbered 500 and above with School of Public Health prefixes – BIOST, ENV H, EPI, G H, HIHIM, HSERV, HSMGMT, NUTR, PABIO, PHG, SPH (4 credits)
4. *Capstone or Thesis:* NUTR 596 or NUTR 700 (9 credits)

Doctor of Philosophy

Prepares students to expand the base of knowledge in nutritional sciences and to apply this knowledge in public health and clinical healthcare settings through interdisciplinary training. Designed to assist students in (1) gaining an advanced understanding of nutrition and metabolism, and related biological, biochemical, molecular, and behavioral sciences; (2) acquiring skills in research methods; (3) developing timely and original hypotheses in nutritional sciences. Also, seeks to meet the substantial state, regional, and national need for doctorally prepared faculty in schools or departments of nutrition and health sciences and for leadership positions in agencies.

Degree Requirements

105 credits

1. *Nutritional Sciences Core:* NUTR 500, NUTR 513, NUTR 520, NUTR 521, NUTR 522, NUTR 529, NUTR 531, NUTR 562, and 12 additional credits from NUTR courses numbered 500 and above
2. *Other Sciences:* courses numbered 400, 500, and above from BIOC, BIOL, BIOST, GENOME, EPI, G H, HSERV, HUBIO, IMMUN, MICROM, NUTR, and PATH; or other courses approved by the faculty adviser. (22 credits)
3. *Epidemiology:* EPI 511 or EPI 512, and EPI 513

4. *Biostatistics*: BOST-prefix courses numbered 500 and above (8 credits)
5. *Research Methods*: 8 credits from among EPI 517, EPI 519, EPI 548, EPI 549; or other courses approved by the faculty adviser
6. *Public Health Core*: HSERV 579
7. *Dissertation*: NUTR 800 (27 credits)

Pathobiology

Graduate Program

Graduate Program Manager
310c Harris Hydraulics, Box 357965
(206) 543-4338
pabio@uw.edu

Offers graduate training in the application of basic biomedical research to diseases of public health interest. The program involves core courses to develop a fundamental understanding of basic cellular and molecular processes and techniques important in the application of basic biomedical research to diseases; laboratory experience to learn how to collect, analyze, interpret, and use data for solving problems; and opportunities to develop skills in communicating research findings through oral and written presentations.

Master of Science

Develops an understanding of applications of molecular biology to public health, epidemiology, and cellular or antigenic analysis, and microbiology or immunology. Develops basic research skills and understanding scientific method. Students fulfill course requirements the first year, then propose and complete a thesis that includes an original research project.

Admission Requirements

Not currently accepting students into the master's program; however, this remains an option under specific circumstances, such as failure to pass the general examination or changes to academic goals.

Degree Requirements

Minimum 60 credits

1. *Required Courses:* PABIO 500, PABIO 551, PABIO 552, PABIO 553, EPI 511, PABIO 580, PABIO 581, PABIO 582, PABIO 590, PABIO 700
2. *Electives:* Additional courses in pathobiology or the biomedical sciences to fulfill the graded course requirement, to encompass the interests of the student, or to fulfill any additional requirements set forth by the student's committee.

MS Thesis Research Proposal: Completed by the end of the fourth quarter of the first year; should contain the following, in this order:

1. Brief synopsis of background relevant to the project.
2. Summary of preliminary experiments.
3. Description of experiments planned for the next year.

MS Thesis: Provided to the MS advisory committee two weeks prior to the oral presentation.

MS Oral Presentation and Defense: Formal seminar

Doctor of Philosophy

Develops skills concerning pathogenesis and infection. Also develops familiarity with the paradigms for control, prevention, and treatment; develops an understanding of epidemiology and disease processes; teaches basic methodologies used in this research including relevant areas of molecular biology, bacteriology, cell biology, virology, epidemiology, and biostatistics; and develops familiarity with the major classes of pathogens.

Admission Requirements

1. *Personal statement*: Representation of the student's background and readiness for graduate study in pathobiology.
2. Unofficial transcripts from all collegiate institutions attended
3. Three letters of recommendation.
4. Curriculum vitae
5. Official GRE scores
6. Applicants whose native language is not English must demonstrate English language proficiency, to include a minimum 600 TOEFL score on the paper test or 250 on the computerized test, with scores not more than two years old.

Degree Requirements

90 credits minimum

1. *Required Courses*: PABIO 500, PABIO 551, PABIO 552, PABIO 553, , PABIO 580, PABIO 581, PABIO 582, PABIO 590, PABIO 598, PABIO 600, PABIO 800; EPI 511; either IMMUN 441 or IMMUN 532
2. PABIO 580 every winter quarter (excused while writing dissertation); PABIO 581 every autumn quarter the first three years; PABIO 582 every spring quarter till the general examination is completed; and PABIO 590 every spring quarter the first four years. Students present research at the Graduate Research Symposium annually after the first year.
3. *Electives*: PABIO 536 and UCONJ 510 strongly recommended
4. *Recommended tracks for elective credits*:
 - a. *Eukaryotic Pathogens*: IMMUN 532, EPI 520, EPI 532, MICROM 444, CONJ 531-CONJ 548
 - b. *Bacterial Pathogens*: IMMUN 532, MICROM 553, MICROM 555, EPI 520, EPI 529, GENOME 576, select modules from the molecular conjoint series (e.g., CONJ 548, CONJ 549, CONJ 557)
 - c. *Viral Pathogens*: IMMUN 532, MICROM 540, CONJ 531-CONJ 544, MCB 532, EPI 520, EPI 524, EPI 530

Research Facilities

Research facilities are geographically dispersed - faculty offices and laboratories at a number of locations around the Seattle area and the UW campus, to include: Health Sciences Building, Center for Infectious Disease Research, Seattle Children's Research Institute, Fred Hutchinson Cancer Research Center, Harborview Medical Center Research and Training Building, the Brotman Building (South Lake Union), Infectious Disease Research Institute, Institute for Systems, Biology, and Western Fisheries Research Center.

Financial Aid

The department provides a research assistantship that offers a competitive salary, tuition waiver, and health insurance. Students with satisfactory academic progress can anticipate funding for the duration of their studies.

Public Health Genetics

F363 Health Sciences Building

Program Overview

Health Sciences Building, H wing, room 655, office D
Box 357232

Public health genetics is an emerging field that applies advances in human genetics, genomics, and molecular biotechnology to improve public health and prevent disease.

The UW's Institute for Public Health Genetics (IPHG), alone among U.S. universities, offers graduate degrees at both the master's and PhD levels.

IPHG provides broad, interdisciplinary training for future public health professionals, facilitates research in public health genetics, and serves as a resource for continuing professional education.

Graduate Program

Graduate Program Coordinator
HSB 655, Box 357232
206-616-9286
phginfo@uw.edu

Master of Science, Genetic Epidemiology

Draws on training in epidemiology, genetics, and biostatistics and examines how genes and environmental factors interact to influence health and disease in human populations. Training focuses on methods to identify genetic influences on human diseases and interactions with environmental exposures in populations, emphasizing applied research skills.

Admission Requirements

1. Statement of purpose
2. Official sealed transcripts, including courses, grades, and degrees from all institutions attended after secondary school
3. GRE scores. Required for all applicants, except those who hold a U.S. doctorate (neither the MCAT nor ECFMG are acceptable substitutes for the GRE).
4. International applicants: official TOEFL scores
5. Three letters of recommendation from professors, supervisors, or others who know the student's work reasonably well. At least two letters should be academic references.
6. Recent copy of resume or curriculum vitae

Degree Requirements

68 credits minimum

1. *Required Courses:* PHG 511/EPI 517, PHG 519 or BOST 551, STAT 550/BOST 550, EPI 573/ENV H 571, EPI 512, EPI 513, BOST 517, BOST 518, PHG 536 or GENOME 559, GENOME 552, PHG 512, PHG 527/B H 527, PHG 580 (44.5 credits)
2. *Elective Courses:* Excludes independent study and thesis credits; must be in epidemiology, biostatistics, genetics, public health genetics, or be related to the biological, physical, or social/behavioral factors which affect health, in particular ethical, legal and social issues related to genetic epidemiology.
3. *Thesis:* PHG 700 (9 credits minimum)

Master of Public Health, Public Health Genetics

Focuses on genomics in public health (genetic and molecular epidemiology, pharmacogenetics, clinical aspects of genomics) and implications of genetics for society (ethics and social science, law and policy, health economics, and outcomes research).

Admission Requirements

Same as for Master of Science, Genetic Epidemiology, shown above

Degree Requirements

63 credits

1. *Required Courses:* (38 credits): EPI 511, BOST 508 or BOST 511, HSERV 511, ENV H 511, HSERV 510 or GH 531/EPI 539, PHG 511, PHG 512, PHG 513, PHG 521 or PHG 527, PHG 523, PHG 580
2. *Electives* (13 credits): may combine approved elective courses
3. *Master's Practicum* (3 credits minimum): PHG 595
4. *Thesis* (9 credits minimum): PHG 700

Doctor of Philosophy

Focuses on genomics in public health (genetic and molecular epidemiology, pharmacogenetics, clinical aspects of genomics) and implications of genetics for society (ethics and social science, law and policy, health economics, and outcomes research).

Admission Requirements

Same as for Master of Science, Genetic Epidemiology, shown above

Degree Requirements

90 credits minimum

1. *Required Courses:* EPI 511 or EPI 512 and EPI 513; BOST 508 or BOST 511 or BOST 517; ENV H 511 or ENV H 570; HSERV 510 or GH 531/EPI 539 or HSERV 511; PHG 511, PHG 513; PHG 551 or GENOME 565; PHG 512, PHG 521 or PHG 527; PHG 523, PHG 580 (36-40 credits)
2. *Recommended Courses:* GENOME 552, PHG 536, BOST 512/BOST 513, BOST 518 (16.5 credits)
3. *Electives:*(minimum 21 credits)
4. PHG 580: Required each quarter until preliminary examination is passed (minimum 6 quarters; minimum 6 credits)

5. *Preliminary Examination*: usually taken at end of second year
6. *Selective Courses for Core Knowledge Areas and Development of Dissertation Topic*: minimum 9 additional credits related to dissertation. Additional writing courses may be required. See list of example courses available on program website.
7. *General Examination*
8. *Dissertation*: PHG 800 (minimum 27 credits)
9. *Final examination/dissertation defense*

Certificate in Public Health Genetics

Available to students already enrolled in any other UW graduate degree program, the certificate provides training in three primary areas of public health genetics: Genetic Epidemiology; Pharmacogenomics; Ethical, Legal, and Social Issues in Genetics.

Admission Requirements

1. Completed application form
2. Typed statement of purpose (maximum one page)
3. Current UW graduate school transcripts

Certificate Requirements

12 credits

1. PHG 511, PHG 512, PHG 513, PHG 580 (12 credits)
2. PHG 580 taken a minimum three quarters
3. *Electives*: Students are encouraged to take other PHG courses

JD/MPH in Public Health Genetics

Admission Requirements

Acceptance into the JD program before requesting admission to the MPH degree program

Degree Requirements

Same courses as described above for the MPH in Public Health Genetics

Quantitative Ecology and Resource Management

Program Overview

The Quantitative Ecology and Resource Management (QERM) interdisciplinary graduate program offers students a unique opportunity to apply statistics, mathematics, and decision science to a broad range of problems in terrestrial and marine ecology, natural resource management, biometrics, and mathematical biology. The program attracts mathematically trained students interested in working on these problems, and biologically or environmentally trained students wishing to develop or enhance their quantitative skills.

The QERM program is interdisciplinary, bringing together diverse faculty from a wide range of academic areas such as statistics, applied mathematics, forestry, biology, aquatic and fishery sciences, oceanography, and marine affairs. This diversity provides strength to the program.

Graduate Program

Graduate Program Coordinator
304 Loew Hall, Box 352182
(206) 616-9571
qerm@uw.edu
depts.washington.edu/qerm

The Quantitative Ecology and Resource Management (QERM) Interdisciplinary Graduate Program offers students a unique opportunity to apply statistics, mathematics, and decision science to a broad range of problems in terrestrial and marine ecology, natural resource management, biometrics, and mathematical biology. The program attracts mathematically trained students interested in working on these problems, and biologically or environmentally trained students wishing to further enhance their quantitative skills.

The QERM program is interdisciplinary, bringing together diverse faculty from a wide range of academic areas such as statistics, sociology, anthropology, applied mathematics, forestry, biology, aquatic and fishery sciences, oceanography, and marine affairs. This diversity provides strength to the program.

Both a Master of Science and Doctor of Philosophy degree are offered; graduates are capable of continuing with the development and extension of biometrical and biomathematical modeling as they enter the educational, research, or private-sector work force.

Admission Requirements

1. Background in probability and mathematical statistics, linear algebra, and differential equations. Applicants with little or no statistical background are advised to take additional coursework prior to applying. Although not mandatory, this background makes a student's application more competitive.
2. Successful completion of the following coursework (or equivalent) prior to applying: MATH 126 (or equivalent); MATH 308 (or equivalent).
3. Strongly recommended: MATH 394-MATH 395; STAT 341-STAT 342, or STAT 481.
4. Also taken into consideration:

- a. Minimum 3.00 GPA in last 60 semester or last 90 quarter credits required.
 - b. Normally, completion of college-level courses in probability and mathematical statistics, linear algebra, and differential equations.
 - c. Scores on Graduate Record Examination (GRE). Competitive applicants generally score above the 75th percentile on the verbal and analytic sections, and above the 85th percentile on the quantitative section.
 - d. Minimum TOEFL score of 580 (237 for computer-based tests) - for international students only.
 - e. Knowledge of the intended area of study, including clearly written statement of objectives.
 - f. Recommendations from persons familiar with the applicant's academic ability and potential.
 - g. Admission is also dependent on program resources and fit between student interests and faculty research. Students should explore faculty research interests by reviewing the QERM website, depts.washington.edu/qerm, to determine if their area of research interest is conducted at the UW. Students are not required to enter the QERM program with a faculty adviser selected in advance. Typically students identify their research and faculty adviser during their first year of study.
5. Application deadline for autumn quarter is January 1.

Degree Requirements (for Master of Science and Doctor of Philosophy)

Required coursework reflects the expectation that the student already has a fundamental understanding of the principles of statistical inference and ecological modeling. Required coursework taken during the first year includes:

1. STAT 516 and STAT 517
2. IND E 513 or IND E 599 (offered alternating years)
3. AMATH 523 or AMATH 535 (offered alternating years)
4. QERM 514 and QERM 597
5. SEFS 540
6. BIOL 567/SEFS 567/FISH 567
7. Ecology elective

Following the first year of core coursework, students select elective coursework in an area of emphasis ranging from biometry, mathematical modeling, and resource management. Additional elective coursework in basic biology and ecology gives students greater insight into the environmental systems in which they expect to apply their quantitative training.

Master of Science

Minimum 36 credits

Requirements for successful completion of the master of science degree include:

1. Successful completion of a minimum 36 quarter credits, including 27 course credits and 9 thesis credits, with at least 18 credits of coursework numbered 500 or above, including a thesis
2. Receipt of numerical grades in at least 18 quarter credits of coursework taken at the UW

3. Completion of a seminar on results of the research and oral defense of the thesis
4. Completion of all University requirements for graduation

Doctor of Philosophy

Minimum 90 credits

Requirements for successful completion of the doctoral degree, minimum of 90 credits, include:

1. Successful completion of the QERM qualifying examinations at the PhD level, following the first year of study
2. Successful completion of a minimum of 90-quarter credits, including 27 dissertation credits. Completion of an MS degree may be applied toward one year of the PhD program. The core QERM courses must be taken if the student has obtained an MS from a different program
3. A seminar on results of the research and an oral defense of the dissertation
4. Completion of all University requirements for graduation

Financial Aid

The QERM program offers incoming students a nine month fellowship funded by the Graduate School. Students secure their own funding starting at year two, typically in the form of a teaching or research assistantship. Tuition and health insurance are typically included as part of the financial package. Funding decisions are made annually; attempts are made to continue support for students making satisfactory progress.

Urban Design and Planning

Program Overview

The PhD in Urban Design and Planning at the University of Washington is one of 39 PhD programs in urban and regional planning in North America, and one of the oldest, founded in 1967. This program brings together faculty from disciplines ranging from architecture to sociology to focus on the interdisciplinary study of urban problems and interventions. Covering scales from neighborhoods to metropolitan areas, the program addresses interrelationships between the physical environment, the built environment, and the social, economic, and political institutions and processes that shape urban areas. The breadth of this program permits students to pursue doctoral studies in the various aspects of urban design and planning as well as in a number of related social science, natural resource, and engineering areas.

The program seeks to prepare scholars who can advance the state of research, practice, and education related to the built environment and its relationship to society and nature in metropolitan regions throughout the world. It provides a strong interdisciplinary educational experience that draws on the resources of the entire University, and on the laboratory provided by the Seattle metropolitan region and the Pacific Northwest. The program emphasizes the educational values of interdisciplinarity, intellectual leadership and integrity, and the social values of equity, democracy, and sustainability. It seeks to promote deeper understanding of the ways in which public decisions shape and are shaped by the urban physical, social, economic, and natural environment. The program envisions its graduates becoming leaders in the international community of researchers, practitioners, and educators who focus on improving the quality of life and environment in metropolitan regions.

Graduate Program

Graduate Program Coordinator
311 Loew, Box 352192
(206) 543-6398

Doctor of Philosophy

Admission Requirements

Admission to the PhD program is based on evidence of promise of high scholarly achievement and research orientation. The applicant's statement of purpose, Graduate Record Examination (GRE) test results, letters of recommendation, and examples of past work constitute the basis for the admission evaluation.

Applicants typically have a master's degree in fields ranging from planning and public affairs to natural and social sciences. Students interested in a professional degree in urban design and planning should apply to the [master's program in urban design and planning](#).

Application Deadline: All application materials are due by February 1. International applicants are encouraged to submit the Graduate School on-line application form by November 1.

For more information, see the program's [website](#).

Degree Requirements

90 credits, divided into three phases.

Phase I: The Core Curriculum

The core curriculum defines the intellectual foundation of the program. While the program retains considerable flexibility in defining a research agenda within urban and environmental planning and policy, it provides a common foundation for all students to build upon. Students enter the program with a master's degree, in fields ranging from planning and public affairs to natural and social sciences. Depending on the academic preparation of the student, the core requirements can be met within one to two years.

Required Courses: Five courses, normally completed during the first year unless schedule conflicts make this infeasible. Courses from Phase II requirements may also be taken in the first year.

1. *Core Sequence:* URBDP 591, URBDP 592, URBDP 593
2. *Restricted Electives (before completion of Phase I):*
 - a. Qualitative Research Methods - one of the following: URBDP 598, GEOG 425, HIST 598, HSERV 526, POL S 493.
 - b. Quantitative Research Methods - one of the following: CS&SS 594, CS&SS 504, CEE 584

Phase II: Area of Study

Students develop with their Supervisory Committee a description of their proposed areas of study. These areas of scholarship must demonstrate an interdisciplinary research approach to an application within urban and environmental planning and policy. The description should develop a curriculum proposal approved by the Supervisory Committee that addresses the following advanced study requirements:

Curriculum Requirements: Seven courses and a teaching seminar, in addition to advanced courses directly related to the area of study selected by the student. Some courses may be taken in the first year.

1. Urban Processes and Patterns: Three courses – For course options, see program website at depts.washington.edu/urbdpphd/Phase_II.shtml
2. Research Design and Methods: Two courses – For course options, see program Website at depts.washington.edu/urbdpphd/Phase_II.shtml
3. Urban and Environmental Design and Planning: Two courses – For course options, see program Website at depts.washington.edu/urbdpphd/Phase_II.shtml
4. Teaching Methods: One teaching seminar and experience as a TA for at least one quarter, before completion of Phase III.

General Examination: A critical review of the literature in the area of study, developed by the student, which integrates interdisciplinary research on that area of study and identifies areas of potential research opportunity that may subsequently form the basis for a dissertation proposal. The review should demonstrate broad familiarity with relevant research in the chosen area, and with the range of theory and methods applied within the reviewed literature.

Phase III: Dissertation

Once the student passes the general examination, he or she is advanced to the level of doctoral candidate, and is expected to build on the critical review of the literature to develop a dissertation proposal. The dissertation proposal should demonstrate the characteristics of interdisciplinarity, relevance to urban and environmental planning and policy, and potential for contribution to scholarship.

Financial Aid

The interdisciplinary PhD program in Urban Design and Planning attempts to provide funding for doctoral program applicants in a way that makes the program attractive to the strongest potential applicants, ensures their effective mentoring while in the program, and actively engages and energizes faculty to improve the program and to bring research funding to support students.

Interschool of Intercollege Programs

Bioengineering

Department Overview

N107 William H. Foege Building

Bioengineering encompasses a wide range of activities in which the disciplines of engineering and biological or medical science intersect. Such multidisciplinary endeavors are yielding new discoveries and major advances that are revolutionizing the healthcare system. The Department of Bioengineering, housed jointly in the School of Medicine and the College of Engineering, provides a comprehensive, multidisciplinary program of education and research and is recognized as a leading bioengineering program in the world. Major areas of research and education include biomaterials and regenerative medicine, molecular and cellular engineering, technology for expanding access to healthcare, instrumentation, imaging and image-guided therapy, and systems, synthetic, and quantitative biology.

Undergraduate Program

Adviser

N107 William H. Foege Building, Box 355061
(206) 685-2000

bioeng@uw.edu

depts.washington.edu/bioe/programs/bachelors/bs.html

The Bioengineering program offers the following programs of study:

- Bachelor of Science in Bioengineering degree
- Bachelor of Science in Bioengineering degree with an option in nanoscience and molecular engineering
- Bachelor of Science in Bioengineering degree with an option in data science
- A five-year BS/MS option (consult website or adviser for details)

Bachelor of Science in Bioengineering

Department Admission Requirements

Engineering Undeclared Students

See section on College of Engineering Admission for additional details on Direct-to-College admission and placement process for Engineering Undeclared students. The deadline to submit a request for placement in an engineering major occurs annually on July 1.

If the number of Engineering Undeclared students requesting the major exceeds the department capacity for such students, a matching process is implemented. Factors considered include performance in prerequisite courses, quality of overall academic record, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Core courses within the department form a seven-quarter curriculum designed to start spring quarter of the sophomore year. Because the curriculum is cohort-based and all students start and proceed at the same pace, Engineering Undeclared students admitted to Bioengineering after their first year are expected to start the curriculum in spring quarter of their second year.

Engineering Undeclared students in good standing with respect to the continuation criteria described below may request placement into an engineering major after completion of minimum requirements as specified below:

1. ENGR 101 (1)
2. English composition
3. MATH 124, MATH 125, MATH 126 (or MATH 134, MATH 135, MATH 136)
4. CHEM 142 (or CHEM 143 or CHEM 145)
5. PHYS 121
6. One course from the list on this [website](#). Students are encouraged to choose a course required for graduation in the majors they are considering.
7. Minimum 2.0 grade in all courses used to satisfy placement requirements
8. Minimum 2.50 cumulative GPA in courses used to satisfy placement requirements
9. Minimum 12 credits as a matriculated UW student. Some departments require more credits. See department websites for details.

Students in good standing who do not meet the placement requirements by July 1 will be placed into a major on a conditional basis pending the completion of all placement requirements and readiness to begin the bioengineering core sequence of courses in the following spring quarter. Additional advising resources will be available to these students. See section on [College of Engineering Continuation Policy for Engineering Undeclared Students](#) for additional details.

Current UW Students and Transfer Students

The department follows a cohort model beginning in spring quarter. Transfer students, current UW students without Engineering Undeclared status, and current UW students with Engineering Undeclared status who are eligible to begin the bioengineering core sequence of courses in their first spring quarter may apply. Admission is competitive.

Core courses within the department form a seven-quarter curriculum designed to start in the spring quarter. Because the curriculum is cohort-based and all students start and proceed at the same pace, students admitted to Bioengineering are expected to start the bioengineering curriculum in spring quarter immediately following admission.

1. Admission is for spring quarter only. Application deadline: January 15
2. Course requirements: MATH 124, MATH 125, MATH 126; CHEM 142, CHEM 152, CHEM 162 (or CHEM 145, CHEM 155; or CHEM 143, CHEM 153); PHYS 121; 5 credits English composition. All courses completed prior to application deadline
3. Additional course requirements: AMATH 301 or CSE 142 and BIOEN 217; BIOL 180; CHEM 223 or CHEM 237; PHYS 122 - all completed or in progress at time of application; all completed prior to spring quarter
4. Grade requirements: Minimum 2.5 grade in CHEM 162; minimum 2.50 cumulative GPA in courses required for application

5. Strongly recommended: BIOEN 215 or ENGR 115 completed; and MATH 307 completed or in progress at time of application

Factors evaluated for admission include performance in prerequisite courses, quality of overall academic record, demonstrated ability to take at least 12 credits per quarter, record of honors, content of personal statement, applicable work or extracurricular activities, and other special circumstances as disclosed by the applicant.

Admission to Nanoscience and Molecular Engineering Option (NME): By self-selection. Normally occurs winter quarter of the junior year, upon completion of all bioengineering prerequisites and formal admission to the bioengineering major. Students declare the NME option with a department adviser.

Admission to Data Science Option (DS): By self-selection. Normally occurs winter quarter of the junior year, upon completion of all bioengineering prerequisites and formal admission to bioengineering major. Students declare the Data Science option with a department adviser.

Graduation Requirements

180 credits

Students follow requirements in effect at time of entry into the department.

General Education Requirements (105 credits):

1. *Areas of Knowledge:* 24 total credits in Visual, Literary, & Performing Arts (VLPA) and Individuals & Societies (I&S), with at least 10 credits in each area. 3 credits in Diversity (DIV), which can overlap with other areas of knowledge requirements.
2. *Written and Oral Communication (5 credits):* 5 credits English composition from approved University list. Additional writing credits are built into the major core courses.
3. *Mathematics (24 credits):* MATH 124, MATH 125, MATH 126; either MATH 307 or AMATH 351; either MATH 308 or AMATH 352; minimum 3 credits statistics from the following: STAT 390, IND E 315, STAT 311, or Q SCI 381
4. *Natural Science (44 credits):* CHEM 142, CHEM 152, CHEM 162 and CHEM 223 (or CHEM 237); PHYS 121, PHYS 122; BIOL 180, BIOL 200, BIOL 220
5. *General Electives (8 credits); (6 credits for the NME option)*

Major Requirements (75 credits):

1. *Engineering Fundamentals (4 credits):* AMATH 301
2. *Bioengineering Core (37 credits):* BIOEN 215 or ENGR 115; BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 400
3. *Bioengineering Capstone (7-10 credits):* One of the following options: (1) BIOEN 401 plus 9 credits of BIOEN 402; (2) BIOEN 404 and BIOEN 405; students taking BIOEN 404 and BIOEN 405 take three additional engineering elective credits from a departmentally approved list (see 5, below).
4. *Bioengineering Senior Electives (15 credits):* from designated 400-level and above BIOEN-prefixed courses. Refer to departmental list.

5. *Approved Engineering Electives (9-12 credits)*: Chosen from a departmentally approved list or from additional bioengineering senior elective credit. Students who take BIOEN 402 need 9 approved engineering elective credits; students who instead take BIOEN 404 and BIOEN 405 need 12.
6. *Grade Requirements*: Minimum 2.0 grade in each BIOEN-prefixed course applied to the major

Nanoscience and Molecular Engineering Option Requirements (77 credits):

1. *Engineering Fundamentals (4 credits)*: AMATH 301
2. *Bioengineering Core (37 credits)*: BIOEN 215 or ENGR 115; BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 400
3. *Bioengineering Capstone (10 credits)*: BIOEN 401, plus 9 credits of BIOEN 402.
4. *Nanoscience and Molecular Engineering Courses (21 credits)*: NME 220, NME 321, NME 421; minimum 15 credits of designated 400-level and above BIOEN-prefixed nano-molecular engineering courses; refer to departmental list. The senior capstone (10 credits from BIOEN 401 and BIOEN 402) must be in an NME area.
5. *Approved Engineering Electives (5 credits)*
6. Minimum 2.0 grade in each bioengineering course applied to the major

Data Science Option Requirements (82-85 credits):

1. *Engineering Fundamentals (4 credits)*: AMATH 301
2. *Bioengineering Core (37 credits)*: BIOEN 215 or ENGR 115; BIOEN 315, BIOEN 316, BIOEN 317, BIOEN 325, BIOEN 326, BIOEN 327, BIOEN 335, BIOEN 336, BIOEN 337, BIOEN 345, BIOEN 400
3. *Bioengineering Capstone (7 to 10 credits)*: One of the following options: (1) BIOEN 401 plus 9 credits of BIOEN 402; (2) BIOEN 404 and BIOEN 405
4. *Data Science Courses (minimum 23 credits)*:
 - a. *Introduction to Data Science*: STAT 180/CSE 180/INFO 180, INFO 201, or INFO 370
 - b. *Programming*: CSE 143 or CSE 163
 - c. *Machine Learning*: CSE 416/STAT 416, STAT 435, or INFO 371
 - d. *Societal Implications of Data Science*: SOC 225, B H 201, B H 311, or B H 444
 - e. At least one course each in two of the following data science areas (refer to eScience Institute list):
 - i. *Data Management*
 - ii. *Data Visualization and Communication*
 - iii. *Data Science in Bioengineering*: BIOEN 420, BIOEN 423, BIOEN 424, BIOEN 436, BIOEN 447, BIOEN 449, BIOEN 451, BIOEN 466, BIOEN 485, BIOEN 488, or BIOEN 492
5. *Electives*: Data Science courses on approved list of engineering electives may be used to satisfy requirements 5.a. and 5.b., below. See department for approved list and for appropriate course combinations to satisfy minimum major requirements.
 - a. *Bioengineering Senior Electives*: Designated 400-level and above BIOEN-prefixed courses (15 credits)

- b. *Approved Engineering Electives*: Chosen from departmentally-approved list of additional bioengineering senior elective credits. Students who take BIOEN 402 need 9 approved engineering elective credits, and students who take BIOEN 404 and BIOEN 405 need 12 credits.
6. Minimum 2.0 grade in each bioengineering course applied to the major

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Bioengineering students learn to apply engineering synthesis and analysis to biological problems and to glean design principles from nature to solve medical problems and create biomedical devices and materials. A key piece of the degree program is the senior capstone research and design project, through which students develop their knowledge and skills by joining in the department's cutting-edge research. Bioengineering graduates are prepared to enter graduate school, medical school, or the growing biomedical industry. The department's goal is to prepare students to be leaders and innovators in improving human health and healthcare. Bioengineering graduates have the ability to apply knowledge of mathematics, science, and engineering; the ability to design and conduct experiments, as well as to analyze and interpret data; the ability to design a system, component, or process to meet desired needs; the ability to function on multi-disciplinary teams; the ability to identify, formulate, and solve engineering problems; an understanding of professional and ethical responsibility; the ability to communicate effectively; the broad education necessary to understand the impact of engineering solutions in a global and societal context; a recognition of the need for, and an ability to engage in, life-long learning; knowledge of contemporary issues; the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice; an understanding of biology and physiology; the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology; the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interactions between living and non-living materials and systems.
- *Instructional and Research Facilities*: The department is housed in the Foege North building. Amenities include instructional laboratories, an advanced computing laboratory for class instruction and student use, a general computer laboratory for student use, a student work room, a seminar room, and meeting space. Departmental offices are also located in this building. Other laboratories are located in the College of Engineering and the School of Medicine. The Department of Bioengineering houses UWEB (University of Washington Engineered Biomaterials), participates in the Center for Nanotechnology, and sponsors many other research centers relating to our five thrust areas in computational bioengineering, distributed diagnosis and home healthcare, engineered biomaterials, medical imaging and image-guided therapy, and molecular bioengineering and nanotechnology.
- *Honors Options Available*: College Honors (Completion of both Interdisciplinary Honors and Departmental Honors requirements). Departmental Honors (see adviser for requirements). For Interdisciplinary Honors, see University Honors Program.
- *Research, Internships, and Service Learning*: Many undergraduate bioengineers are involved in internships. The department participates in the College of Engineering Co-op Program and maintains an internship website for majors.
- *Department Scholarships*: Several scholarships are available for majors.
- *Student Organizations/Associations*: The Biomedical Engineering Society (BMES), the campus chapter of the national professional organization, organizes social events as well as events that support student interest in medical school, graduate school, and industry.

Of Special Note: Courses on technology commercialization are available to seniors.

Graduate Program

Graduate Program Coordinator
N107 William H. Foege Building, Box 355061
(206) 685-2000
bioeng@uw.edu

The department offers the Master of Science (MS), the Master of Pharmaceutical Bioengineering (PHARBE), and Doctor of Philosophy (PhD) degrees.

Master of Science

The master of science provides breadth of knowledge of engineering, biology, and medicine, and depth of knowledge in a particular research area. The degree prepares students for careers in academic, industrial, or hospital environments.

Admission Requirements

International applications, deadline December 1; domestic applications, deadline December 15. Late and/or incomplete applications are not reviewed.

Required application items

1. Online application: www.grad.washington.edu/applForAdmiss.
2. Department of Bioengineering admission form
3. Statement of purpose
4. Resume/curriculum vitae
5. Three letters of recommendation
6. Unofficial transcripts only (official transcripts are requested once an offer has been made)
7. Official GRE scores (sent to code 4854, and must be sent before the deadline)
8. Official TOEFL scores (from international applicants only, and must be received before the deadline)

More information about the application is online at depts.washington.edu/bioe/education/prospective/educ_prospective.html. Materials sent in addition to those listed above are considered non-essential and do not enhance the application.

Required courses: ordinary differential equations, linear algebra, signal analysis, probability theory and statistics, programming, electrical engineering and physics, chemistry, materials science, rate processes and mathematics, and cell and molecular biology. Admitted students must be knowledgeable of these topics prior to entrance to the MS program.

Degree Requirements

36 credits

1. BIOEN 501, BIOEN 502, BIOEN 503 (12 credits); biostatistics; bioengineering seminar

2. BIOEN electives: (10 credits)
3. BIOEN 700
4. All core and elective courses taken for a numerical grade.
5. A single course may not count for two separate requirements.
6. One quarter teaching assistant

Master of Pharmaceutical Bioengineering

The Master of Pharmaceutical Bioengineering (PHARBE) is an evening degree program designed to enable working local engineers, scientists, researchers, and professionals in the biotechnology, pharmaceutical, and related industries to explore advanced education in the areas of molecular and cellular biology, drug discovery and design, pharmaceuticals, and translational pharmaceuticals. Professionals may also complete three certificate programs without applying for degree status.

Admission Requirements

1. BS degree or equivalent in a relevant science (field/research), public health (biomedical related) or engineering (field/research) related, or a BS degree or equivalent in unrelated field and two years' experience working within a scientific or engineering group for a biotechnology or pharmaceutical company or related industry. Clinical degrees are considered. Applicants who have a bachelor's degree other than a BS, professional experience, and who have completed recommended prerequisite coursework are also considered.
2. Minimum 3.00 GPA in the last 90 quarter credit hours (60 semester credit hours). Students who have a BA/BS degree with under a 3.00 GPA and have two years' work experience may be approved for graduate non-matriculated (GNM) status for basic biosciences. Students who receive a 3.0 or above in their basic biosciences courses under GNM status are considered for degree admissions.
3. Official GRE scores
4. One set of official (unopened) transcripts from each non-UW institution attended
5. *Prerequisite Course Requirements:* The following courses must be completed with a minimum 2.0 in each course before applying to the degree program. Students whose undergraduate degree majors are in engineering, biology, chemistry or pharmacy are exempt from the prerequisite course requirements.
 - a. *Calculus:* Minimum one quarter (or one semester) of college calculus
 - b. *Chemistry:* Minimum two quarters (one semester) of college general chemistry. Additional course in organic chemistry recommended.
 - c. *Biology:* Minimum one quarter (semester) of general biology
 - d. *Physics:* one quarter (PHYS 114).
6. Applicants are evaluated on professional experience, previous degrees earned, or most recent/undergraduate GPA, basic biosciences courses GPA (if applicable), letters of recommendation, statement of intent, and GRE test scores. Admission is not guaranteed.
7. Applicants who do not qualify for admission to the PHARBE degree program may be admitted to courses and/or to Pharmaceutical Bioengineering Certificate programs.
8. *English Proficiency:* Non-native English speakers are expected to have adequate English language proficiency. The Graduate School requires a TOEFL score of at least 580, unless applicants are citizens of Australia, Canada, Ireland, New Zealand, or the United Kingdom; or hold a bachelor's or advanced degree from an accredited institution in any of these countries.

Degree Requirements

Minimum 40 credits

1. *Basic Biosciences Curriculum (20 credits)*: Molecular and Cellular Biology I, Molecular and Cellular Biology II, Pharmaceutics I , Pharmaceutics II , Statistics and Experimental Design
2. *Advanced Tracks*: 16 credits from one of two advanced tracks in translational pharmaceuticals or drug discovery and design. (Students must complete all 20 credits of the basic biosciences core courses before enrolling in advanced track courses.)
 - a. *Translational Pharmaceuticals (16 credits)*: Preclinical Development , Process Development , Formulation and Delivery , Clinical Development
 - b. *Drug Discovery and Design (16 credits)*: Molecular Biotechnology , Drug Discovery & Design , Molecular Targets & Drug Classes , Systems Biology and Bioinformatics
3. Departmental Seminar (4 credits)
4. *Optional Capstone Project*: Professional capstone project in either the drug discovery and design orpProcess development courses.
5. Minimum 3.00 cumulative GPA

Doctor of Philosophy

Trains individuals for careers in bioengineering research and teaching. The program includes three major objectives: (1) breadth of knowledge about engineering, biology, medicine, and the interdisciplinary interface between these different fields; (2) depth of knowledge and expertise in a particular scientific specialty; (3) demonstrated independence as a bioengineering researcher. These objectives are fulfilled through a combination of educational and research experiences. The program is rigorous but maintains flexibility to accommodate qualified students from diverse academic backgrounds. Entrance to the PhD program may be made directly after the BS An optional dual PhD degree in bioengineering and nanotechnology is available; see www.nano.washington.edu.

Admission Requirements

See application process detailed in the MS section.

While a completed MS degree is not required before beginning the PhD, every graduate student must have the following courses as part of her or his undergraduate education: ordinary differential equations, linear algebra, signal analysis, probability theory and statistics, programming, electrical engineering and physics, chemistry, materials science, processes and mathematics, and cell and molecular biology. Admitted students must be knowledgeable of these topics prior to entrance to the PhD program.

Degree Requirements

90 credits

1. Required Courses
 - a. Molecular Bioengineering: BIOEN 501
 - b. Cellular Bioengineering: BIOEN 502
 - c. Systems Bioengineering: BIOEN 503
 - d. Biostatistics

- e. Bioengineering Seminar: BIOEN 510
- f. 16 credits of bioengineering elective courses, chosen in consultation with faculty adviser
- g. 27 credits of dissertation writing (BIOEN 800)

All core and elective courses must be taken for a numerical grade. A single course may not count for two separate requirements.

2. One quarter teaching assistantship

A student progressing well follows this schedule:

1. First Year: Complete one to three lab rotations and select a thesis adviser
2. Second Year: Pass the qualifying examination and form a Supervisory Committee
3. Third Year: Pass the general examination.
4. Fourth Year (and subsequent years): Make an annual progress report to, and receive feedback from, the Supervisory Committee.
5. Fifth Year: Defend the dissertation.

Medical Scientist Program

A Medical Scientist Training Program (MSTP) exists for the support of individuals interested in coordinated graduate school/medical school study leading to both the MD and PhD degrees. Students entering this highly competitive program are given an opportunity to pursue a flexible, combined course of study and research. Early inquiry is essential for this option. Contact the MSTP office at (206) 685-0762.

Research Facilities

As the department is established within the College of Engineering and the School of Medicine, bioengineering students have access to all engineering and health science departments and facilities. A wide range of technologies and virtually all aspects of biomedical research tools are available.

Financial Support

Financial support is available to qualified graduate students in the form of traineeships, fellowships, and teaching and research assistantships. Funding is derived from federal research and training programs, the Graduate School Fund for Excellence and Innovation, and programs sponsored by private agencies. Questions regarding financial support may be directed to the adviser.

Global Health

The Department of Global Health, established in 2007, bridges the schools of Medicine and Public Health, with a mandate to harness the expertise and interdisciplinary power of all 16 UW schools and colleges. The department is the second largest at the UW in terms of funding for research and training programs. Departmental efforts include 31 centers, programs, initiatives, and the Institute for Health Metrics and Evaluation.

The mission is to close the gap between the world's one billion people who experience relatively good health and the five billion who experience much lower levels of health, through teaching (education, training, and mentoring), research, and service programs.

The department offers an undergraduate minor, a Master of Public Health, and two PhD options: global health, and pathobiology. Four graduate certificate offerings are available for graduate students, as well as a global health pathway for UW medical students. Current and emerging focus areas include health metrics and evaluation, infectious diseases, workforce development, health system strengthening and implementation science, climate change, global trauma and violence, global medicines safety, and a strong cross-cutting focus on social justice and equity.

Undergraduate Program

The department offers the following program:

- A minor in global health

Minor

Minor Requirements (30 credits):

1. *Required courses (9 credits):* G H 101/GEOG 180/JSIS B 180; G H 201; and G H 210 or G H 410
2. *Perspectives in global health series (2 credits):* G H 401 and G H 402
3. *Electives (to bring total to 30 credits):* Minimum of one elective course from each of the four content areas selected from a list of approved courses available from the Department of Global Health website, globalhealth.washington.edu/academics/undergraduate-minor/requirements
4. Minimum 15 credits outside the student's major
5. Minimum 15 credits completed through the UW
6. Minimum 15 upper-division credits
7. Minimum 2.0 grade in courses applied to the minor

Graduate Program

Graduate Program Coordinator
1510 San Juan Road, Box 357965
(206) 897-1804
ghprog@uw.edu

Master of Public Health

The MPH program emphasizes a social justice approach to global health with a focus on the social, economic, and political determinants of health, and the history and context of global responses to health problems. The core curriculum develops competencies in the basic tools of public health, including epidemiology, biostatistics, global health systems, environmental health, and social behavioral sciences. Courses in research methods and management are also required. A practicum provides hand-on experience with local or international agencies engaged in global health activities, and academic coursework culminates with independent scholarship leading to a research or practice thesis. The curriculum is interdisciplinary, with faculty and courses from across campus including natural and social sciences and the humanities. Case studies and applied learning are common approaches.

Admission Requirements

Baccalaureate degree by the time of matriculation; some tracks require at least two years of relevant post-college work or volunteer experience prior to matriculation. Each MPH track has its own admission requirements.

1. Graduate School online application. Deadline midnight, December 1
2. Official GRE scores for applicants who have not already earned a doctoral-level degree (e.g., MD, PhD, JD) from a U.S. institution of higher learning
3. Proof of English proficiency, if applicable
4. Unofficial transcripts from each college or university attended
5. Three recent letters of recommendation, preferably from former supervisors and professors
6. Personal statement, including background, goals, and research interests
7. Resume - maximum three pages

Degree Requirements

63 credits, for all MPH tracks

Minimum 30 credits from graduate-level, in-classroom courses; at least 18 from global health in-classroom courses.

All tracks require a foundation course, epidemiology, biostatistics, environmental health, social and behavioral sciences, research methods, a practicum, and a thesis. Beyond shared requirements, each track also has its own set of requirements. See program website.

Doctor of Philosophy

Program Manager
Institute for Health Metrics and Evaluation
2301 5th Avenue, Suite 600, Box 358210
Seattle, WA
(206) 897-2870
ghpdh@u.washington.edu

In collaboration with the Institute for Health Metrics and Evaluation and Health Alliance International, the department offers a PhD program. Building on faculty expertise in metrics and implementation science, the program provides students innovative tools to advance global health solutions, and includes two emphasis areas:

Metrics: Students translate evidence into useful knowledge by learning and applying advanced quantitative methods, impact evaluation techniques, and analytic tools. Students design and develop innovative ways to tackle critical global health measurement challenges.

Implementation Science: Students identify and address barriers to effective implementation and scale-up of evidence-based interventions by developing and applying cutting-edge methodologies and analytical approaches.

For comprehensive information, see the PhD program website.

Admission Requirements

The department considers all indicators of future success, including past work, service, and research experience; level of enthusiasm and detail in letters of recommendation; previous academic records and performance on standardized tests; applicant's written statement of purpose.

Minimum Qualifications

1. Bachelor's degree from an accredited college or university in the United States, or its equivalent from a foreign institution. Strong candidates have prior master-level training or significant experience working in the global health field, ideally in a low-resource setting.
2. Demonstrated commitment to the field of global health
3. Minimum 3.30 cumulative GPA in previous undergraduate- and graduate-degree work, though competitive applicants normally present a minimum 3.70 GPA
4. GRE scores greater than or equal to 120 (700) on the quantitative section
5. English proficiency: TOEFL for students who have not completed a degree in an institution where English is the primary language of instruction.

Degree Requirements

Minimum 96 credits

1. *Coursework:* Minimum 27 dissertation credits, 37 credits in core requirements, 16 credits in area of emphasis, and remaining credits in electives. See details about curriculum and course paths on program website.
2. Preliminary written examination

3. General examination
4. Research and dissertation
5. Final examination

School of Law

School Overview

Dean

Kellye Y. Testy

Associate Deans

Steve Calandrillo
Penny A. Hazelton
Mary Hotchkiss
Peter Nicolas

Assistant Dean

Naomi Sanchez

Interim Assistant Dean

Stephanie Cox

Established in 1889, the School of Law is a member of the Association of American Law Schools and is on the American Bar Association's list of approved law schools. Graduates of the School are prepared to practice law anywhere in the United States. Additional information about the School is contained in the current *School of Law* catalog.

Facilities and Services

The School of Law, housed in William Gates Hall since 2003, is equipped with classroom, clinical, library, lounge, and office facilities. Eleven classrooms are equipped for multi-media presentations, wireless internet connection, and assistive-listening systems.

The Marian Gould Gallagher Law Library is among the largest university law collections on the West Coast. The collection currently contains more than 450,000 bound volumes and volume equivalents of microform. In addition to the extensive main collection, it houses important materials that support the Asian, marine, sustainable international development, and tax law graduate programs and serves as a federal depository for selected United States government documents. The library is equipped with the latest in microreaders and printers in order to make full use of the growing microform collection. The library is a subscriber to LEXIS, WESTLAW, the Western Library Network, and other research databases.

Juris Doctor Program

The Juris Doctor (JD) degree is conferred upon a student who has met the residence requirements, consisting of nine quarters of at least 12 credits each, and has earned at least 135 credits satisfactory to the School of Law.

As with most law schools in the United States, the first-year courses are required and are designed to introduce students to basic legal skills, foundational subject matter, and the variety of public and private

processes with which the profession is concerned. Those courses deal with contracts, torts, property, civil procedure, criminal law, constitutional law, and basic legal skills.

Except for a required course in professional responsibility, the public service requirement, and an advanced writing project requirement, courses in the second and third years are elective. Therefore, a student may choose a program designed to suit his or her interests and needs. JD candidates are required to perform 60 hours of public-service legal work during the second or third year.

Admission

New students may enter the School of Law only in autumn quarter. For first-year students, instruction begins earlier than for upper-class students. Students must have earned a baccalaureate degree from an accredited college or university prior to commencing the study of law.

All applicants are required to take the Law School Admission Test (LSAT) and to register for the Law School Data Assembly Service (LSDAS). Registration packets and test information are available at most law schools and from Law School Admission Council, Box 2000, Newtown, PA 18940-0998. www.lsac.org

No specific prelaw course is required or recommended, and the School of Law subscribes to the remarks set forth on prelaw preparation in *The Official Guide to U.S. Law Schools (2000 Edition)*. Applications for admission to the next entering class must be postmarked no later than January 15. To be assured of consideration, an applicant must have complete credentials, including the LSDAS report, filed in the School of Law by February 1. An application fee (at this writing, \$50) also is required.

Transfer Applicants

Students who have completed at least one year at a member school of the Association of American Law Schools may apply for admission with advanced standing, with credit for no more than one year of such work. A student who has completed or expects to complete at least two years of work at a member school of the Association of American Law Schools and who expects to graduate from that member school may apply to this school for admission as a non-degree candidate.

Applicants should request application forms and instructions from the admissions office in time to permit filing of all application materials by July 10.

Applications are considered only if vacancies exist. Selection is based on evidence either (1) that the candidate can produce above-average work at this law school, or (2) that the candidate will contribute to the diversity of the student body.

Students working on law degrees to be conferred by the University have priority over non-degree candidates in the selection of courses. This policy is in accordance with the general University policy on the registration of nonmatriculated students.

Financial Aid

Students in need of financial assistance may receive University aid, School of Law aid, federal loans, or aid from all these sources. To be considered for aid, applicants must submit the Free Application for Federal Student Aid (FAFSA) by February 28. FAFSAs are available in December at most college financial aid offices, or may be obtained by writing or calling the Office of Student Financial Aid, 105 Schmitz Hall, Box 355880, University of Washington, Seattle, WA 98195, (206) 543-6101, offa@uw.edu. Applicants for admission should not wait until they have been admitted before applying for financial aid.

School of Law grants are awarded primarily on the basis of financial need, although scholarship or other factors may be considered for certain awards. Inquiries concerning School of Law aid should be addressed to Financial Aid Coordinator, School of Law, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195-3020; uwlawaid@uw.edu.

Inquiries

A more detailed statement on admission policy and application procedure is available from the School of Law. Requests for application materials and the University law school bulletin should be addressed to Law School Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195-4617; admissions@law.washington.edu; (206) 543-4078.

Graduate Program

Graduate Program Coordinator
William Gates Hall, Box 353020
(206) 543-4937
gradlaw@uw.edu

In addition to the professional law program leading to the Juris Doctor degree, the law faculty offers graduate programs leading to the Master of Laws (LLM) in Asian and Comparative Law, the law of sustainable international development, intellectual property law and policy, and taxation. The School of Law offers the Doctor of Philosophy (PhD) degree in Asian and Comparative Law only.

Master of Laws

Admission Requirements

1. Minimum B or 3.00 GPA in the most recent two years of study.
2. U.S. applicants must have completed their first degree in law (JD or equivalent) at a school accredited by the American Bar Association.
3. International students must have a first degree in law (LLB, BLaw) or equivalent and a minimum TOEFL score of 580 or 237 (TOEFLC).

Degree Requirements, Asian and Comparative Law

36 credits, as follows:

1. *Required courses:* LAW B 551, LAW 600, LAW B 550; two courses in Asian and comparative law
2. *Elective courses:* Additional courses, chosen in consultation with adviser, to bring total credits to 36.

Degree Requirements, Intellectual Property Law and Policy

40 credits, to include:

1. *Required core courses:* LAW P 501, LAW P 510
2. *Additional requirement for students not trained in the common law system:* LAW P 503
3. At least 16 additional credits drawn from a list of approved elective courses.

4. Research project and thesis

Degree Requirements, Law of Sustainable International Development

40 credits, as follows:

1. 15 credits in Law School classes. The remaining 25 credits may be earned in any other departments of the University. Sustainable international development students are required to take courses in at least three departments other than the Law School.
2. *Writing and Research Requirement*: Completion of a research paper is required and is generally satisfied by LAW B 578.
3. LAW A 545

Degree Requirements, Taxation

36 credits, as follows:

1. *Required courses*: LAW T 501, LAW T 502, LAW T 503, LAW T 504, LAW T 510, LAW T 511
2. *Core electives*: Two of the following courses: LAW T 515, LAW T 516, LAW T 521, LAW T 530
3. *Electives*: Additional courses, chosen in consultation with adviser, to reach 36 credits for degree

Doctor of Philosophy

Admission Requirements

Admission to the PhD program is limited to exceptional scholar-lawyers who are fluent in English and in another language. Prospective PhD students must normally complete the LLM program before being accepted as PhD students. The School does, however, welcome applications from candidates with equivalent academic standing and a demonstrated capacity for advanced research and writing.

Degree Requirements

90 credits, to include:

1. An LLM degree is counted toward the credit necessary for the PhD program.
2. Doctoral thesis seminar (4 credits)
3. Other coursework (26-29 credits): Coursework varies according to student's research interest areas and is determined in consultation with Supervising Committee
4. Doctoral dissertation (27-30 credits)

Financial Aid

Scholarship funds for graduate students in law are quite limited. Inquiries should be made to Law School Graduate Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195; gradlaw@uw.edu; (206) 543-4937.

Inquiries

Requests for applications and program brochures for all School of Law LLM programs except the LLM in taxation, as well as information regarding application procedures, should be addressed to Law School Graduate Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195.; gradlaw@uw.edu.

Requests for applications and program brochures for the LLM in taxation should be addressed to Law School Graduate Tax Admissions, William Gates Hall, Box 353020, University of Washington, Seattle, WA 98195; gradlaw@uw.edu.

School of Medicine

School Overview

Dean

Paul G. Ramsey
C314 Health Sciences

Established in 1946, the School of Medicine is the only medical school directly serving the states of Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI). Located in the Warren G. Magnuson Health Sciences Center, the School operates a decentralized program of medical education (WWAMI) via a regional network of teaching affiliates.

The School's basic-science departments provide educational opportunities for students from all schools and colleges within the University. Clinical teaching programs are conducted at the University of Washington Medical Center, Harborview Medical Center, Seattle Children's hospital, Northwest Hospital & Medical Center, Valley Medical Center, and the Veterans Affairs Puget Sound Healthcare System, as well as at other clinical affiliates in Seattle and throughout the WWAMI states.

The School admits approximately 240 medical students to its first-year class and has a total enrollment of over 1000 students pursuing the Doctor of Medicine degree. The full-time faculty numbers more than 2,100 members and there are more than 4,500 clinical faculty located throughout the WWAMI region. The affiliated University residency-training network enrolls more than 1,200 house officers. Enrollment in the graduate programs in the basic sciences exceeds 600 students, and approximately 1,000 postdoctoral fellows are enrolled in advanced training programs. The School has baccalaureate and/or graduate programs in occupational therapy, physical therapy, prosthetics and orthotics, and medical technology. The School participates in training a broad spectrum of other allied health professionals. The School is also home for the Physician Assistant Training Program known as MEDEX.

WWAMI Program

The WWAMI program was initiated in 1971 as an effort to address the maldistribution and shortage of physicians in the Northwest region, provide a broader range of educational opportunities for students, and address the need for primary-care physicians oriented toward rural practice. It is an integral part of the undergraduate medical curriculum and is a fully accredited program of the School of Medicine. The WWAMI program is named for the five states (Washington, Wyoming, Alaska, Montana, and Idaho) that share resources and responsibilities in the regional educational program. Funds appropriated to the WWAMI program by the Wyoming, Alaska, Montana, and Idaho legislatures assure each state of positions for its students in the entering medical class each year.

Foundations of Science Phase Training

The UW School of Medicine is nationally recognized for its regional training program (WWAMI). In addition to providing unique clinical learning opportunities, the WWAMI program allows a small-group learning experience at the regional training sites, which many students prefer. Students from Washington (Spokane), Alaska, Montana, and Idaho complete their 18-month foundational curriculum in small learning groups in their respective home states. Wyoming students complete their first 12-month foundational curriculum in Wyoming. The state of Washington provides two sites for medical students to complete their 18-month foundations curriculum:

Seattle: uwmedicine.washington.edu/Education/Md-Program

Spokane: www.medicalsciences.wsu.edu/prospectivestudents/wwamiprograminfo.html

Small group learning experiences are available in Spokane. All Washington residents are required to rank one or more of these two sites in order of preference in their secondary application. Every effort is made to match accepted Washington students with one of their preferred sites.

More information and video testimonials from first-year Spokane medical students are available at: <http://uwmedicine.washington.edu/Education/MD-Program/Admissions/>

Offers of acceptance are conditional upon agreement to participate in the WWAMI program.

Patient Care Phase Training

At the conclusion of the foundations-of- science phase, students enter the portion of the curriculum that is predominantly clinical. Required, selective, and elective clerkships are described below. As part of clinical training, students complete clerkships at the UW, at its affiliated hospitals, or at community clinical units located in the five-state region. During third- and fourth-year clerkships, School of Medicine full-time and clinical faculty members provide supervised clinical training in required as well as elective clerkships throughout the WWAMI region.

Academic Programs

Bachelor of Science

A program leading to a baccalaureate degree with a major in [microbiology](#) is offered through the College of Arts and Sciences.

Bachelor of Clinical Health Sciences

A program leading to a baccalaureate degree with a major in clinical health services is offered through the [MEDEX](#) program.

Bachelor of Science in Medical Technology

A curriculum in medical laboratory science is offered by the Department of Laboratory Medicine. This program provides study in basic laboratory science that includes clinical laboratory training and is designed to prepare knowledgeable and skilled laboratory scientists for a variety of employment opportunities. Information concerning admission to the medical laboratory science program appears under [Laboratory Medicine](#) in this catalog.

Bachelor of Science in Prosthetics and Orthotics

The Department of Rehabilitation Medicine offers a Bachelor of Science degree in prosthetics and orthotics. The curriculum provides professional training in the basic sciences and the clinical application, design, and fabrication of prostheses and orthoses. Information concerning admission to the curriculum in prosthetics and orthotics may be found under [Rehabilitation Medicine](#) in this catalog.

MEDEX Northwest Physician Assistant Training

MEDEX Northwest, UW School of Medicine, is a program designed to train physician assistants. The program has been in existence since 1978 and is accredited by ARC-PA, the Accreditation Review Commission on Education for the Physician Assistant. MEDEX currently trains approximately 80 students annually in three didactic training sites (Seattle, Yakima, and Spokane). Discussions are currently underway to have a fourth training site in Anchorage, AK. Students return to their home communities in the WWAMI region (Washington, Wyoming, Alaska, Montana, Idaho) plus a variety of sites in Oregon and Nevada for their clinical year of training.

MEDEX Northwest is currently an eight-quarter program. The first four quarters consist of intense clinical and didactic instruction at one of the didactic training sites. The final four quarters are spent in clinical experiences throughout the Northwest region. At the completion of the program, students are eligible to sit for the National Certifying Examination for Physician Assistants.

Master of Occupational Therapy

The Department of Rehabilitation Medicine offers a graduate degree in occupational therapy. The curriculum provides professional training in the health sciences and in the theory and practice of occupational therapy as it impacts occupational performance across the life span and in the various arenas of practice. Occupational therapy addresses daily living skills including self-care, work, and leisure/play. Information concerning admission to the occupational therapy program appears under [Rehabilitation Medicine](#) in this catalog.

Doctor of Physical Therapy

The Department of Rehabilitation Medicine offers a graduate degree in physical therapy. The curriculum provides professional education in the basic sciences and in the clinical use of physical therapy evaluation and management strategies in the treatment or prevention of neuromusculoskeletal dysfunction. Information concerning admission to the physical therapy program appears under [Rehabilitation Medicine](#) in this catalog.

Master of Science and Doctor of Philosophy

Work leading to master's and doctoral degrees is offered, in accordance with the requirements of the Graduate School, in the departments of [Biochemistry](#), [Bioengineering](#), [Biological Structure](#), [Immunology](#), [Microbiology](#), [Pathology](#), [Pharmacology](#), and [Physiology and Biophysics](#). Master's degree programs are offered by the departments of [Laboratory Medicine](#), [Medical History and Ethics](#), and [Rehabilitation Medicine](#). Students may work toward these degrees concurrently with the MD degree, taking additional years beyond the typical four-year medical curriculum.

Concurrent degrees are possible in many other departments and colleges of the University. Recent graduates have pursued concurrent degrees in the basic sciences of medicine and the School of Public Health. A student who intends to work toward a graduate degree should confer with the chairperson of the department in which graduate study is to be pursued and with the Associate Dean for Academic Affairs of the School of Medicine. Specific requirements for admission to work for advanced degrees appear in the Graduate School section of this catalog. Permission to pursue advanced degrees is granted to medical students only if they are progressing normally in the medical curriculum and show evidence of being able to take on this additional work load.

Doctor of Medicine

Upon completion of the curriculum of the School of Medicine curriculum, the MD degree is awarded to those candidates who (1) have shown evidence of good moral character, (2) have satisfactorily completed the requirements of the curriculum, (3) have fulfilled all special requirements, and (4) have discharged all indebtedness to the University.

Admission

Procedures and policies described are subject to change. The most current information regarding the admission process is available from the School of Medicine [Admissions Office](#).

Selection Factors

Candidates are considered comparatively on the basis of academic performance, motivation, maturity, personal integrity, and demonstrated humanitarian qualities. A knowledge of, and exposure to, the needs of individuals and society and an awareness of healthcare delivery issues are desired. Extenuating circumstances in an applicant's background are evaluated.

Applicants submit scores from the Medical College Admission Test (MCAT), taken no later than autumn of the year before matriculation. Scores cannot be more than three years old at the time of matriculation.

Under exceptional circumstances, certain course requirements may be waived for individuals who present unusual achievements and academic promise. All candidates must demonstrate substantial academic ability in their major field as well as in required science courses. They should be proficient in the use of the English language, basic mathematics, personal computing, and information technologies.

All entrants in recent years have, at a minimum, fulfilled requirements for a bachelor's degree. No specific major is advised. A broad background in the humanities and liberal arts is encouraged.

Pre-Medical Requirements

Completed prior to matriculation but preferably by the time of application; undergraduate or postbaccalaureate courses completed at a college or university accredited by the appropriate regional accrediting body.

Courses must include a minimum of:

1. 4 semesters or 6 quarters of social science or humanities
2. 6 semesters or 9 quarters of chemistry and biology. Subject matter in these courses must include general chemistry, general biology, biochemistry, molecular genetics, and cell biology/cell physiology, although applicants are not required to take courses with these specific titles.
3. 2 semesters or 3 quarters of physics; or 1 semester or 2 quarters of physics plus 1 semester or 2 quarters of calculus or linear algebra

Courses recommended, but not required:

- Ethics
- Anatomy or comparative anatomy

- Human or mammalian physiology
- Embryology

For further information, consult:

- [UW School of Medicine Admissions website](#)
- [Facebook](#)
- [Email](#)

Under exceptional circumstances certain course requirements may be waived for individuals who present unusual achievements and academic promise.

Application Procedure

The UW participates in the American Medical College Application Service (AMCAS). Deadline for submitting an application to AMCAS is October 15; no waivers are granted. After receiving the application, the School of Medicine asks qualified individuals to submit a \$35 application fee and supplemental application materials. Every attempt is made to notify applicants of final action by the end of March of the year of matriculation.

Residents of the states of Washington, Wyoming, Alaska, Montana, or Idaho are eligible to apply. Candidates from Wyoming, Alaska, Montana, and Idaho submit residency certifications from their respective state certifying officers. Proof of legal residence for Washington residents also may be requested. Determination of state of legal residence is not made by the School of Medicine. More information about residency certification is available at: www.uwmedicine.org/education/md-program/admissions/applicants/residence-certification

Applicants with DACA status who reside in a WWAMI (Washington, Wyoming, Alaska, Montana, Idaho) state and who are legally authorized and recognized by their respective state's residency office as a state resident for WWAMI educational purposes are considered.

Applicants from outside this five-state region from disadvantaged backgrounds or who have demonstrated a commitment to serving underserved populations are considered. Foreign applicants must also have a permanent-resident visa.

Individuals with a demonstrated interest in research may apply for the MD/PhD program (Medical Scientist Training Program, or MSTP) regardless of residency.

Applicants who have failed to meet minimum standards at this or another medical (MD or DO) or dental school are not considered.

Applicants must meet essential requirements and technical standards and complete premedical course requirements.

The deadline for submitting additional application materials is December 1. Secondary materials include:

1. Autobiographical statement in which the candidate describes the origin and development of his or her motivation to be a physician, with specific emphasis on steps taken to explore a career in medicine and eventual professional goals. Other issues of importance to the candidate should

also be included. The applicant may request that the personal comments section of the AMCAS application be used to fulfill this requirement.

2. Three additional short essays (250 word limit each)
 - a. How have your experiences prepared you to be a physician?
 - b. How do you imagine your personal and professional lives intersecting 10 years from now?
 - c. What obstacles to your goals have you experienced and how have you dealt with them?
 - d. For re-applicants: From your most recent application until now, how have you strengthened your application?
3. A letter of recommendation from a premedical committee or a minimum three letters from writers who can speak to one or more of the following: academic ability, commitment to service, leadership potential, clinical or research experiences, interpersonal skills, ability to function on a team, and/or potential as a physician. The collection of letters should provide a balanced and well-rounded view of the applicant's candidacy. The School of Medicine accepts up to three additional letters of recommendation. Letters from current employers may be advantageous. All letters are submitted via the AMCAS Letters of Evaluation/Recommendation service. Letters must be received by December 1.
4. \$35 non-refundable application fee (automatically waived for those qualified for AMCAS fee waivers). Others seeking a fee waiver should submit requests directly to the School of Medicine Admissions Office.
5. Online acknowledgment of having read, understood, and being able to meet, with or without reasonable accommodation, the Essential Requirements of Medical Education at the UW School of Medicine: Admission, Retention, and Graduation Standards; and online acknowledgment of the clinical clerkship rotation policy and the UW SOM Honor Code. These are sent with the secondary application form.
6. All acceptances are contingent on a criminal background check. Falsifying information may lead to withdrawal of an acceptance.
7. More information about the application procedure is available at: www.uwmedicine.org/admissions

Medical School Curriculum (For students entering 2015 or 2016; in effect for these two cohorts from 2015 to 2020)

The four-year medical school curriculum consists of three phases, totaling 267 credits

- Foundations Phase – 107 credits
- Patient Care Phase – 84 credits
- Explore and Focus Phase – 76 credits

Specific requirements are as follows:

1. Foundations Phase

The first 18 months of the medical-student curriculum, starting with a two-week clinical immersion that introduces the medical profession and includes instruction and supervision related to basic clinical skills, is followed by eight integrated basic science blocks. Pathology, Human Form and Function (anatomy and radiology), and Pharmacology are threaded throughout all blocks of the Foundations Phase. In the longitudinal Foundations of Clinical Medicine (FCM) course, which spans all 18 months of the Foundations Phase, students learn under supervision to perform a

detailed medical history and physical examination, develop clinical reasoning skills, and communicate and establish rapport with patients from all backgrounds. They also spend one full day every other week working with patients and other health professionals in outpatient primary care clinics.

Foundations Phase Curriculum (107 credits)

Most students are also able to take elective courses.

a. Blocked Courses

- i. Molecular and Cellular Basis of Disease (11 credits)
- ii. Invaders and Defenders (10 credits)
- iii. Circulatory Systems (16 credits)
- iv. Blood and Cancer (5 credits)
- v. Energetics and Homeostasis (10 credits)
- vi. Mind, Brain, and Behavior (14 credits)
- vii. Lifecycle (8 credits)

b. Longitudinal Courses

- i. Primary Care Practicum (8 credits)
- ii. Foundations of Clinical Medicine (8 credits)

c. Scholarship Courses

- i. Independent Investigative Inquiry (III) (6 credits) – Conducted in one or more of the biological, behavioral, sociocultural, or epidemiological sciences basic to medicine, culminating in a scholarly product or written paper. Helps the student gain an understanding of the philosophy and methods of scientific investigation. Fosters skills of life-long learning.

- d. **Consolidation and Transition (11 credits)** – A transition period between the Foundation Phase and the Parent Care Phase. Preparation for U.S. Medical Licensing Examination (USMLE step 1), including a Foundations Capstone to review key concepts. Students complete the Independent Investigative Inquiry and the transition to clerkships.

2. Patient Care Phase

Students work as junior members of medical-care teams in medical-school-affiliated hospitals, clinics, or practices located in the five-state WWAMI region. Students learn and practice clinical skills, gain clinical experience, and increase clinical problem-solving abilities.

Patient Care Curriculum (84 credits)

- i. Family Medicine (12 credits)
- ii. Internal Medicine (24 credits)
- iii. Obstetrics/Gynecology (12 credits)
- iv. Pediatrics (12 credits)
- v. Psychiatry and Behavioral Sciences (12 credits)
- vi. Surgery (12 credits)

3. **Explore and Focus Phase**

Students continue to hone clinical skills and prepare for residency. Includes four required clerkships and 20 weeks of clinical electives.

Explore and Focus Curriculum (76 credits)

- i. Neurology/Neurosurgery (8 credits)
- ii. Emergency Medicine (8 credits)
- iii. Advanced Patient Care (16 credits)
- iv. Clinical electives (40 credits)*
- v. Transition to Residency (4 credits)

*Students in the Medical Scientist Training Program and the UW Pathology fellowship who enter the UWSOM prior to 2015 and who do not engage in the clinical curriculum immediately after completing pre-clinical coursework meet the clinical requirements as they exist at the time they enter, with the exception of 8 credits of clinical electives which are waived. These students enter the clinical curriculum in summer of their third year of MD coursework after completion of the PhD or UW Pathology fellowship.

Medical School Curriculum (For students entering 2017 or after)

The four-year medical school curriculum consists of three phases, totaling 287 credits.

- Foundations Phase – 120 credits
- Patient Care Phase – 86 credits
- Explore and Focus Phase – 81 credits

An Ecology of Health and Medicine course spans all three phases of the curriculum. Students gain familiarity and understanding of our healthcare system, including specifics about health policy, patient safety, social determinants of health, health equity, value-based care, population health, teamwork, medical informatics, and ethics/professionalism.

1. **Foundations Phase**

The first 18 months of the medical-student curriculum, starting with a two-week clinical immersion that introduces the medical profession and includes instruction and supervision related to basic clinical skills, is followed by eight integrated basic science blocks. Pathology, Human Form and Function (anatomy and radiology), and Pharmacology are threaded throughout all blocks of the Foundations Phase. In the longitudinal Foundations of Clinical Medicine (FCM) course, which spans all 18 months of the Foundations Phase, students learn under supervision to perform a detailed medical history and physical examination, develop clinical reasoning skills, and communicate and establish rapport with patients from all backgrounds. They also spend one full day every other week working with patients and other health professionals in outpatient primary care clinics.

Foundations Phase Curriculum (120 credits)

Most students are also able to take elective courses.

- a. **Blocked Courses**
 - i. Molecular and Cellular Basis of Disease (11 credits)
 - ii. Invaders and Defenders (10 credits)
 - iii. Circulatory Systems (16 credits)
 - iv. Blood and Cancer and Musculoskeletal (8 credits)
 - v. Energetics and Homeostasis (10 credits)
 - vi. Mind, Brain, and Behavior (14 credits)
 - vii. Lifecycle (8 credits)
 - b. **Longitudinal Courses**
 - i. Foundations of Clinical medicine (15-16 credits)
 - ii. Ecology of Health and Medicine (4 credits)
 - c. **Scholarship Courses**
 - i. Independent Investigative Inquiry (6-7 credits) – Conducted in one or more of the biological, behavioral, sociocultural, or epidemiological sciences basic to medicine, culminating in a scholarly product or written paper. Helps the student gain an understanding of the philosophy and methods of scientific investigation. Fosters skills of life-long learning.
 - ii. Research Methods, including Epidemiology and Biostatistics (6 credits)
 - d. **Consolidation and Transition** (11 credits) – A transition period between the Foundation Phase and the Patient Care Phase. Preparation for U.S. Medical Licensing Examination (USMLE step 1), including a Foundations Capstone to review key concepts. Students complete the Independent Investigative Inquiry and the transition to clerkships.
2. **Patient Care Phase**

Students work as junior members of medical-care teams in medical-school-affiliated hospitals, clinics, or practices located in the five-state WWAMI region. Students learn and practice clinical skills, gain clinical experience, and increase clinical problem-solving abilities.

Patient Care Curriculum (86 credits)

- i. Family Medicine (12 credits)
 - ii. Internal Medicine (24 credits)
 - iii. Obstetrics/Gynecology (12 credits)
 - iv. Pediatrics (12 credits)
 - v. Psychiatry and Behavioral Sciences (12 credits)
 - vi. Surgery (12 credits)
 - vii. Ecology of Health and Medicine (2 credits)
3. **Explore and Focus Phase**

Students continue to hone clinical skills and prepare for residency. Includes four required clerkships and 20 weeks of clinical electives.

Explore and Focus Curriculum (81 credits)

- i. Neurology/Neurosurgery (8 credits)
- ii. Emergency Medicine (8 credits)
- iii. Advanced Patient Care (16 credits)
- iv. Clinical electives (40 credits)*
- v. Ecology of Health and Medicine (1 credit)
- vi. Transition to Residency (8 credits)

*Students in the Medical Scientist Training Program and the UW Pathology fellowship who enter the UWSOM prior to 2015 and who do not engage in the clinical curriculum immediately after completing pre-clinical coursework meet the clinical requirements as they exist at the time they enter, with the exception of 8 credits of clinical electives which are waived. These students enter the clinical curriculum in summer of their third year of MD courses after completion of the PhD or UW Pathology fellowship.

Student Evaluation and Promotion

Students must complete all curricular, academic, and professional conduct requirements, which include meeting the Essential Requirements and Technical Standards and demonstrating attitudes and behavior appropriate to a career in medicine. Student evaluation is based on observation of the student's behavior and conduct by the faculty and others involved in teaching as well as on papers and examinations. Every student must pass all academic requirements, all School of Medicine examinations, Steps 1 and 2 of the United States Medical Licensing Examinations, and an approved scholarly Independent Investigative Inquiry project, as well as demonstrating specific clinical skills developmental benchmarks c before receiving the Doctor of Medicine degree. No exceptions are permitted. Periodic reviews of student performance are conducted by the School's Student Progress Committee. Students are informed of deficiencies and remedial requirements, if any, for these deficiencies.

A student may be dismissed from the School of Medicine if s/he does not meet the standards for graduation set by the School, to include failure to maintain an acceptable academic record, failure to follow academic directives provided by the School's committees, and/or failure to develop attitudes and behavioral patterns appropriate to a career in medicine. A pattern of documented concerns about a student's performance and professionalism may result in the student's being dismissed.

The Faculty Council on Academic Affairs (FCAA) reviews the School of Medicine's and Student Progress Committee's actions, and the Dean of the School of Medicine has final approval of the committee's and council's recommendations. A review mechanism is available. Once dismissal or withdrawal from the School has occurred, the student may not petition for reinstatement, and must instead apply for readmission through the standard admission process and procedures.

Honor Societies

Alpha Omega Alpha (AOA), a national honor medical society, elects members on the basis of high scholarship and good moral character. AOA recognizes and perpetuates excellence in the medical profession, with goals to promote scholarship and research in medical school, encourage high standards and conduct, and recognize high attainment in medical science, practice, and related fields.

Gold Humanism Honor Society (GHHS), a national honor medical society, elects members on the basis of high scholarship and good moral character. GHHS recognizes individuals who are exemplars of humanistic patient care and who can serve as role models, mentors, and leaders in medicine. Goals involve promoting humanism and patient-centered care throughout the medical profession.

Grading System

The Curriculum Office implements and manages guidelines governing the grading system. The Associate Dean for Curriculum collaborates with course and clerkship directors and Foundations and Clinical Regional Assistant Deans who oversee compliance. The Student Progress Committee reviews all fail grades and the performance of students whose evaluations include a pattern of evaluator or professional development concerns.

Final Course Grades

1. Pass/Fail: Required Foundations Phase blocks
2. Pass/Fail: Independent Investigative Inquiry (III)
3. Honors/High Pass/Pass/Fail: Required Patient Care Phase and Career Explore and Focus Phase clerkships and clinical electives (All clerkships 8 credits or longer have the option of H/HP/P/F and clerkships less than 8 credits are Pass/Fail only.)
4. Evaluator Concern: internal designation
5. Professional Development Assessment: internal designation
6. Withdrawal

If completion of an additional paper or project is required for achievement of an Honors grade in a required or elective clinical course, all requirements for the Honors grade must be completed no later than the last day of the course. Fail grades are reviewed by the Student Progress Committee.

The School of Medicine reserves the right to revise or modify the curriculum, system of evaluation, or graduation requirements.

Graduation with Honors

A degree of Doctor of Medicine with honors may be awarded to students with high achievement who have demonstrated initiative and success in clinical and scholarly pursuits related to medicine, outstanding leadership, or exceptional service commitment. Graduation with honors may be awarded for up to 15% of the graduating class. High honors may be awarded to recognize outstanding and truly exceptional performances of a few selected students, and may not be given each year. Nominations are submitted by department and College faculty, honorees are selected by the Student Progress Committee, and final recipients are approved by the Medical School Executive Committee.

The Center for Health Equity Diversity and Inclusion (CEDI)

The Center for Health Equity, Diversity, and Inclusion (CEDI) operates throughout the School of Medicine, including the WWAMI region's teaching, patient care, and research programs. CEDI offers educational opportunities to develop expertise in patient care of vulnerable populations through its pathway programs and classes. CEDI collaborates with departments and divisions, general medical education, academic affairs, and teaching programs in the WWAMI region. Pipeline programs include outreach to underrepresented middle and high school students through the Doctor for a Day Program, the national Summer Health Professions Education Program (SHPEP), the UW Health Professions Academy (HPA), and support of five URM medical student affinity groups. Residents, fellows, and faculty are also supported through UW Network of Underrepresented Residents and Fellows (UWNURF) and the Committee on Minority Faculty Advancement (CMFA). The Center also collaborates across campuses and with other two- and four-year colleges and universities to engage in recruiting disadvantaged and underrepresented students in the WWAMI region.

Pathways and Classes: CEDI manages three pathway programs that prepare medical students to provide culturally responsive care to specific populations – done through coursework and elective clerkships tied specifically to those populations. Pathway programs include: Hispanic Health Pathway, Indian Health Pathway, and LGBTQ Health Pathway. Medical students may also expand their skills working with vulnerable populations through two other programs – the Global Health Pathway and the Underserved Pathway. Some students elect more than one program concurrently. Beyond courses required for a pathway program, students may elect classes on African American Health and Healthcare Disparities and Clinical Management of the Transgender Patient (one of few such classes offered nationally).

Summer Health Professions Education Program: In collaboration with the UW School of Dentistry and the School of Public Health, CEDI offers a six-week summer program for freshman and sophomore college students from underrepresented and disadvantaged backgrounds with an interest in health careers. The 80 admitted students engage in clinical shadowing experiences; take enrichment classes that include biology, chemistry, physics, biostatistics, and public health; and complete a class that helps them prepare for applying to health professions schools. UW housing, stipends, and travel assistance are available.

Health Professions Academy: For underrepresented minority and disadvantaged UW undergraduate students interested in careers in medicine and dentistry. Offers longitudinal advising; assistance with MCAT (Medical College Admission Test) and DAT (Dental Admissions Test) preparation; and clinical shadowing, research, and networking opportunities.

Student Groups: CEDI manages five groups for underrepresented minorities: Asian Pacific American Medical Students Association (APAMSA), Latino Medical Students Association (LMSA), Medicine Wheel Society (MWS), Queer Medical Student Association (QMed), and Student National Medical Association (SNMA). These organizations involve students in activities including Doctor for a Day – a pipeline program that introduces health careers to underrepresented minority middle and high school students. UWSOM also manages other student organizations including Muslim Health Professionals of Greater Puget Sound (MHP), Alliance for Equal Representation in Medicine (AFERM), Health Equity Circle (HEC), and Students for an Anti-Racist UWSOM (SARU).

Residents/Fellows and Faculty: CEDI provides programming for underrepresented minority (URM) residents, and fellows and faculty. The UW Network for Underrepresented Residents and Fellows (UWNURF) collaborates with the Student National Medical Association (SNMA) to host Doctor for a Day events. They also plan town halls and didactic lectures, attend conferences to recruit URM students to UW sub-internships and residency programs, and host monthly networking events. The Committee on Minority Faculty Advancement (CMFA) often sponsors underrepresented speakers from other universities to speak about health disparities; works to support junior faculty; and provides other networking opportunities. CEDI also created the African American Roundtable to discuss ways to recruit and support African American students in medicine.

Diversity in Hiring: A search committee toolkit based on best/effective practices in searches, selection, promotion, and retention of diverse faculty offers trainings for departments and divisions on implicit bias and hiring processes.

Inquiries and requests for additional information may be obtained from the Center for Health Equity, Diversity, and Inclusion, Box 357430, School of Medicine, University of Washington, Seattle, Washington 98195-7430; (206) 685-2489, or at www.mycedi.org

Medical Scientist Training (MD/PhD) Program

Highly qualified candidates have a wide choice of research specializations. Participating graduate departments and interdepartmental disciplines include biochemistry, bioengineering, chemistry,

environmental health, epidemiology, genetics, immunology, microbiology, molecular biotechnology, pathology, pharmacology, and physiology and biophysics. Participating programs include neuroscience, molecular and cellular biology, and molecular medicine and mechanisms of disease. Students may also conduct research at the Fred Hutchinson Cancer Research Center.

Candidates submit an application and any supplemental material requested by January 1. Consideration is given to applicants with significant research experience and/or a minimum 3.50 cumulative GPA, or minimum MCAT scores of 10 in each category.

Applicants correspond directly with the administrator of the Medical Scientist Training

Program: MSTP

University of Washington

Health Sciences Building, Room I264

Box 357470

Seattle WA 98195-7470

(206) 685-0762

mstp@uw.edu

www.mstp.washington.edu

Financial Information

Fees and Other Charges

All fees and extra service charges are payable in U.S. dollars, due at the time specified and subject to change without notice. See Financial Aid Budget Information for current tuition and fees

at: www.uwmedicine.org/education/md-program/current-students/student-affairs/financial-aid/budget-information

Financial Assistance

Financial aid awards are based on need. All aid applicants must submit the Free Application for Federal Student Aid (FAFSA). The Federal Direct Stafford Loan (subsidized and unsubsidized), Perkins Loan, and Primary Care Loan are the primary sources of aid. Institutional loans are also available from the School of Medicine. Limited grant funds are available to Washington State residents who meet specific funding criteria.

Scholarships are available through the School of Medicine. A separate application for a School of Medicine scholarship is due May 31.

February 28 is the financial aid application deadline for all available aid sources. Late applicants are awarded only Stafford and unsubsidized Stafford loans.

Outside employment is discouraged while the student is enrolled in medical school.

Enrichment Opportunities

Students may explore working in rural or urban clinics in medically underserved communities, undertaking medical research projects, or participating in an international exchange program with a developing country. Two of the more formally structured programs include:

1. Rural/Underserved Opportunities Program (RUOP) exposes students to rural medicine and utilizes clinical training sites in all five states. During a summer month between the first and

second academic years, students work with physicians in small communities and urban underserved clinics.

2. Medical Student Research Training Program offers research opportunities to UW medical students the summer between the first and second years. Student trainees receive a stipend. The project is 10 weeks, full-time, 40 hours per week. The student may not be enrolled in courses for credit during this time

Graduate Medical Education and Postdoctoral Training

The UW School of Medicine offers residency and fellowship programs. Training occurs at the UW Medical Center, Harborview Medical Center, Veterans Affairs Puget Sound Health Care System, Seattle Children's hospital, and other affiliated training sites in Seattle and throughout the WWAMI region. Postdoctoral research fellowship opportunities in the basic sciences are also offered.

Continuing Medical Education

Offerings include short courses of one to three days, one- to two-week board-review courses, visiting professorships, preceptorships, and mini-residencies. Other offerings include lecture series at hospitals, video-tape presentations, self-directed instructional materials, and other specific courses requested by members of the medical community throughout the WWAMI region. Information is available at www.uwcme.org.

All physicians are invited to participate in continuing medical education programs offered by clinical departments, such as grand rounds and regular conference series.

The UW School of Medicine is accredited to sponsor continuing medical education for physicians. All programs sponsored by Continuing Medical Education are applicable to physician re-licensure requirements of the Washington Board of Medical Examiners and for Category I credit of the Physician's Recognition Award of the American Medical Association. Prescribed credit for the American Academy of Family Physicians and other types of credit are included in the program offerings when appropriate.

For information concerning Continuing Medical Education programs, contact:

University of Washington School of Medicine
Office of Continuing Medical Education
Box 359441
4333 Brooklyn Ave NE
Seattle, Washington 98195
Telephone: (206) 543-1050
Email: cme@uw.edu
Website: www.uwcme.org

Anesthesiology

Department Overview

BB1459 Health Sciences

The Department of Anesthesiology maintains an active program of teaching and research for both the specialist and nonspecialist. Medical students are introduced to the principles of anesthetic management and the effects of anesthetic agents on circulatory and respiratory physiology. The clinical-clerkship program provides basic training in airway management and care of the unconscious patient. A three-year residency program is available for physicians who desire specialty training in anesthesiology. In addition, advanced clinical and research training is offered in several major subspecialty areas (cardiac anesthesia, neuroanesthesia, pediatric anesthesia, obstetrical anesthesia, pain management, and regional anesthesia). Opportunities for collaborative research are available to undergraduate and graduate students. The department conducts a regular series of clinical conferences, didactic lectures, and research seminars. Questions regarding medical student clerkships may be directed to Dr. John Bramhall at (206) 231-2847 or bramhall@uw.edu. Other training questions may be directed to the Residency Coordinator at (206) 543-2773 or lfg@uw.edu.

Bioethics and Humanities

A204 Health Sciences Building

Undergraduate Program

Adviser

A204 Health Sciences Building

Box 357120

(206) 543-5145

bhadvise@uw.edu

The Department of Bioethics and Humanities offers the following program of study:

- A minor in bioethics

Minor

Minor Requirements: 25 credits

1. Minimum 18 credits of bioethics and humanities courses
2. Electives from an approved list to reach 25 credits. If a B H course is cross-listed with another department's course, the course may be counted toward the B H-course minimum even if taken under the other department's prefix. See program website for more information on electives.
3. Minimum 2.0 grade in courses presented for the minor

Graduate Program

Graduate Program Coordinator

(206) 221-6548

gradprog@uw.edu

The department offers a two-year master of arts in bioethics. The program offers training in research and clinical aspects of bioethics as well as empirical and normative methods of analysis.

Students study with diverse and well-respected faculty from the University of Washington, the Treuman Katz Pediatric Bioethics Center, and the Seattle Veterans' Health Administration. The program helps prepare students to teach, publish, and conduct research that incorporates bioethics analysis.

Master of Arts

Application and Admission

Qualified candidates include:

1. Practicing clinicians, biomedical scientists, health lawyers, post-doctoral fellows, and physicians accepted into a UW clinical fellowship program or the Treuman Katz Pediatric Bioethics Fellowship program.
2. Students currently enrolled in a professional degree program at the University of Washington (i.e. Law, Nursing, or Medicine).

Candidates should possess strong writing, critical thinking, and verbal communication skills. GRE scores are not required. Application due date is March 1.

Degree Requirements

40 credits, as follows:

1. Ethical theory (10 credits)
2. Empirical research methods (6 credits)
3. Clinical ethics (6 credits)
4. Research ethics (3 credits)
5. Approved electives (6 credits)
6. Practicum (3 credits)
7. Master's project (6 credits)

Students are encouraged to take additional electives based on interest and area of specialty, with guidance from their faculty mentor(s).

Opportunities for in-depth study on a topic of interest are available through elective courses, mentored research, and practicum experiences.

Biological Structure

Department Overview

G520 Health Sciences

The department promotes an understanding of biological processes through the study and analysis of structure-function relationships. Research problems that interest members of the faculty are diverse, including cellular differentiation and development explored in a variety of biological systems, neuroscience, molecular biophysics, biomolecular structure, and quantitative biology with an emphasis on computer-graphic representations of biological structures.

The department recruits students through interdisciplinary PhD programs at the UW. Faculty are affiliated with one or more of the programs that provide training in a wide range of scientific research areas. These multidisciplinary programs include faculty from the departments of Biochemistry, Bioengineering, Biological Structure, Biology, Environmental Health, Genetics, Immunology, Microbiology, Molecular Biotechnology, Oceanography, Pathobiology, Pathology, Pharmacology, and Physiology and Biophysics, as well as research groups in the Fred Hutchinson Cancer Research Center.

The department does not offer a specific course of study leading to a master of science degree. An MS degree may be awarded, however, for students who meet the following requirements: One year of coursework (30 credits), concentrating in one or more areas that include neurobiology, cell and molecular biology, or developmental biology. Minimum 30 credits of research. Basic knowledge of statistics. One quarter of teaching as an assistant. A thesis committee approves the course of study, administers a general examination, and reviews the research proposal prior to the thesis defense.

Biomedical Informatics and Medical Education

Department Overview

The department consists of two units: (1) the Division of Medical Education and Evaluation and (2) the Division of Biomedical and Health Informatics. Medical Education and Evaluation provides training, research, and service in educational areas central to medical education including faculty and course evaluation, construction and scoring of examinations, curriculum development, implementation of innovative educational methodologies such as standardized patients and web-based simulated patients, faculty development, and research consultation (<http://bime.uw.edu>). Biomedical and Health Informatics (BHI) consists of a research and training program that emphasizes both basic and applied aspects of informatics (<http://bime.uw.edu>). BHI houses a National Library of Medicine Training Grant supporting pre- and postdoctoral fellows.

The department offers courses in the theory and application of medical education and biomedical and health informatics “designed for faculty, graduate and undergraduate students, postgraduates, and fellows in the health sciences who desire further training in methods, issues, research, and technology of medical education and biomedical informatics. BIME offers research master's and doctoral degrees, as well as fellowship training, in biomedical and health informatics.

Graduate Program

Graduate Program Adviser
UW Medicine, South Lake Union, Box 358047
(206) 616-0369
informat@uw.edu

Master of Science

Admission Requirements

1. Baccalaureate degree from an institution within the United States or equivalent degree from a recognized college or university from outside the United States
2. Minimum 3.00 undergraduate GPA, for the last 90 graded quarter credits or 60 graded semester credits
3. Prior formal college-level coursework, verified by official transcripts, in mathematics (including statistics), computer programming (at least two quarters), and biology (or zoology), as evidenced by official transcripts
4. GRE scores unless the applicant holds an earned doctorate (such as PhD, DDS, MD, EdD, JD) from an accredited U.S. institution. GRE scores must be from testing within the past five years.
5. GRE scores for all international applicants, including holders of foreign doctorates (such as PhD, DDS, MD, EdD, JD).
6. A test of English language proficiency (usually the TOEFL) for most international applicants, unless they have an earned an undergraduate or graduate degree from an accredited U.S. institution. For the TOEFL a minimum score of 600 (paper-based), 100 Internet-based), or 250

(computer-based); scores must be from a test taken within the past two years. IELTS scores are not accepted.

Degree Requirements

60 credits, as follows:

1. *Core courses:* BIME 530, BIME 533, BIME 534, BIME 535, BIME 537, BIME 539, BIME 543, BIME 550, BIOST 517 (or BIOST 537 or other approved equivalent biostatistics graduate course). BIME 543 effective for autumn 2015 cohort, or later; BIOST 537 effective for autumn 2014 cohort, or later.
2. *Elective courses:* Approved courses related to one's plan of study and research interests.
3. *Research seminars:* BIME 590 or BIME 591 (6 credits)
4. *Thesis and final examination:*
5. Cumulative 3.25 minimum GPA and quarterly 3.0 minimum GPA. Minimum 9 700-level thesis credits over at least two quarters. Minimum 30 credits from numerically graded courses. Only courses grades 2.7 and above count toward the degree.

Doctor of Philosophy

Admission Requirements

1. Baccalaureate degree from an institution within the United States or equivalent degree from a recognized college or university from outside the United States
2. Minimum 3.00 undergraduate GPA for the last 90 graded quarter credits or 60 graded semester credits
3. Prior college-level coursework, verified by official transcripts, in mathematics (including statistics), computer programming (at least two quarters), and biology (or zoology)
4. GRE scores, unless the applicant holds an earned doctorate (such as PhD, DDS, MD, EdD, JD) from an accredited U.S. institution. The GRE scores must be from testing within the past five years.
5. GRE scores for all international applicants, including holders of foreign doctorates (such as PhD, DDS, MD, EdD, JD)
6. A test of English language proficiency (usually the TOEFL) for most international applicants, unless they have an earned undergraduate or graduate degree from an accredited U.S. institution. For the TOEFL a minimum score of 600 (paper-based), 100 Internet-based), or 250 (computer-based). Scores must be from a test taken within the past two years. IELTS scores are not accepted.

Degree Requirements

90 credits

1. *Core courses:* BIME 530, BIME 533, BIME 534, BIME 535, BIME 537, BIME 539, BIME 543, BIME 550; BIOST 517 (or BIOST 537, or other approved equivalent biostatistics graduate course). BIME 543 effective for 2015 cohort, or later; BIOST 517 effective for autumn 2014, or later.
2. *Depth of knowledge courses:* Five additional approved courses in the area of specialization.
3. *Research seminars:* BIME 590 or BIME 591 (12 credits)

4. *Qualifying, general, and final examinations*: 60 credits completed prior to general examination; 27 800-level dissertation credits over at least three quarters
5. Minimum 3.0 quarterly GPA; minimum 3.25 cumulative GPA; only courses graded 2.7 and above count toward the degree; minimum 60 UW credits

Comparative Medicine

Department Overview

T142 Health Sciences

The department provides education and research opportunities in the use of animals in biomedical research, testing, and education. In addition, training is provided for veterinarians in the diagnosis, treatment, and prevention of the diseases of laboratory animals. Current educational programs include scheduled courses in the principles and techniques of animal experimentation (C MED 407) for biomedical graduate students, zoonotic diseases, and training in laboratory-animal medicine for veterinary medical students and veterinarians, combined with a master of science degree program in comparative medicine. Areas of current research interests include enteric disease, lymphocyte biology, biology of aging, mouse genomics, generation and characterization of transgenic animal models, somatic cell gene transfer, and animal models of gene therapy.

Graduate Programs

Graduate Program Coordinator
T136 Health Sciences, Box 351790
(206) 685-3261

Postdoctoral Program

Postdoctoral training in laboratory animal medicine and comparative pathology is offered to persons with a D.V.M. or equivalent degree. Training consists of coursework, clinical residency rotations, and research leading to a Master of Science degree in comparative medicine. The program also prepares participants for specialty certification by the American College of Laboratory Animal Medicine. Financial assistance is normally provided. A detailed description of the postdoctoral program is available at depts.washington.edu/compmed/.

Master of Science

The Master of Science degree in comparative medicine provides advanced training in comparative medicine to veterinarians. Admission requires acceptance into the department's postdoctoral training program. The degree option involves additional elective courses, the completion of a more-involved research project, and a thesis.

Predocctoral Program

Designed to acquaint veterinary medical students with laboratory-animal medicine as a veterinary specialty. Specific areas covered include control/treatment of the principal diseases of common laboratory animals and their role in biomedical research. Blocks of four to eight weeks are available for fourth-year students year-round. Stipend support is normally provided.

Family Medicine

Department Overview

C408 Health Sciences

The department improves the health and well-being of individuals, families, and communities through leadership in education, scholarship, and clinical care. Over 800 clinical faculty members are located throughout the Washington, Wyoming, Alaska, Montana and Idaho (WWAMI) region, and approximately 40 regular faculty at the University site in Seattle.

Direct patient care is offered primarily through the clinical operations at the UW Neighborhood Clinic in Northgate and the Family Medicine Clinic at Harborview. The Medical Student Education Section develops and delivers innovative training to students who serve the evolving needs of the diverse individuals, families, and communities of the WWAMI region, with emphasis on rural and urban underserved and other vulnerable populations. The residency program offers full spectrum training of residents that allows graduates to enter a variety of practice settings, including careers with an academic or health policy focus. The UW Family Medicine Residency Network, a group of 18 family medicine residency programs located within the WWAMI region, exists to promote excellence in family medicine residency education, provide academic leadership, and respond to societal needs for family physicians. The research section's efforts are focused primarily in four areas -- rural health, the health workforce, chronic disease, and medical education. MEDEX Northwest trains physician assistants who primarily practice in medically underserved and rural areas of WWAMI.

Genome Sciences

Department Overview

S-250 Foege Building

The department was created in 2001 with the merger of the Department of Genetics and the Department of Molecular Biotechnology.

Graduate Program

Graduate Program Coordinator
S-340 Foege Building, Box 355065
(206) 616-7297
gensci@uw.edu

The department offers a graduate program leading to the doctor of philosophy degree. Students are admitted only to the doctoral program.

Faculty and students study a broad range of topics, including the genetics of *E. coli*, yeast, *C. elegans*, *Drosophila*, and mouse; human and medical genetics; mathematical, statistical, and computer methods for analyzing genomes and theoretical and evolutionary genetics; and genome-wide studies by such approaches as sequencing, transcriptional and translational analysis, polymorphism detection, and identification of protein interactions.

The department addresses leading edge questions in biology and medicine by developing and applying genetic, genomic, and computational approaches that take advantage of genomic information now available for humans, model organisms, and a host of other species.

Doctor of Philosophy

Admission Requirements

1. Baccalaureate or advanced degree, either in a science such as biology, biochemistry, or related field, or in a computational area such as computer science or mathematics. The ideal candidate has experience in both areas. Competitive applicants have excellent GRE scores as well as extensive laboratory research experience.
2. Personal statement describing the applicant's academic and scientific background, research goals, and motivation for applying
3. Curriculum vitae
4. Unofficial copies of transcripts.
5. Unofficial copies of GRE scores (and TOEFL scores, for international applicants). Applicants who have provided official scores to the UW Graduate School need not send additional copies.
6. Three letters of reference from professors or others able to provide insight on the applicant's qualifications. Reference letters may be submitted online or by hard copy.
7. Applicants still in school will have earned additional courses not yet listed on the transcript should send a list of such courses to be taken before graduation.

Degree Requirements

90 credits

1. *First year:* Core courses, covering such topics as gene regulation, genomics, genetic analysis, genomic informatics, computational biology, proteomics, and population genetics, as well as literature review. Students rotate through a minimum of three laboratories before selecting a thesis laboratory at the end of the first year. Actual courses are determined in consultation with adviser.

Electives focused on specific areas of interest. Students have the option of selecting mentors from core faculty members in the department as well as from adjunct and affiliate faculty members from several UW departments and the Fred Hutchinson Cancer Research Center.

2. *Second year:* Thesis research and additional electives. General examination for PhD candidacy.
3. *Third year:* Teaching assistant for two undergraduate courses.
4. *Final years:* Complete research and defend dissertation during fifth year.
5. During all years, students participate in the departmental Journal Club and research reports functions, and attend presentations of well-known researchers via the departmental seminar series.

Financial Aid

Genome Sciences provides full funding, including a competitive twelve-month salary, tuition waiver, and health insurance. Support is contingent upon satisfactory academic progress.

Research Facilities

The department is located in the William H. Foege Building. Students are assigned space in the laboratories of faculty members with whom they do their rotations or dissertation research. State-of-the-art research facilities are available in the department for cellular, protein, and DNA analysis. Extensive computer and library resources are available.

Immunology

Department Overview

H564 Health Sciences

The department includes more than 30 faculty and 200 scientists, students, post-docs and staff engaged in elucidating fundamental immunological mechanisms and how these mechanisms impact human health; infectious, autoimmune, and allergic diseases; and cancer. Current focus areas include lymphocyte signaling, T and B cell development, macrophage function, antigen processing, immuno-tolerance, and the structure of antigen receptors.

Graduate Program

Graduate Program Coordinator
H564 Health Sciences, Box 357650
immgrad@uw.edu
(206) 685-3955, fax (206) 543-1013

Master of Science

Students are not admitted to the department specifically as candidates for a master's degree. A terminal master's degree can be awarded if the faculty deems the student has made some progress in the program but not enough to be consistent with earning the PhD.

Doctor of Philosophy

Admission Requirements

Students are admitted for autumn quarter; application deadline is January 1 for U.S. citizens and November 1 for international applicants. Requirements for admission are flexible. However, most successful applicants have completed survey courses in biology, chemistry, and physics; one year of organic chemistry; and mathematics through integral calculus. Prior exposure to immunology through formal coursework, or especially through laboratory research, is desirable. A bachelor's degree is required, as is evidence of superior scholarship and above average performance on the GRE General Test. A GRE subject test is not required.

International students must take the TOEFL; 250 is the minimum acceptable score on the computer test.

Degree Requirements

90 credits

1. 18 graded credits in the first two years. First-year coursework consists of consecutive five-week-long courses taken autumn through spring quarters – two per quarter (for 1.5 to 2 graded credits each); winter quarter, first year students also take IMMUN 532 (4 graded credits), for a total of 13 or 13.5 graded credits the first year, depending on course choices. In the second year, students earn 4.5 or 5 additional graded credits by taking electives winter and/or spring quarters. As part of

first- and second-year coursework, students take two five-week courses that specifically focus on cancer immunology.

2. Autumn quarter of the first year, students may take an elective and attend selected lectures of the undergraduate immunology course, IMMUN 441. Students attend the departmental seminar series, Journal Club, and research-in-progress talks beginning the first quarter and continuing throughout enrollment.
3. All elective courses must be relevant to biomedical research, and include either a final examination or required written paper for a grade. Elective classes must be at the 500 level, and receive a numerical grade.
4. Each student takes the qualifying examination during July immediately following the second year of classes. (MSTP students take qualifying examinations following the first year of graduate classes.)
5. Students who pass the qualifying examination then prepare for the General Examination, which must be taken within 15 months of the qualifying examination.
6. The dissertation must meet all format requirements.

Laboratory Medicine

Department Overview

NW 120, UW Medical Center

Medical laboratory science, offered by the Department of Laboratory Medicine, is a profession of highly knowledgeable and skilled individuals who perform clinical laboratory tests on patient samples. This is a critical part of healthcare, as the results obtained by these laboratory tests are a vital tool for physicians in their diagnosis, treatment, and prevention of disease.

Please Note: In summer 2020, the Department of Laboratory Medicine and the Department of Pathology merged into the Department of Laboratory Medicine and Pathology. The General Catalog entry for the new department was not available at time of publication.

Undergraduate Program

Adviser

NW 120, UW Medical Center
(206) 598-6131

medtech@uw.edu

The Department of Laboratory Medicine offers the following program of study:

- Bachelor of Science in Medical Laboratory Science degree

Bachelor of Science

1. *Pre-professional Phase.* During the first two years, students enroll as pre-majors in the College of Arts and Sciences, satisfying general education requirements as well as completing prerequisite courses.
2. *Professional Phase.* The professional phase begins autumn quarter of the third year and continues for seven consecutive quarters at the UW School of Medicine. Courses in the first year of the professional phase provide students an appropriate theoretical background and basic technical skills that enable them to function effectively in the clinical laboratory.

The final year is offered in the clinical laboratories of the UW Medical Center and its principal affiliates. Students in the core clinical laboratories receive on-the-bench training in chemistry, hematology, immunohematology, and microbiology.

Suggested First- and Second-Year College Work: Completion of University writing, reasoning, and general education requirements. Electives, not required for admission or graduation, may include: CHEM 321, MICROM 301, GENOME 351, GENOME 371, B STR 301, PHIL 115, PHIL 241, CLAS 101, CLAS 205, PATH 410, UCONJ 420. Begin taking admission requirements, shown below.

Department Admission Requirements

1. BIOL 118, BIOL 180, BIOL 200, BIOL 220; CHEM 142, CHEM 152, CHEM 162; CHEM 223 or CHEM 237; one of STAT 220, STAT 221/SOC 221/CS&SS 221, STAT 311, or Q SCI 381.

2. Complete all general education requirements including 10 credits of Individuals & Societies, and 10 credits of Visual, Literary, & Performing Arts, as well as all required English and writing courses.
3. Students admitted to the medical laboratory science program must be exempt from or have successfully completed any required English as a Second Language (ESL) courses no later than August 31 of the application year or admission is cancelled.

Application Procedure: See program adviser for application form. Application deadline is February 15, to begin the following autumn quarter.

Major requirements

149 credits

1. *Courses Required for Admission (44 credits):* See list above.
2. *Didactic Courses (60 credits):* BIOC 405; IMMUN 441; MICROM 442, MICROM 443, MICROM 445, MICROM 460, MICROM 461; LAB M 301, LAB M 302, LAB M 418, LAB M 419, LAB M 420, LAB M 421 (6 credits), LAB M 426 (6 credits), LAB M 430, LAB M 435
3. *Clinical Rotations (45 credits):* LAB M 423 (9 credits), LAB M 424 (9 credits), LAB M 425 (9 credits), LAB M 431, LAB M 433, LAB M 436
4. Minimum 2.0 grade in all didactic and clinical rotation courses
5. Minimum 2.00 GPA, both cumulative and in required courses

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* Graduates of the medical laboratory science program are expected to have in-depth knowledge of the relationships between laboratory data and pathologic processes, and how laboratory data relate to clinical medicine. They have experience with the performance and quality control of routine and specialized medical laboratory testing procedures and an understanding of the theoretical basis of these procedures. In addition, they have experience trouble-shooting and resolving typical problems in the clinical laboratory and are familiar with laboratory quality assurance, safety, governmental regulations, information systems, management, research design and practice, educational methodology, continuing education, communication, ethics, professionalism, and concepts and principles of laboratory operations.

Successful medical laboratory scientists enjoy studying the biological, chemical, and physical sciences and find personal satisfaction and intellectual reward in applying scientific methods in the diagnosis and evaluation of disease. A medical laboratory scientist may practice as a generalist, using knowledge in several of the scientific areas, or may specialize in one scientific area in larger hospitals. Medical laboratory scientists may work in a variety of settings, including clinical laboratories in large medical centers, hospitals, and clinics. Others carry out research in industrial, public health, and medical laboratories, or teach in hospitals, colleges, and universities.

- *Instructional and Research Facilities:* The major training sites are the University of Washington Medical Center and Harborview Medical Center. Affiliate hospitals include Seattle Children's hospital, Labcorp Dynacare, Group Health Cooperative, MultiCare Health System, Northwest Hospital, Providence Everett Medical Center, Providence St. Peter Hospital, Veterans' Affairs Puget Sound Health Care System, Virginia Mason Medical Center, Evergreen Hospital Medical Center, and Highline Medical Center. The Puget Sound Blood Center is also affiliated with the University of Washington. These laboratories support patient care, and provide training and research in the major clinical divisions of chemistry, hematology, immunohematology (blood banking), and microbiology, including multiple subspecialties in these divisions. In addition,

students can either receive training in a variety of clinical laboratory rotations designed to enrich their core clinical experiences or participate in research in collaborative projects supervised by faculty members in the Department of Laboratory Medicine. Enrichment rotations include subspecialty sections in chemistry, hematology, and/or microbiology; molecular diagnostics laboratories; and laboratories where multi-tasking skills are utilized.

- *Honors Options Available:* For Interdisciplinary Honors, see University Honors Program.
- *Internship Opportunities:* One or two internships per year in Japan available to graduates of the medical technology program.
- *Department Scholarships:* Several offered.
- *Student Organizations/Associations:* None currently active.

Of Special Note: The medical laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences, 5600 N. River Road, Suite 720, Rosemont, IL 60018-5119, (847) 939-3597, (773) 714-8880, (773) 714-8886 (fax), info@naacls.org, www.naacls.org. Graduates are eligible for certification by the Board of Registry of the American Society for Clinical Pathology and by the National Credentialing Agency for Laboratory Personnel, Inc.

Graduate Program

Graduate Program Coordinator
NW 120, Box 357110
(206) 598-2148
hschil@uw.edu

The department offers a Master of Science in Laboratory Medicine and prepares the graduate for advanced technical and supervisory positions in clinical and research laboratories as well as in pharmaceutical and diagnostic industries.

The curriculum usually two years for full-time students, may be up to six years for part-time students. Students select one of five pathways and work with a mentor on a thesis project. In addition to 25 credits of required courses, they take courses related to their area of study. The target population is medical technology (MT/MLS) graduates with ASCP certification.

The department also offers a combined undergraduate/graduate program (CUG). Students may enter either as undergraduates or college graduate/postbaccalaureate students. The student must first be accepted into the undergraduate program shown above. Undergraduates or college graduate/postbaccalaureate students may apply simultaneously to the CUG program, or delay application until graduation. Once accepted the student completes the undergraduate program, then immediately enrolls in the Graduate School. Students receive a BS in Medical Laboratory Science at the completion of their undergraduate studies and an MS in Laboratory Medicine at the completion of their graduate studies.

Admission Requirements

The program accepts mostly ASCP certified medical laboratory scientists (MLS/MT). For medical laboratory scientists (MLS/MT), medical laboratory technicians (MLT), students from a four-year program, or laboratorians with significant experience in a clinical laboratory, admission requirements include:

1. Minimum 3.00 GPA in the most recent 90 graded quarter credits (60 graded semester credits)

2. Certification as a medical laboratory scientist (MLS/MT) or equivalent, or as a medical laboratory technician (MLT) or equivalent, or as a specialist in a clinical laboratory field
3. GRE Aptitude Test within the last five years
4. Foreign students submit results of the TOEFL, MLT, or IELTS to the Graduate School. Scores are good for only two years.
5. A 200-300 word statement about educational and professional objectives and reasons for taking the master of science program
6. Three letters of recommendation
7. A personal interview

For students with an undergraduate degree in a scientific field such as chemistry, microbiology, or biology, without ASCP certification, the program is highly competitive. Admission requirements include:

1. Outstanding academic achievements, including a minimum 3.20 GPA in the last 90 graded quarter credits (60 graded semester credits)
2. GRE Aptitude Test within the last five years, with excellent scores.
3. Foreign students submit results of the TOEFL or IELTS. Scores are good for only two years.
4. A 200-300 word statement about educational and professional objectives and reasons for taking the master of science program
5. Three letters of recommendation
6. Personal interviews with department faculty

Application deadline is February 15 to begin the following autumn quarter. Application forms and procedures for admission to the Graduate School are available at www.grad.washington.edu/.

Degree Requirements

Minimum 36 credits, of which nine are thesis credits. Full-time medical laboratory scientists typically complete the program in two years. Students select one of five pathways, as follows:

1. Chemistry/Immunology
 - a. Required: BIOC 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - b. Recommended: MICROM 441
 - c. Electives relevant to thesis, chosen with advice from mentor: BIOC 426, BIOC 440, BIOC 441, BIOC 442, BIOC 540, BIOC 541, BIOC 542, BIOC 512, BIOC 513, CHEM 428, CHEM 429, CHEM 436, CONJ 546, IMMUN 532, IMMUN 533, IMMUN 534, IMMUN 535, PATH 500, PATH 502, PATH 513, PATH 515, PATH 516, PATH 517, P BIO 505, P BIO 506, P BIO 507, PHCOL 401, PHCOL 402
2. Hematology/Coagulation
 - a. Required: BIOC 440, BIOC 441, BIOC 442, BIOC 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
 - b. Recommended: PATH 516
 - c. Electives relevant to thesis chosen with advice from mentor: BIOC 512, BIOC 513, CHEM 428, CHEM 429, CONJ 546, GENOME 465, IMMUN 441, IMMUN 532, P BIO

506, PATH 500, PATH 512, PATH 514, PATH 515, PATH 516, PATH 522, PATH 560 (*, max. 10).

3. Microbiology/Virology

- a. Required: BIOST 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
- b. Recommended: IMMUN 441, MICROM 442, MICROM 445, MICROM 555 (2.5)
- c. Electives relevant to thesis chosen with advice from mentor: BIOC 440, BIOC 441, BIOC 442, BIOC 541, BIOST 512, BIOST 513, CHEM 428, CHEM 429, CONJ 547, CONJ 550, EPI 503, EPI 507, EPI 510, EPI 511 (3-4), EPI 512, IMMUN 533, MICROM 411, MICROM 431, MICROM 450, MICROM 529, MICROM 530, MICROM 531, MICROM 553, P BIO 505, P BIO 506, PATH 512, PATH 513, PATH 515, PATH 516

4. Molecular Diagnostics/Genetics

- a. Required: BIOST 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
- b. Recommended: BIOC 440 or equivalent, BIOC 441 or equivalent, BIOC 442 or equivalent, GENOME 465
- c. Electives relevant to thesis chosen with advice from mentor: BIOST 512, BIOST 513, BIOST 516, CHEM 428, CHEM 429, CONJ 546, EPI 516, EPI 517, GENOME 411, GENOME 466, GENOME 531, IMMUN 441, IMMUN 532, IMMUN 536, MICROM 450, MICROM 530, P BIO 505, P BIO 506

5. Management/Medical Informatics

- a. Required: BIOST 511, LAB M 502, LAB M 510, LAB M 520, LAB M 601, LAB M 700
- b. Electives relevant to thesis chosen with advice from mentor
 1. Business Administration: B A 470, B A 472
 2. Business Communications: B CMU 510

6. Human Resource Management and Organizational Behavior (HRMOB): HRMOB 410, HRMOB 450, HRMOB 470 MGMT 403, MGMT 404

MEDEX

Department Overview

Suite 200, Roosevelt Commons

MEDEX Northwest, established in 1969, has the long-standing mission to train health care providers who will practice primary care in medically underserved and rural areas of the UW School of Medicine's service region (Washington, Wyoming, Alaska, Montana, Idaho -- or WWAMI). MEDEX also has a formal agreement to train students from Nevada.

Undergraduate Program

Bachelor of Clinical Health Sciences

Admission Requirements

1. Clinical Experience: two years minimum (4,000 hours minimum)
2. Human Anatomy and Physiology: Minimum 10 quarter or 6 semester credits. Preferably these courses should be completed within the past five years. Minimum 2.7 grade in each class.
3. Other Medically Related Sciences (e.g., biology, microbiology, chemistry). Minimum 5 quarter or 3 semester credits. Minimum 2.7 grade in each class.
4. English. Two college English courses at the 100 or higher level. At least one must be a composition course. Minimum 2.7 grade in each class.

Major Requirement

129 credits as follows:

MEDEX 450, MEDEX 451, MEDEX 452, MEDEX 453, MEDEX 454, MEDEX 455, MEDEX 456, MEDEX 457, MEDEX 458, MEDEX 459, MEDEX 460, MEDEX 461, MEDEX 462, MEDEX 463, MEDEX 465, MEDEX 466, MEDEX 467, MEDEX 468, MEDEX 469, MEDEX 470, MEDEX 471, MEDEX 472, MEDEX 473, MEDEX 474, MEDEX 475. These courses are taken over eight quarters, not all in numerical order. (Although MEDEX 450 and MEDEX 451 must be taken the first summer quarter of the program, they do not count toward the 180 credits required for the Bachelor of Clinical Health Services degree. The remaining 129 credits shown in this paragraph constitute the major for this degree.)

Graduate Program

Master in Clinical Health Services

Offered through MEDEX Northwest and the UW School of Medicine in Seattle and Spokane, the Master of Clinical Health Services (MCHS) for physician assistants is designed for professionals who have worked as PAs for at least two years and hold a bachelor's degree. The EMCHS helps students assume leadership roles through the development of skills and techniques needed to manage the rapidly changing world of health care.

Admission Requirements

1. Baccalaureate degree from a regionally accredited U.S. institution or equivalent foreign institution. No preference of college major
2. Minimum 2.7 grade for each class
3. Minimum two years (4,000 hours) clinical experience
4. Human anatomy and physiology (completion preferred within the last five years): 10 quarter credits, or 6 semester credits.
5. Physician Assistant-Certified (PA-C) by the National Commission on Certification of Physician Assistants (NCCPA)
6. Medically related sciences (e.g., biology, microbiology, chemistry). (15 quarter credits, or 9 semester credits).
7. Meet UW Graduate School requirements

Degree Requirements

162 credits, as follows:

1. First summer through first spring (four quarters): MEDEX 550, MEDEX 551, MEDEX 552, MEDEX 553, MEDEX 554, MEDEX 555, MEDEX 556, MEDEX 558, MEDEX 559, MEDEX 560, MEDEX 561, MEDEX 562, MEDEX 568, MEDEX 569, MEDEX 570, MEDEX 571, MEDEX 572, MEDEX 573, MEDEX 574, MEDEX 575, MEDEX 577
2. Second summer through third summer (five quarters): MEDEX 540, MEDEX 541, MEDEX 542, MEDEX 543, MEDEX 562, MEDEX 565, MEDEX 566, MEDEX 581, MEDEX 582, MEDEX 583, MEDEX 584, MEDEX 588
3. Minimum 2.7 grade in all required courses
4. Minimum 3.00 GPA

Medicine

Department Overview

RR512 University of Washington Medical Center

domchair@uw.edu

Active programs in teaching, research, and patient care are carried on at the University of Washington Medical Center, Veterans' Administration Puget Sound Health Care System (VAPSHCS), Harborview Medical Center, Pacific Medical Center, the Puget Sound Blood Center, the Northwest Kidney Center, and the Fred Hutchinson Cancer Research Center. Major affiliations for clinical teaching also exist with Providence Medical Center and Swedish Hospital Medical Center. There are many additional affiliations with community hospitals in Seattle, the state of Washington, and the WWAMI region. Medical students, interns, medical residents, and postdoctoral research fellows rotate through these various hospitals and participate in the learning experiences offered at each.

Microbiology

Department Overview

K357A Health Sciences

Microbiology is a natural science that deals with microorganisms such as bacteria, fungi, protozoa, algae, and viruses. It is concerned with the nature and properties of these organisms, their effects on humans and the environment, and how they can be exploited to provide useful products.

Undergraduate Program

Adviser

K-357A Health Sciences, Box 357735

(206) 543-5824

micro@uw.edu

The Department of Microbiology offers the following programs of study:

- The Bachelor of Science degree with a major in microbiology
- A minor in microbiology

Bachelor of Science

Suggested First- and Second-Year Courses: PHYS 114, PHYS 115, or PHYS 121, PHYS 122; one of the following: MATH 112, MATH 124, Q SCI 381, or STAT 311.

MICROM 410, the first microbiology course for majors, is taken after completion of BIOL 200 and organic chemistry (CHEM 223 or CHEM 237). To graduate in four years, a student must complete introductory biology and organic chemistry before autumn quarter of the junior year.

MICROM 301, and MICROM 302, offered to non-majors, serve as introductory courses, but cannot be used to fulfill graduation requirements for a major in microbiology. MICROM 301 is a prerequisite for students applying to nursing, physical therapy, or dental school.

Department Admission Requirements

1. Minimum 75 credits applicable to graduation, with a minimum 2.00 overall cumulative GPA.
2. Completion of the following prerequisite courses with a minimum 2.50 cumulative GPA: BIOL 180; BIOL 200 (minimum 2.3 grade); BIOL 220; either CHEM 142, CHEM 152, CHEM 162; or CHEM 143 and CHEM 153; either CHEM 223, CHEM 237, or CHEM 335

Major Requirements

Minimum 90 credits (including microbiology courses) in the biological, physical, and mathematical sciences, as follows:

1. Minimum 2.50 cumulative GPA in courses required for admission: BIOL 180; BIOL 200 (minimum 2.3 grade), BIOL 220; either CHEM 142, CHEM 152, and CHEM 162, or CHEM 143 and CHEM 153; either CHEM 223, CHEM 237, or CHEM 335
2. *Core Courses (8 credits)*: MICROM 402; MICROM 410; MICROM 496
3. *Distribution Groups and Electives (28 credits)*: Minimum one course from each of the following four distribution groups; minimum two laboratory courses. Remaining credits from additional courses from the distribution groups or from an approved list of electives. See adviser for approved list
 - a. *Medical Microbiology*: IMMUN 441, MICROM 442 MICROM 443, MICROM 460, or both MICROM 460 and MICROM 461
 - b. *Virology*: MICROM 445 or MICROM 450
 - c. *Diversity and Ecology*: MICROM 412 or MICROM 435
 - d. *Genetics and Molecular Biology*: MICROM 411; or MICROM 431; and either GENOME 361 or GENOME 371
4. Either PHYS 114 and PHYS 115; or PHYS 121 and PHYS 122 (PHYS 116 or PHYS 123 recommended)
5. Either MATH 112, MATH 124, MATH 144, Q SCI 381, STAT 220, or STAT 311
6. Either BIOC 405 and BIOC 406, or BIOC 440, BIOC 441, and BIOC 442
7. All required courses taken for a numerical grade unless course is offered credit/no-credit only. Minimum 2.25 cumulative GPA; minimum 1.8 grade in all MICROM and IMMUN core and elective courses applied to the major
8. Transfer students must complete at least 20 required and elective microbiology credits through the UW.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the [department website](#).

Minor

Minor Requirements: 29 credits as follows:

1. 14 credits to include BIOL 200; one of CHEM 152, CHEM 155, CHEM 162, or CHEM 165; one of CHEM 223, CHEM 237, or CHEM 355.
2. 15 credits from the following: MICROM 410; one from MICROM 302, MICROM 402, MICROM 431, or MICROM 443; and approved 400-level, graded microbiology courses to reach 29 credits. See adviser for approved list.
3. Minimum cumulative 2.00 GPA for all courses counted toward the minor

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The department's objective is to provide a major with the best instruction possible in broad areas of microbiology so students qualify for a wide variety of positions with a terminal BS degree or qualify to pursue advanced degrees in graduate or professional schools.

Microbiology offers students an excellent education in the biology of microorganisms, namely bacteria, fungi, protozoa, and viruses. Through learning about the biology of these microorganisms and viruses, students more fully understand the pivotal position they occupy in establishing and maintaining our biosphere, their effects on human, animal, and plant life, and how the biological properties of certain microbes are exploited for certain purposes. Microorganisms are important in drinking water, wastewater and sewage treatment, production and spoilage of foods, production of antibiotics, bioremediation of toxic compounds, and genetic engineering of organisms having unique characteristics. Students gain insight into strategies used by microorganisms and viruses to cause disease and the mechanisms used by their host to defend themselves.

Graduates have found research positions in biotechnology and pharmaceutical companies, as well as in state and government positions hiring microbiologists. Students interested in a health profession or graduate program benefit from this program.

- *Instructional and Research Facilities:* Microbiology courses are taught using state-of-the-art facilities in the teaching wing of the Health Sciences building. Research labs are located in the Health Sciences, Fred Hutchinson Cancer Research Center, NW Regional Primate Research Center, and UW Rosen building.
- *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning:* MICROM 499, undergraduate laboratory research, is offered for credit. See adviser for details.
- *Department Scholarships:* The department offers four awards each year. More information is available at the department's website.
- *Student Organizations/Associations:* The Microphiles Club is open to all students. The club sponsors field trips to local biotech companies, speakers on topics such as research and career opportunities, graduate school, and peer teaching.

Graduate Program

Graduate Program Coordinator
K357A Health Sciences, Box 357735
(206) 543-2572
microadv@uw.edu

The department offers a graduate program leading to the doctor of philosophy degree. Students interested in graduate work should obtain the necessary application forms from the department.

Doctor of Philosophy

Admission Requirements

Background in any biological science discipline. Selection based on evaluation of a student's undergraduate record for indications of ability to excel in independent, creative research. The department strongly recommends that undergraduate preparation include courses in biochemistry, physics, general and organic chemistry, microbiology, molecular biology and cell biology. Prospective students are strongly advised to seek opportunities to carry out undergraduate research.

Required background courses (generally satisfied prior to entry into the graduate program):

1. Biochemistry (equivalent to BIOC 440, BIOC 441, and BIOC 442)
2. Classical and molecular genetics (equivalent to GENOME 371 or GENOME 372)
3. General microbiology (equivalent to MICROM 410)
4. Medical microbiology and basic immunology recommended for those considering research in the area of medical microbiology or virology.

Degree Requirements

90 credits minimum, as follows:

1. **Conjoint (6 credits):** See department website for specific courses.
2. **Virology and Bacteriology (6-7 credits):** See department website for specific courses.
3. **Faculty Research Presentations for first-year students:** MICROM 599
4. **Laboratory Rotation:** MICROM 500, minimum three quarters
5. **Journal Club:** MICROM 522, continuous enrollment
6. **Seminar:** MICROM 520 seminar series or attendance at Fred Hutchinson seminars, where students are also encouraged to attend the Microbiology seminars. To be taken every quarter unless a conflict with teaching exists.
7. **Additional requirements:**
 - a. Teaching assistant in at least two laboratory courses for undergraduates (usually satisfied in the first and/or second year).
 - b. Minimum two formal lectures given in an undergraduate course (third or fourth year).
 - c. First author on multiple papers related to thesis research published or accepted for publication in refereed journals. Under some circumstances, one first-author publication satisfies this requirement.
8. General examination, dissertation, final examination

Neurological Surgery

Department Overview

325 9th Avenue, Harborview Medical Center

askuwns@uw.edu

The department is dedicated to teaching and research in the entire spectrum of diseases of the central and peripheral nervous system. Instruction is provided for medical students and postgraduate physicians.

Medical-student instruction includes participation in the human-biology curriculum as well as in elective basic-science and clinical experiences. These are available at Harborview Medical Center, UW Medical Center, Veterans Affairs Puget Sound Health Care Center, and Seattle Children's hospital. The department also has several course offerings correlating research and clinical problems of the nervous system, including research seminars in neuro-oncology, molecular imaging, stem cell biology, and clinical and basic-science correlates of the epilepsies.

Selected medical students also may elect research experience within the department. Department research facilities are housed in the Medical Research Tower of the UW Medical Center, at Harborview Research and Training Building, and at Veterans' Affairs Puget Sound Health Care System. Investigations are under way at these institutions in many areas of molecular biology, stem cell biology, neurophysiology, brain function and epilepsy research, neuroanatomy, nanotechnology, molecular imaging, behavioral research, outcomes research (cranial and spine), trauma research, and neuro-oncology.

In addition to undergraduate instruction, a fully certified residency program in neurological surgery is available for selected postgraduate physicians. The eight-year program emphasizes preparation for a career in academic neurosurgery.

Neurology

Department Overview

RR650 University of Washington Medical Center

neurolog@uw.edu

Neurology's four-year residency program (including an internship) offers training in all facets of neuroscience research. In addition, the department offers training programs in the Divisions of Neurogenetics and Pediatric Neurology and in the Epilepsy Center. A clinical-clerkship program provides basic training in neurology patient care. The department is active in teaching, research, and patient care at the UW Medical Center, Seattle Veterans' Affairs Medical Center, Harborview Medical Center, Seattle Children's hospital, and the Fred Hutchinson Cancer Research Center. Medical students, interns, neurology residents, and postdoctoral research fellows rotate through these various hospitals and participate in the learning experiences offered at each.

Obstetrics and Gynecology

Department Overview

BB667 Health Sciences Building

The department is involved with teaching, patient care, and research in the areas of normal and abnormal human reproduction: growth and development of the fetus, normal and complicated obstetrics, and surgical and medical diseases of the female reproductive system, including endocrinology, oncology, infectious disease, urogynecology, psychosocial problems, primary and preventive health care, and ethics.

Ophthalmology

Department Overview

RR801 University of Washington Medical Center

The department is responsible for education and instruction in both clinical and research programs in diseases of the eye and visual system.

Medical student education is provided through multiple electives in Seattle and the WWAMI region during the clinical years (usually third and fourth years of medical school). Successful graduates of medical school interested in ophthalmology apply to residency, which includes three years of training beginning in their PGY-2/R-2 year at affiliated hospitals. A PGY-1R-1year is required prior to ophthalmology residency, (applied for at the same time as ophthalmology residency). After residency, optional programs for further specialized training are available for application at the UW Ophthalmology Department, to include a two-year ophthalmic/plastics and orbit fellowship, a two-year surgical retina fellowship, a one-year uveitis fellowship, a one-year pediatrics fellowship, and a one-year cornea fellowship. Patient care is provided under supervision of faculty physicians at the UW Medical Center, Harborview Medical Center, Veterans' Affairs Medical Center, and Seattle Children's hospital.

Clinical research programs relate to eye diseases. Laboratory research encompasses neurophysiology of vision, morphology of the retina and visual system, corneal wound healing, biochemistry of ocular tissues, and anatomy/physiology of the orbit. Postdoctoral training is offered in all these disciplines.

For more information on residencies and fellowships, contact the department.

Orthopaedics

Department Overview

BB1043 University of Washington Medical Center

The department is actively involved in quality patient care, teaching, and research concerning bone and joint problems. Special areas of expertise include foot and ankle, hand and microvascular, hip and knee, arthritis, sports medicine, pediatric orthopaedics, shoulder and elbow, spine, trauma, and tumors.

In addition to providing instruction for medical students, the department provides education at the graduate, residency, and post-residency levels. Selected medical students may elect research experience in the department. A fully approved residency offers opportunities to carry out fundamental and clinical research. Residents may work toward the master of science degree by meeting the requirements of the Graduate School and the academic unit offering the degree program.

Otolaryngology -- Head and Neck Surgery

Department Overview

BB1165 University of Washington Medical Center

The department provides clinical care for patients with a broad spectrum of disorders affecting the head and neck region, including the ears, nose, and throat. A major departmental effort is directed toward basic research in the areas of sensorineural hearing disorders, physiology of the larynx, and cancer treatment and rehabilitation. The department supports a number of research fellows and advanced degree candidates, and is responsible for a four-year residency program and for the training of medical students in subjects relevant to the specialty.

Pathology

Department Overview

C516 Health Sciences

Pathology, the study of disease: its causes, mechanisms, and effects on the body, is both a basic biological science and a specialty of medicine. As a medical specialty, practiced by MDs, it includes the laboratory evaluation of organs, tissues, and fluids to assist other physicians in reaching a diagnosis. As a basic science, practiced by PhDs, pathology focuses on the experimental investigation of the molecular processes of disease, using techniques of cell and organ culture, biochemistry, molecular biology, and genetics.

The department offers graduate training in experimental pathology, with emphasis on the cellular and molecular biological basis of disease. The program trains individuals for careers as practicing scientists in biomedical research, investigating basic disease mechanisms. Emphasis is on developing skills in hypothesis generation and testing, including the design, accomplishment, and critical interpretation of experiments. Experimental pathology uses the full range of biomedical research techniques (including biochemistry, molecular biology, cell biology, animal modeling) to elucidate the mechanisms underlying human disease. Graduates usually continue research careers at biotechnology companies or universities/research institutes.

Please Note: In summer 2020, the Department of Laboratory Medicine and the Department of Pathology merged into the Department of Laboratory Medicine and Pathology. The General Catalog entry for the new department was not available at time of publication.

Graduate Program

Graduate Program Adviser
C516 Health Sciences, Box 357470
(206) 616-7551

Doctor of Philosophy

Admission Requirements

1. Copy of the Graduate School Application
2. Official transcripts
3. Official GRE scores. Subject test in biology or related area recommended.
4. Statement of purpose and research interests
5. Three or more letters of recommendation
6. Personal statement that addresses the relationship between personal background and aspirations

Special Requirements

Undergraduate courses in the sciences. Acceptable scores on the GRE, including advanced biology or chemistry. Some experience in a research laboratory strongly recommended. Those wishing to

matriculate toward both the MD and PhD degrees must gain admission to both the Graduate School and the School of Medicine.

Degree Requirements

90 credits

1. *Required coursework:* PATH 500, PATH 501, PATH 507, PATH 512), PATH 513, PATH 515, PATH 516, PATH 551; BIOST 511; CONJ 538, CONJ 539
2. *Research before the general examination:* PATH 600
3. *Research after the general examination:* PATH 800
4. *Recommended courses:* CONJ 531, CONJ 532
5. *General examination*
6. *Dissertation*
7. *Final examination*

Financial Aid

Funding is provided from departmental and University funds, training grants, a variety of institutional fellowships, and research grants of individual faculty members.

Research Facilities

The department emphasizes the cellular and molecular approach to the investigation of the pathogenesis of disease in mammalian species. Special facilities exist for training in electron microscopy; cell, tissue, and organ culture; recombinant DNA techniques; histochemistry and cytochemistry; analytical biochemistry; immunology; and molecular and cell biology.

Residency Training Program

The department supervises a residency-training program in anatomic pathology and, jointly with the Department of Laboratory Medicine, in clinical pathology for qualified medical doctors. Subspecialty training is also available through clinical fellowships. Persons who complete the residency program are eligible for certification by the American Board of Pathology. For additional information, contact the Resident Program Director, Department of Pathology, Box 356100, or visit the residency program [website](#).

Pediatrics

Department Overview

RR314 Health Sciences

Pediatrics involves the study of physical and behavioral development of humans, in health and disease, from conception to adulthood.

Instruction is provided through conjoint courses, lectures, conferences, clerkships, and electives. Faculty members participate in teaching the basic curriculum and offer 20 electives, in addition to the general pediatrics clerkship at multiple WWAMI sites. A residency program is offered with a wide variety of electives as well as the traditional hospital-inpatient and clinic experience. Postdoctoral fellowship training is available in many subspecialty areas of pediatrics. The major teaching hospitals in Seattle are Seattle Children's hospital, University of Washington Medical Center, and Harborview Medical Center.

Pharmacology

Department Overview

E401 Health Sciences

Pharmacology is the science that deals with the nature of interactions between drugs and biological systems, and with the applications of such interactions to the treatment of disease. Courses in this field are given for medical, dental, pharmacy, nursing, and graduate students.

Graduate Program

Graduate Program Coordinator
E-417 Health Sciences, Box 357280
(206) 685-9252
phcoladm@uw.edu

The Department of Pharmacology offers the Doctor of Philosophy degree.

Doctor of Philosophy

Admission Requirement

A baccalaureate degree with a major in any of the sciences, such as biochemistry, chemistry, pharmacy, physics, physiology, psychology, or zoology. Students are selected from the applicant pool based on several criteria, including academic records, recommendations, and previous research experience.

Graduation Requirements

Minimum 90 credits, to include:

1. PHCOL 510, PHCOL 511, PHCOL 512, and PHCOL 513 with a minimum 2.7 grade for each class. Enrollment in PHCOL 507 throughout graduate school; PHCOL 514 in the first, second, and third years of graduate study.
2. PHCOL 519 (laboratory rotations) for autumn, winter, and spring quarters of the first year acquainting the student with various areas of pharmacology and research under investigation within the department. During each quarter, the student carries out a research project in the laboratory of a faculty member. At the end of the quarter, the student gives a presentation on the rotation research project that is evaluated by the faculty, using the criteria of scientific content, delivery, knowledge of the subject, and organization of material. The student receives a grade and academic credit for PHCOL 519. Students entering the PhD program with an MS degree or equivalent may petition to enroll in only one quarter of PHCOL 519 before selecting a laboratory. Rotations may occur outside the department by special permission only.
3. Four advanced 2-3 credit graded elective courses in pharmacology in addition to the PHCOL 510 through PHCOL 513 series. Nine graded credits (non-seminar) in graduate-level courses in physiology, biochemistry, molecular biology, immunology, cell biology, or other relevant areas. The courses should strengthen the foundation of the student's thesis proposal.

4. Creditable passage of the general examination consisting of a comprehensive take-home written examination on general pharmacology, taken during summer quarter of the second year, followed by preparation of a grant proposal on the thesis project, and an oral examination, given by the Supervisory Committee during the first quarter of the third year of study. The student is evaluated on the proposed dissertation research and on his or her knowledge of the major disciplines important to the research. Based on the student's performance, the committee recommends approval and candidacy for the PhD degree, further work and subsequent reexamination, or termination.
5. After successful completion of the general examination, the student devotes most of his or her time to thesis research in the third and subsequent years of study. Students are expected to finish all degree requirements and complete their thesis research within a six-year time period from matriculation.
6. The research project for the Ph.D. dissertation is chosen by the candidate and faculty sponsor and approved by the candidate's Supervisory Committee. Research must represent a worthy and fundamental contribution showing originality in concept and implementation.

When the candidate has concluded the research project and prepared a complete copy of the dissertation, the sponsor obtains approval of the Graduate School and sets a date for the final examination. The final examination is concerned principally with the subject matter of the dissertation, but may include the background and origins of the dissertation problem as well as its practical applications and extrapolations.

Financial Aid

Financial support is offered to students who maintain satisfactory academic progress. Tuition and stipends are provided by National Institutes of Health training grants, University of Washington teaching assistantships, individual research grants, and fellowships from private sources.

Physiology and Biophysics

Department Overview

G424 Health Sciences

Physiology deals with the processes, activities, and phenomena incidental to, and characteristic of, life and living organisms. Based upon physics, chemistry, and mathematics, physiology interlocks closely with the other basic medical sciences anatomy, molecular biology, immunology, biochemistry, pharmacology, pathology, and with psychology. Research in physiology is accomplished by analyzing the molecular, cellular, and integrative properties of the system under study. For this reason, physiology appeals to students with diverse backgrounds and goals. Courses in this field are given for medical, dental, pharmacy, nursing, and graduate students.

Graduate Program

Graduate Program Coordinator
G424 Health Sciences, Box 357290
(206) 685-0519
pbio@uw.edu

The Department of Physiology and Biophysics offers advanced instruction and training leading to both the Master of Science and Doctor of Philosophy degrees. Students aspiring only to the M.S. degree are rarely accepted. Students pursuing a PhD degree in physiology and biophysics may emphasize molecular and cellular physiology, biophysics, neurobiology, respiratory physiology, or endocrinology. Studies leading to the doctoral degree require five to six years to complete. The first year is spent acquiring a broad knowledge of physiology via a sequence of courses and laboratory rotations. After selection of a special area of study, the second year is spent taking advanced seminars in the area of specialization and developing a thesis proposal. After admission to candidacy, the latter years are spent pursuing the area in depth and completing an original research project.

Individuals with graduate degrees in physiology and biophysics often pursue careers in teaching and research in colleges and universities and in biotech industries. The department participates in interdisciplinary PhD degree programs in neurobiology and behavior and in molecular and cellular biology. The department also participates in the medical scientist training program, and the biological physics structure and design program.

Master of Science

The Master of Science degree is normally granted as part of the path of study leading to the Doctor of Philosophy degree. Students are normally admitted only to the Doctor of Philosophy degree.

Doctor of Philosophy

Admission Requirements

To apply for admission, a student must provide academic transcripts, Graduate Record Examination (GRE) scores, four letters of recommendation, and a statement of purpose. Because of the broad scope and interdisciplinary nature of the graduate program, there are no specific prerequisites for admission. However, most students have backgrounds in the physical and/or biological sciences. These include

majors in biology, physics, mathematics, engineering, computer science, chemistry, and psychology. The most important requirement is a strong motivation and excitement about doing science.

Degree Requirements

90 credits minimum, as follows:

Due to the broad nature of research interests in the department and the diversity of graduate-student backgrounds, formal course requirements are kept to a minimum and are completed in the first year. Students are encouraged to shape their own graduate education, as they choose the majority of their coursework and the scientific direction for their research. Courses available include those offered by other departments, both in the Medical School and elsewhere on campus. Electives may be chosen from a list of mini-courses whose topics reflect the current interests of faculty and students. Students are required to take at least six mini courses.

Required Courses:

1. CONJ 531, CONJ 532, P BIO 532, NEUBEH 501, NEUBEH 502, P BIO 508, must be taken three times); P BIO 513, P BIO 519
2. Six departmental mini-courses, to be completed prior to the general examination, from the following: P BIO 509, P BIO 545, P BIO 550, P BIO 551, P BIO 552, P BIO 553, P BIO 554, P BIO 555, P BIO 556, P BIO 557, P BIO 559.
3. P BIO 600 (before general examination)
4. P BIO 800 (after general examination)
5. Note: P BIO 503 is highly recommended, but not required

General Examination

The general examination must be taken by the last day of autumn quarter of the third year. After passing the general examination the student is advanced to candidacy for the doctoral degree. The student then registers for P BIO 800 and continues working on thesis research.

Final Examination

The culmination of the program is the submission of a written doctoral thesis and the presentation of this work in a public lecture attended by members of the department and the University.

Research Facilities

The department is well equipped to provide instruction and research training in cellular and molecular physiology, neurobiology, membrane biophysics, respiratory physiology, muscle biophysics, endocrinology, reproduction, and physiological psychology. The facilities of the Regional Primate Research Center, adjacent to the department, are available to qualified trainees who need to use primates in their research.

Psychiatry and Behavioral Sciences

Department Overview

BB1644 Health Sciences

pbsci@uw.edu

The department offers coursework, clinical training, and research opportunities for undergraduate students, medical students, graduate physicians, and graduate students in allied health programs such as psychology, social work, and psychiatric nursing.

A biobehavioral approach is emphasized, which incorporates intrapersonal, interpersonal, and sociocultural factors. Intrapersonal factors include emotion, perception, cognition, psychodynamics, neurochemistry, neuroanatomy, neurophysiology, genetics, and the developmental and aging processes. Interpersonal factors focus upon dyadic, familial, and group interactions. Sociocultural factors include the cultural, social, institutional, and community systems as well as the environment and epidemiology of health and disease.

Graduate Program

The Medical School curriculum is divided into a core (basic) curriculum and an elective curriculum. Within its core curriculum the Department of Psychiatry and Behavioral Sciences offers material covering learning theory, cognition, memory, perception, neuropharmacology, social growth and development, epidemiology of health and disease, psychopathology, psychotherapy, and neuropsychiatry and behavioral medicine, as well as training in interviewing skills and assessment techniques. Its elective program includes a variety of clinical experiences and advanced didactics and seminars designed to further the knowledge and skills developed within the basic curriculum. In addition, the department encourages research and other scholarly pursuits by students in areas of interest to them. Stipends are available for research studies.

Residency Training in Psychiatry

A four-year residency for medical school graduates and a three-year post-internship residency prepares physicians for Specialty Board Certification in Psychiatry. Clinical rotations on inpatient, outpatient, emergency, and consultation/liaison services are augmented by individual supervision and didactic lectures. With the program's integrative orientation, residents become proficient in psychotherapy, psychopharmacology, and community liaison with patients of all ages. Fellowships in child, geriatric, addiction, community, forensic and consultation-liaison psychiatry, and psychiatric neuroscience are available.

Clinical Psychology Internship Program

The one-year internship in clinical psychology, accredited by the American Psychological Association, offers advanced clinical training to candidates for the doctorate in clinical psychology from graduate programs accredited by the American Psychological Association. Training tracks with the internship in general adult, general child, rehabilitation and health psychology, and public behavioral health and justice policy (adult and child). Advanced research skills training is also available as part of an INH-funded training grant for selected internship participants.

Postdoctoral Fellowship Training

Postdoctoral fellowships for advanced clinical and research training in behavioral medicine, broadly construed, are also offered.

Radiation Oncology

Department Overview

NN106 University of Washington Medical Center

Radiation oncology is the branch of clinical medicine that utilizes high-energy radiation to treat disease, usually cancer. The department consists of three divisions: clinical radiation oncology, medical radiation physics, and experimental cancer biology. Training programs are offered in all three divisions. Research programs in the department are aimed at the physical and biological mechanisms of interactions between ionizing radiations, and normal and malignant tissues, with particular emphasis on high linear energy transfer (LET) radiation effects. The department is actively involved in radiation treatment planning work, particularly in regard to intensity modulated radiation therapy (IMRT). Other programs involve the application of positron emission tomography (PET) to elucidate differences between cancers and normal tissues, and the development of specialized radiopharmaceuticals.

Radiology

Department Overview

RR215 University of Washington Medical Center

Diagnostic radiology is that branch of clinical medicine that specializes in interpretation of various imaging modalities in order to detect, to characterize, and (with increasing frequency) to treat a wide variety of diseases. Historically, x-rays were the first energy source utilized for these purposes, and they continue to be a mainstay of this discipline. More recently, the armamentarium has grown to include ultrasound, computed tomography, magnetic resonance, and positron-emission tomography. In nuclear medicine, one of radiology's major subspecialties, radionuclides are employed for both diagnostic and therapeutic purposes. Another subspecialty is interventional radiology, wherein aspirations and biopsies, as well as therapeutic procedures such as abscess drainage, tumor embolization, and vascular stents are performed percutaneously.

The department consists of two clinical divisions: diagnostic radiology and nuclear medicine. Both are supported by technologists and faculty in radiation physics. Instruction is provided for medical students, residents, and fellows as well as for other physicians. The faculty and its teaching and research activities are represented in each hospital affiliated with the University.

Rehabilitation Medicine

Department Overview

BB928 Health Sciences

The Department of Rehabilitation Medicine provides education for medical students, interns, residents, and allied health students in occupational therapy, physical therapy, and prosthetics and orthotics in a comprehensive approach to rehabilitation problems. This includes special diagnostic and evaluative procedures; methods and rationale in the application of principles of occupational therapy, physical therapy, prosthetics and orthotics, and other health professions; and advanced investigation of special problems encountered in the field. In addition, the department conducts a residency training program for the specialty of physical medicine and rehabilitation.

The department offers curricula leading to the following degrees: Master of Occupational Therapy, Doctor of Physical Therapy, Master of Prosthetics and Orthotics, and a PhD in rehabilitation science.

Occupational Therapy

Head

Janet M. Powell

The profession of occupational therapy appeals to people who enjoy thinking creatively and flexibly to solve problems, and who want to help people with disabilities perform activities important in their daily lives. Occupational therapists provide services related to occupational performance (activities) in everyday life in the areas of self-care, work, education, or play and leisure. They work with people who have physical illness or injury, social or emotional difficulties, congenital or developmental problems, or who are in need of preventive strategies to enhance health and well-being; and with people in all age groups from diverse cultural and ethnic groups and socioeconomic levels.

Occupational therapists help people with impairments or limitations live as productive and as high quality of life as possible. Services focus on increasing independence, enhancing development, providing compensatory strategies, and minimizing or preventing disability. Therapists adapt activities and environments, select therapy activities meaningful to clients, and provide client, family, and caregiver education. For example, an occupational therapist may teach adaptive dressing techniques to a client who has lost use of a hand following a stroke, help a child with autism interact with peers, or modify a computer for a young adult with a spinal cord injury returning to work.

Today's occupational therapists practice in rehabilitation centers, outpatient rehabilitation clinics, schools, hospitals, mental health facilities, private practice, skilled nursing facilities, home healthcare, and community health programs. The most common work settings for occupational therapists are school systems, hospitals, and long-term care facilities. The current and future job outlook for occupational therapists is excellent. The occupational therapy program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA) located at 4720 Montgomery Lane, Suite 200, Bethesda, MD, 20814-3449. ACOTE's telephone number, c/o AOTA, is (301) 652-2682 and its web address is www.acoteonline.org. Standards comply with the U.S. Department of Education criteria for recognition of accrediting agencies. Graduates of the program are eligible to sit for the national certification examination for occupational therapists. The National Board for Certification in Occupational Therapy (NBCOT) is the certifying agency responsible for development and implementation of this examination. All states currently require state licensure in order to practice.

Master of Occupational Therapy

Admission Requirements

1. Bachelor's degree in any major and Graduate Record Examination (GRE) taken within the past five years. Seven prerequisite courses as shown below. Volunteer or work experience in at least two practice areas of occupational therapy. Admission is once a year for entry autumn quarter; applications are due November 1.
2. Specific prerequisite courses at the UW. (Students who have attended schools other than the UW must take comparable courses.)
 - a. *Natural Sciences*: BIOL 118; B STR 301; CHEM 120; EDPSY 490
 - b. *Social Sciences*: PSYCH 305; PSYCH 306; SOC 110 or ANTH 202
3. *Requirements to Apply*: Completion of five prerequisite courses, including three courses in the natural sciences; 3.00 minimum GPA in prerequisite courses with no single course graded less than 2.7. Applicants must have a cumulative college-level grade point average of at least a 3.00 (B) to be considered for admission. This includes all baccalaureate and post-baccalaureate courses. Admission is based on academic ability, communication skills, and understanding and experience in occupational therapy. Detailed program requirements and selection process information are available by consulting the program's website at rehab.washington.edu/education/degree/ot/, by emailing ot@uw.edu, or by calling (206) 598-5764.

Degree Requirements

Courses: To be completed in the scheduled sequence, beginning autumn quarter only, at the UW: REHAB 510, REHAB 520, REHAB 522, REHAB 533, REHAB 541, REHAB 542, REHAB 543, REHAB 544, REHAB 545, REHAB 548, REHAB 551, REHAB 564, REHAB 570, REHAB 571, REHAB 572, REHAB 574, REHAB 575, REHAB 576, REHAB 577, REHAB 578, REHAB 579, REHAB 580, REHAB 581, REHAB 582, REHAB 584, REHAB 585, REHAB 591, and REHAB 594.

GPA Requirement: cumulative 3.00 GPA in all required professional coursework to retain satisfactory standing and to graduate. Detailed scholastic requirements are available on the program's website at rehab.washington.edu/education/degree/ot/.

Continuation Policy: If at any point the OT curriculum cumulative GPA falls below 3.00, the student is placed on academic probation and must raise the GPA to 3.00 by the end of two subsequent quarters. Students unable to remove their probation status are subject to dismissal from the program. If a student receives a grade below 2.7 in a required course, continuation in the program is reviewed and determined by the Occupational Therapy Advisory and Evaluation Committee.

Fieldwork Placement: The student must satisfactorily complete all academic coursework before taking the two required Level II Fieldwork placements (REHAB 594). Both fieldwork placements must be satisfactorily completed within 24 months following completion of the academic portion of the program in order to graduate.

For more information on the Master of Occupational Therapy program, visit the department's website at rehab.washington.edu/education/degree/ot/.

Physical Therapy

Interim Head

Sarah Westcot McCoy

Physical therapy is a direct form of professional patient care that can be applied in most disciplines of medicine. The principal objective in physical therapy is to restore or improve motor function in individuals with musculoskeletal or neuromuscular conditions.

Management of problems related to motor function is only part of the work of physical therapy. Equally important is rebuilding self-confidence and creating a desire to return to a normal, active life. Other primary objectives of physical therapy are prevention of disability and pain, and training in mobility skills for those who must adapt to permanent disability.

As a consequence of the scope of the profession, physical therapists function in a variety of settings, the most familiar being the hospital. Physical therapists also plan, provide, evaluate, and direct patient care in outpatient clinics, rehabilitation centers, health maintenance organizations, developmental centers, home-health agencies, schools, extended-care facilities, voluntary health programs, industry, and private practices. The physical therapist may be found anywhere quality healthcare is needed. Increasingly, physical therapists are becoming involved in basic and clinical research, such as the academic community, either as full-time faculty members or as supervisors of clinical education, and as consultants in local, state, and federal health-planning activities.

Physical therapists function in compliance with the licensing laws and ethical principles that govern the practice of physical therapy. The steps to licensure as a physical therapist vary slightly from state to state, but all physical therapists graduate from an accredited curriculum of physical therapy that includes a specific period of clinical training. As physical therapy relates to the majority of medical specialties, the education program is broad in scope, including an emphasis on physical and social sciences. The physical therapist evaluates the patient's problem by testing such factors as range of joint motion, muscle strength, posture and gait, pulmonary function, sensory perception, orthotic and prosthetic fit, reflexes and muscle tone, and functional skills. Intervention procedures used may include ultrasound, superficial heat and cold, electrical stimulation, massage, traction, joint mobilization, biofeedback, therapeutic exercise, and assisted ambulation training.

As with all professionals in health fields, physical therapists are responsible for subscribing to a program of continuing education. Some therapists also develop the knowledge and skills of a specialist via continuing education and concentrated practice in one area, such as sports or pediatric therapy. A formal mechanism for certifying specialists is implemented by the national professional association, the American Physical Therapy Association.

The University of Washington program in physical therapy is accredited by the American Physical Therapy Association Commission on Accreditation in Physical Therapy Education. For complete program details visit rehab.washington.edu/education/degree/pt.

Doctor of Physical Therapy

Admission Requirements

1. Enrollment is limited to 44 students each year and admission is competitive.
2. Application is restricted to those who are U.S. citizens or U.S. permanent residents by the autumn program entrance date.
3. Applicants are required to submit scores from the General Test portion of the Graduate Record Examinations (GRE).

4. Prior to the application deadline of November 1, the student must have met the following academic requirements:
 - a. Minimum 3.00 GPA on all college-level courses
 - b. Minimum 3.00 GPA on PT prerequisite courses
 - c. Minimum 2.0 (C) grade on each PT prerequisite course
 - d. Half (50%) of PT prerequisite courses completed.
For a list of PT prerequisite course descriptions, see the program Website at depts.washington.edu/rehab/pt/eligibility.asp#prereq
5. Minimum requirements above must be maintained until program entrance and all prerequisite courses must be finished at that time. Applicants must complete a bachelor's degree before they start the program.
6. Most clinical internship placement sites require potential trainees to undergo a criminal history background check for crimes against vulnerable populations. To ensure that all students offered positions in the PT program have no such history and therefore are able to finish the clinical portion of the curriculum, the completion of a criminal background check process is required of applicants accepting admission.

Degree Requirements

157 credits, as follows:

1. *Year One*
 - a. *Autumn Quarter:* REHAB 504, REHAB 509, REHAB 517, REHAB 521, REHAB 522, REHAB 541, REHAB 544
 - b. *Winter Quarter:* REHAB 506, REHAB 517, REHAB 533, REHAB 542, REHAB 545, REHAB 551
 - c. *Spring Quarter:* REHAB 507, REHAB 517, REHAB 525, REHAB 533, REHAB 536, REHAB 543, REHAB 548
 - d. *Summer Quarter:* REHAB 500, REHAB 508, REHAB 517, REHAB 537, REHAB 538, REHAB 540
2. *Year Two*
 - a. *Autumn Quarter:* REHAB 510, REHAB 511, REHAB 523, REHAB 547, REHAB 566
 - b. *Winter Quarter:* REHAB 502, REHAB 512, REHAB 527, REHAB 529
 - c. *Spring Quarter:* REHAB 502, REHAB 503, REHAB 531, REHAB 566, REHAB 569
 - d. *Summer Quarter:* REHAB 505, REHAB 514, REHAB 535, REHAB 515, REHAB 567, REHAB 801
3. *Year Three*
 - a. *Autumn Quarter:* REHAB 595, REHAB 801
 - b. *Winter Quarter:* REHAB 595, REHAB 801
 - c. *Spring Quarter:* REHAB 595, REHAB 801

Prosthetics and Orthotics

Division Director

Ann Yamane

The prosthetist-orthotist is a member of the rehabilitation healthcare team, which also includes physicians, surgeons, physical and occupational therapists, psychologists, vocational rehabilitation counselors, and other appropriate specialists. The interdisciplinary rehab team works with physically challenged individuals to increase their functional abilities, enhance their daily life, and help them to participate in activities they enjoy.

Certified Prosthetists Orthotists (CPOs) provide direct patient care and management. CPOs work in conjunction with physicians, surgeons, and therapists to evaluate the prosthetic or orthotic needs of the patient. Prostheses replace or substitute for a missing limb or part of a limb, and orthoses help with the control of motion and the support of a weakened body segment. Before designing a specific device, the prosthetist-orthotist examines a patient to find any conditions that might affect the future success of that device. Following the evaluation, the prosthetist-orthotist obtains an impression of the affected segment along with the appropriate measurements. A technician fabricates the prosthesis or orthosis, and the prosthetist-orthotist assesses the fit and function of the device and follows up with the patient, as necessary. To evaluate the fit and function, the prosthetist-orthotist must have a detailed knowledge of anatomy and kinesiology, joint range of motion, muscle strength, human locomotion, material science, and the human-device interaction.

Graduate Program Coordinator
BB808 Health Sciences Center
(206) 543-6763
pando96@uw.edu

The prosthetics and orthotics division offers the following program of study:

- The Master of Prosthetics and Orthotics degree

Master of Prosthetics and Orthotics

Admission Requirements

1. Bachelor's degree in any major from a regionally accredited U.S. college or university
2. Minimum 3.00 cumulative GPA
3. Prior to the start of the program, all prerequisites must be completed, including one course each in the areas of biology* (or other life science), statistics, and chemistry*; a two-course series in the areas of (1) anatomy and physiology and (2) physics*, and two courses in psychology (to include a general psychology course as well as either a developmental or abnormal psychology course). Laboratories must be taken with courses marked with an asterisk*.
4. Minimum 3.00 cumulative prerequisite GPA. No single course graded less than 2.0. Grades lower than 2.0 are not accepted.
5. GRE general test scores. Test must be taken within the past five years.
6. Volunteer or work experience in a prosthetics-orthotics clinic is strongly encouraged
7. Admission is competitive based on scholastic achievement, written skills, references, and involvement in activities or experiences related to the health professions.
8. Admission occurs once a year for entry autumn quarter; applications are evaluated starting November 1.

9. International applicants must meet several requirements in addition to those required of U.S. applicants to be admitted to the UW Graduate School. Consult the FAQs on the UW Graduate School website for more information.

See program [website](#) for complete details on admissions requirements.

Degree Requirements

112 credits as follows:

1. *Courses:* To be satisfactorily completed in a specific sequence beginning autumn quarter of entry year, and only at the UW: REHAB 522, REHAB 544, REHAB 541, REHAB 504, REHAB 509, RHB PO 511, RHB PO 501, REHAB 533, REHAB 545, REHAB 542, REHAB 551, REHAB 506, RHB PO 515, REHAB 548, REHAB 543, RHB PO 512, RHB PO 581, RHB PO 541, RHB PO 502, RHB PO 521, RHB PO 522, RHB PO 523, REHAB 580, RHB PO 561, REHAB 510, RHB PO 524, RHB PO 525, RHB PO 526, RHB PO 527, RHB PO 581, RHB PO 582, RHB PO 562, RHB PO 528, RHB PO 529, RHB PO 583, RHB PO 563, RHB PO 530, RHB PO 531, RHB PO 534, RHB PO 558, RHB PO 584, RHB PO 564.
2. *Grade Requirements:* A student must maintain a minimum 3.00 cumulative program GPA, and receive "credit" grades in all courses graded credit/no credit only, to maintain good standing in the program and be eligible for graduation.
3. *Continuation Policy:* If at any point the cumulative GPA in the curriculum courses falls below 2.70, the student is placed on academic probation. In order to be removed from probation, the student must achieve a cumulative GPA of 3.00 by the end of two consecutive quarters, or within a time frame designated by the Advisory and Evaluation Committee. If a student is unable to remove his or her probation status, he or she is subject to dismissal from the program.

Post-Professional Programs

Doctor of Philosophy in Rehabilitation Science

Director
Deborah Kartin

Rehabilitation science is an interdisciplinary field that focuses on human function and disability. Basic and applied research from health sciences, social sciences, engineering, and related fields is directed toward (1) enhancing physical and psychosocial functioning, participation in life situations, and quality of life for people with disabilities; and (2) informing relevant social and healthcare policy.

The program targets students from diverse backgrounds in rehabilitation-related fields including occupational therapy, physical therapy, speech and language pathology, rehabilitation counseling, medicine, nursing, prosthetics and orthotics, and engineering.

The goal of the PhD program in rehabilitation science is to prepare future researchers, educators, and leaders in the area of rehabilitation science. Graduates contribute to the field of rehabilitation science, working in settings such as academic and research institutions, service delivery systems (e.g., hospitals, public schools), government agencies, and the private sector. These individuals are prepared to address research, education, service delivery, and policy issues from an interdisciplinary perspective.

1. Demonstrate advanced knowledge and productivity in rehabilitation science specific to research, education, service delivery, and/or policy.

2. Demonstrate leadership in interdisciplinary collaboration for the purpose of optimizing research, education, service delivery, and/or policy.
3. Generate and extend knowledge that is innovative and rigorously tested within a focused area of rehabilitation science.

Admission Requirements

1. Baccalaureate degree from a college or university of recognized rank
2. Copy of current professional certification/licensure to practice (as appropriate)
3. Letters of recommendation from three persons knowledgeable about the individual's potential for doctoral-level work in rehabilitation science
4. Letter of application
5. Resume/CV
6. Official university transcripts
7. Official Graduate Record Examination (GRE) General Test Scores

Degree Requirements

100 credits minimum, as follows:

Core course series (21 credits): coursework and practicum experiences in teaching (minimum 5 credits), and coursework in statistics and research methods (minimum 18 credits). In addition, each student must complete three cognates (minimum 6 credits each) specific to the student's goals. The student's committee and the core faculty in the rehabilitation science doctoral program must approve the entire course of study.

General requirements: In addition to meeting all requirements of the UW Graduate School, all students are expected to meet the following general requirements.

1. Minimum 3.00 cumulative and quarterly GPA.
2. 100 credits minimum, of which 27 are dissertation credits.
3. Completion of at least one teaching practicum (3-credit minimum).
4. Satisfactory completion of a research and scientific inquiry day manuscript and presentation.
5. Satisfactory completion of general examinations.
6. Dissertation.
7. Final examination.

For more information on the PhD program in rehabilitation science, visit the program's website at rehab.washington.edu/education/degree/rehabsci/.

Surgery

Department Overview

BB487 University of Washington Medical Center

The Department of Surgery carries out instruction during all four years of School of Medicine attendance. The third-year six-week clerkship constitutes the core of student exposure to general surgery and is required of all students. The fourth-year emergency-room clerkship is also a required part of the curriculum. The department offers a variety of fourth-year elective clerkships in a number of the specialty aspects of the department's clinical activities, including but not limited to trauma, cardiothoracic surgery, plastic surgery, vascular surgery, transplantation, surgical critical care, pediatric surgery, and the management of burn patients.

Urology

Department Overview

BB1115 Health Sciences

Urology is the surgical discipline concerned with diseases of the urinary tract in males and females, and the genital system in the male. The science is broadly based: major areas of practical and investigative concern include congenital defects, cancer, renal diseases, reproductive biology, neuropathology, renal stone formation, and transplantation.

Clinically the field encompasses a large variety of technical skills including real-time imaging and manipulation, endoscopy, laparoscopy and robotics, and open surgery. Medical diagnosis and treatment are a large part of the discipline.

The department is actively involved in patient care, instruction, and research concerning the problems of urology. Training for medical students starts in the second year and continues through the third and fourth years. Training is also provided for residents, fellows, nurses, and applied specialists. The department is responsible for a fully approved urology residency program. Contact the Urology Clerkship Coordinator at (206) 731-3205 for further information.

School of Nursing

School Overview

T301 Health Sciences

Dean

Azita Emami

Associate Deans

Frank Barber, Assistant Dean of Technology, Learning, and Innovation

Butch de Castro, Associate Dean for Diversity, Equity, and Inclusion

Kevin Fralicks, Associate Dean for Advancement

Anne Hirsch, Associate Dean for Student and Academic Affairs

Brendon Lee, Assistant Dean for Finance and Administration

Joie Whitney, Associate Dean for Research

Nurse professionals are members of interdisciplinary teams in clinics, hospitals, and community settings, and work with people of all ages, cultural backgrounds, and lifestyles to help them achieve the highest level of wellness possible. Nurse practitioners fill critical healthcare needs in both urban and rural settings, often for portions of the population who have not received adequate healthcare. Nurse scientists conduct important research about a variety of health problems and how best to promote health, prevent disease, and care for people who are ill. Nurses also teach in colleges and universities throughout the world.

Undergraduate Program

Adviser

T301 Health Sciences, Box 357260

(206) 543-8736

asknursing@uw.edu

The School of Nursing offers the following programs of study:

- Bachelor of Science in Nursing degree with eligibility to take the licensure examination to become a registered nurse.
- An accelerated Bachelor of Science in Nursing option for candidates with an existing bachelor's degree. This option provides eligibility to take the licensure examination to become a registered nurse.
- A four-quarter modification of the basic curriculum is available for the registered nurse. This BSN completion (RN to BSN) program is available at UW Bothell and UW Tacoma, and prepares graduates to go on for advanced degrees in nursing.

Bachelor of Science in Nursing

Suggested First- and Second-Year College Courses: See below, under Admission Requirements.

Admission Requirements

Admission occurs once a year, for autumn quarter. Application deadline: January 15. Selection is capacity constrained.

Application Requirements

1. Minimum cumulative 2.00 GPA
2. One of the following at time of application.
 - a. Three of the total prerequisite science courses completed with a minimum 3.00 GPA
 - b. Four of the total prerequisite science courses completed with a minimum 2.80 GPA

Science prerequisite courses are CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students, two quarter sequence - one general chemistry and one organic - for non-UW applicants); BIOL 118, BIOL 119; NURS 301/B STR 301; MICROM 301 (plus MICROM 302 for UW students; non-UW applicants must take a separate microbiology laboratory if laboratory is not included in the general microbiology course); NUTR 200.

3. College transcript(s)
4. Resume: outlining volunteer/paid healthcare experience, community service, and leadership
5. Personal statement: reflection of personal healthcare experience and fit in nursing role and cultural awareness
6. Letter of recommendation from a healthcare provider (employer or volunteer coordinator)
7. 100 hours of health care experience in a paid or volunteer position in one setting for three months or more, completed within 12 months preceding submission of the application.
8. After initial review of all applications, some are asked to attend a proctored essay session. Dates are published in the admissions publication. Eligible applicants are invited via email. Those not invited to attend the proctored essay are no longer in consideration for admission.

Entrance Requirements: Before beginning the nursing program in autumn, students must meet the following requirements:

1. Minimum 90 credits to include the following:
 - a. *Written communication (10 credits):* English composition and W-courses
 - b. *Problem-solving (8 credits):* one QSR course, chosen from MATH 107, MATH 111, MATH 112, MATH 120, MATH 124, MATH 134, MATH 144, PHIL 115, PHIL 120, PHIL 470, or Q SCI 291. One statistics course, such as STAT 220, STAT 311, Q SCI 381, QMETH 201, or EDPSY 490
 - c. *Visual, Literary, & Performing Arts (VLPA) (15 credits)*
 - d. *Individuals & Societies (I&S) (15 credits):* to include NURS 201 or equivalent
 - e. *Natural World (NW) (26-33 credits):* to include CHEM 120, CHEM 220, CHEM 221 (three quarter chemistry series for UW students; two-quarter sequence - one general chemistry and one organic - for non-UW applicants); BIOL 118, BIOL 119; NURS 301/B STR 301; MICROM 301 (plus MICROM 302 for UW students; non-UW applicants must take a separate microbiology laboratory if laboratory not included in general microbiology course); NUTR 200
 - f. *Electives to complete 90 credits*

2. Minimum 2.00 cumulative GPA, and minimum 2.0 grade for each prerequisite course. Because admission is capacity constrained, the GPA for admission is usually significantly higher.
3. All applicants must be exempt from all English language proficiency requirements at UW to start the program. If offered admission the applicant is required to pay for a background check run by a company specified by the School of Nursing.

For additional information on admission criteria, specific prerequisites, and deadlines, as well as application forms, visit the School of Nursing website, nursing.uw.edu. To contact the School of Nursing Office of Student and Academic Services, call (206) 543-8736 or 1 (800) 759-NURS or email asknursing@uw.edu. Information sessions are offered periodically in the School of Nursing, Health Sciences Building T301, and an information session podcast is available. For a schedule of sessions or to listen to podcast, visit nursing.uw.edu/prospective/visit/bsn/.

Major Requirements

91 credits

1. *Nursing Foundations (47 credits)*: NURS 303, NURS 304, NURS 401, NURS 405, NURS 412, NURS 415, NURS 417, NURS 419, NURS 420, NURS 425, NURS 431, NURS 445, NURS 452
2. *Clinical Nursing (37 credits)*: NCLIN 302, NCLIN 306, NCLIN 403, NCLIN 407, NCLIN 409, NCLIN 411, NCLIN 416, NCLIN 418, NCLIN 422, NCLIN 475
3. *Nursing Research and Methods (7 credits)*: NMETH 403, NMETH 450

Equivalent or higher-level coursework may be substituted with the approval of the academic adviser.

Accelerated Bachelor of Science in Nursing option (prior bachelor's degree in another field)

Admission Requirements

Admission occurs once a year, for autumn quarter, with application deadline the preceding autumn quarter. Selection is capacity constrained.

Application Requirements

1. Minimum 2.80 cumulative college-level GPA
2. Minimum four of the prerequisite science courses completed with a minimum 3.0 grade in each course, and a minimum 3.30 cumulative GPA in these courses. Science prerequisite courses are CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students; two quarter sequence -- one general chemistry and one organic -- for non-UW applicants); BIOL 118, BIOL 119; NURS 301/B STR 301; MICROM 301 plus MICROM 302 for UW students. (Non-UW applicants must take a separate microbiology laboratory if laboratory is not included in the general microbiology course); NUTR 200.
3. College transcript(s)
4. Resume: Outlining volunteer/paid healthcare experience, community service, and leadership
5. Personal statement: reflection of personal healthcare experience and fit in nursing role and cultural awareness
6. Letter of recommendation from a healthcare provider (employer or volunteer coordinator)

7. Applicants are expected to have 100 hours of healthcare experience in a paid or volunteer position in one setting for three months or more, completed within 12 months preceding submission of the application.
8. All applicants are asked to attend a proctored essay session.

Entrance Requirements:

1. Bachelor's degree in a non-nursing field.
2. Lifespan growth and development course -- NURS 201 or equivalent.
3. One statistics course, such as STAT 220, STAT 311, Q SCI 381, QMETH 201, or EDPSY 490.
4. Natural World courses: CHEM 120, CHEM 220, CHEM 221 (three-quarter chemistry series for UW students; two-quarter sequence - one general chemistry and one organic - for non UW applicants); BIOL 118, BIOL 119; NURS 301/B STR 301; MICROM 301 plus MICROM 302 for UW students. (Non UW applicants take a separate microbiology laboratory if laboratory not included in general microbiology course.); NUTR 200. Minimum 3.30 cumulative GPA in these courses.
5. Minimum 3.00 cumulative GPA, and minimum 3.0 grade for each prerequisite course.
6. Applicants must be exempt from all English language proficiency requirements at UW in order to start the program. If offered admission the applicant must pay for a background check run by a company specified by the School of Nursing,

For additional information on admission criteria, specific prerequisites, and deadlines, as well as application forms, visit the School of Nursing website, nursing.uw.edu. To contact the School of Nursing Office of Student and Academic Services, call (206) 543-8736 or 1 (800) 759-NURS or email asknursing@uw.edu. Information sessions are offered periodically in the School of Nursing, Health Sciences Building T301, and an information session podcast is available. For a schedule of sessions or to listen to podcast, visit nursing.uw.edu/prospective/visit/absn/.

Major Requirements

79 credits (Courses from the prior earned degree may be used to satisfy general education, nursing prerequisites, and electives.)

1. *Nursing Foundations (40 credits)*: NURS 303, NURS 304, NURS 401, NURS 405, NURS 412, NURS 415, NURS 417, NURS 419, NURS 420, NURS 431
2. *Clinical Nursing (32 credits)*: NCLIN 301, NCLIN 403, NCLIN 407, NCLIN 409, NCLIN 411, NCLIN 416, NCLIN 418, NCLIN 475
3. *Nursing Research and Methods (7 credits)*: NMETH 403, NMETH 450

Equivalent or higher-level coursework may be substituted with the approval of the academic adviser.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: The School of Nursing prepares its graduates to function as generalists in professional nursing practice and to collaborate with other health-care providers. The BSN/ABSN undergraduate curriculum emphasizes theory and clinical practice to ensure critical thinking, human caring, and clinical expertise. Clinical experiences are provided in institutional and community settings for preventive and acute care. For the ten goals of the BSN degree program, visit nursing.uw.edu/admissions/bsn/curriculum/.
- *Instructional and Research Facilities*: Learning Laboratory

- *Honors Options Available:* With College Honors (Completion of Honors core curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research Internships and Service Learning:* Students complete eight clinical courses during the BSN program, beginning with the first quarter. Each student experiences placements in medical-surgical nursing, pediatric, family nursing, psychosocial mental health, and community-based nursing. Clinical hours per course range from six hours/week during the first quarter to 24 hours/week during the final quarter.
- *Department Scholarships:* Limited scholarships based on student need established by FAFSA. Students are invited to apply after they have been admitted to the program by completing the School of Nursing Financial Aid application.
- *Student Organizations/Associations:* Students may join the Professional Organization of Nursing Students (PONS) after admission to the program. PONS' involvement spans all aspects of the undergraduate program: recruitment, orientation, education, fund raising, and social events.

Graduate Program

Graduate Program Coordinator
T301 Health Sciences, Box 357260
(206) 543-8736
sonas@uw.edu

The School of Nursing offers degrees of Master of Nursing (MN), Master of Science (MS), Doctor of Nursing Practice (DNP) and Doctor of Philosophy in nursing science (PhD). The DNP program admits RNs interested in advanced clinical practice. The PhD program prepares students for roles as scientists, scholars, and educators. Neither the MS nor the PhD program requires RN licensure for admission.

The School offers an MN degree with a focus in community health systems nursing. A thesis or scholarly project is required. A concurrent MN/MPH degree is also available.

The MS degree is in [Clinical Informatics and Patient-Centered Technologies \(CIPCT\)](#). A thesis or scholarly project is required.

The Doctor of Nursing Practice (DNP) program admits postbaccalaureate or post-graduate students for either advanced practice registered nursing or advanced systems and population systems health. The following tracks are available (subject to change; visit School of Nursing website): adult gerontology primary care nurse practitioner; community health-systems nursing; family nurse practitioner; pediatric nurse practitioner; pediatric clinical nurse specialist; neonatal clinical nurse specialist; neonatal nurse practitioner; nurse midwifery; perinatal nurse specialist; and psychiatric mental health nurse practitioner. Applicants who already have a MN degree may apply to earn a DNP degree in their same specialty.

The PhD in nursing science is a research-based degree that trains students to create knowledge that influences and alters the health of individuals, groups, and populations, using current theories of nursing science. The program also offers an optional concentration in statistics in partnership with the Center for Statistics and the Social Sciences. All PhD students must successfully defend a dissertation at the end of their program.

The School of Nursing also offers a Graduate Certificate Program in Advanced Practice Nursing (GCPAPN), with sub-tracks as follows: adult nurse practitioner; psychiatric mental health nurse practitioner; advanced practice environmental health; infant mental health; pediatric nurse practitioner; nurse midwifery; neonatal clinical nurse specialist; and neonatal nurse practitioner. (See School's website for updated information.) Admission criteria vary slightly based on focus of the graduate certificate. Some

graduate certificate options require an RN license and a graduate degree in nursing. All options require completion of or concurrent enrollment in a graduate degree and a minimum 3.00 GPA in the last 90 quarter (60 semester) graded credits. Admission and program requirements for these certificates are the same as requirements for the umbrella degree in which the student is enrolled.

Part-time study is available for some graduate degree programs. Coursework may be started prior to formal admission to a program as a graduate nonmatriculated student (GNM), which allows students to take non-clinical courses and earn up to 12 graduate-level credits that may apply to a graduate program if the student is later admitted.

Master of Nursing

Admission Requirements

1. Baccalaureate degree from a nationally accredited nursing program with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits,
- OR -
Associate of Arts degree or diploma from a nationally accredited RN program, in combination with a baccalaureate degree in a field other than nursing, acceptable to the UW. RNs with non-nursing baccalaureate degrees must demonstrate competencies in community health and professional leadership equivalent to those of baccalaureate degree nursing graduates, and are required to submit nursing equivalency essays.
2. A 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade
3. An active, unrestricted United States RN license at the time of application. Applicants without a Washington State license must obtain one prior to beginning the UW Master of Nursing program.
4. Proof of English Language Proficiency. Applicants whose native language is not English must demonstrate English language proficiency unless the applicant received a degree from an institution in an English-speaking country, or can provide official evidence that their previous degree instruction was in English. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
5. Applications to both the School of Nursing and to the UW Graduate School
6. Three letters of recommendation: one academic, one clinical, and one additional recommendation of either type.
7. Admission essays relevant to the MN program objectives
8. One official transcript from each collegiate institution attended.
9. If admitted, the applicant is required to obtain criminal history/background check clearances via a service designated by the School of Nursing.

Degree Requirements

38-41 credits, as follows:

1. Nursing science and professional foundations (15 credits)
2. Clinical practice (6 credits)
3. Scholarly inquiry (11 credits with scholarly project or 14 credits with thesis)
4. Related coursework (6 credits)

Master of Nursing/Master of Public Health Concurrent Degree Program (MN/MPH)

Admission Requirements

See admission requirements for MN and MPH individual degrees. Students must apply separately to, and be accepted by, each School. Students already enrolled in one School may apply for admission to the other and to the concurrent degree track. Students are encouraged to complete up to one year of study in one School before entering the other.

Degree Requirements

See MN and MPH individual degree requirements; common requirements are as follows:

1. Minimum 18 quarter credits for the master's degree in each program courses numbered 500 and above.
2. Numerical grades in at least 18 quarter credits of coursework for each degree and all required courses taken graded.
3. Up to 12 credits taken in one School can be counted toward the other School's total credit requirements, if approved by both programs.
4. Electives for each School's program can be fulfilled by taking required courses of the other School's program.

One thesis is required. The 9 required thesis credits can be taken in either School, which then becomes the "home" School.

Master of Science

Admission Requirements

A baccalaureate degree in any discipline from a regionally accredited institution of higher learning with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits by date of enrollment.

Applicants need not have a previous degree in nursing.

1. A 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade. Visit the School of Nursing website for a list of approved statistics courses.
2. Proof of English Language Proficiency. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
3. Three letters of recommendation, two from persons qualified to comment on the applicant's academic abilities and one from a person who can provide work-related (practice) information.
4. Applications to both the School of Nursing and to the UW Graduate School.
5. Resume describing relevant work, professional, and volunteer experiences.
6. Admission essays relevant to the MS degree program objectives.
7. An applicant, if admitted, is required to obtain criminal history/background check clearances via a service designated by the School of Nursing.
8. Students planning to take clinical nursing courses need an active, unrestricted Washington RN license. Other applicants to the Master of Science program are not required to have an active RN license or a previous degree in nursing.

Degree Requirements

46-49 credits, as follows:

1. Nursing science (15 credits)
2. Professional foundations (3 credits)
3. Theory development (5 credits)
4. Modes of inquiry (11 credits)
5. Scholarly project (6 credits) or thesis (9 credits)
6. Related coursework (6 credits)

Doctor of Nursing Practice

Admission Requirements

- Baccalaureate degree from a nationally accredited nursing program with a minimum 3.00 GPA on a 4.00 scale for the last 90 graded quarter credits. Applicants with a master's degree from a nationally accredited nursing program must have a minimum 3.00 GPA on a 4.00 scale for the last 90 graded credits of the master's degree.
- OR -
Associate of Arts degree or diploma from a nationally accredited RN program, in combination with a baccalaureate degree in a field other than nursing. RNs with non-nursing baccalaureate degrees must demonstrate competencies in community health and professional leadership equivalent to those of baccalaureate degree nursing graduates, and are required to submit nursing equivalency essays.
- If an applicant has not completed a master's degree, a 3-credit basic course in descriptive and inferential statistics with a minimum 2.0 grade, taken within five years of matriculation.
- Proof of English Language Proficiency. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
- Applications to both the School of Nursing and to the UW Graduate School.
- Three letters of recommendation, one academic, one clinical, and one additional recommendation of either type. Recommendations may be submitted online through the Graduate School.
- Response to three admission questions
- Resume describing relevant work, professional, and volunteer experiences.
- BSN equivalency, if applicable
- One official transcript from each collegiate institution attended.
- All applicants to the Doctor of Nursing Practice program must have an active, unrestricted United States RN license at the time of application. Applicants who do not have a Washington State RN license must obtain one prior to beginning the program.
- If admitted, the applicant is required to obtain criminal history/background check clearances via a service designated by the School of Nursing.

Degree Requirements

93 credits minimum, including:

1. Advanced practice (minimum 45 credits)

2. Leadership (minimum 15 credits)
3. Practice inquiry (minimum 30 credits)

Doctor of Philosophy

Admission Requirements

- Baccalaureate degree from a college or university of recognized rank. Neither a nursing background nor RN licensure is required for admission.
- Applications to both the School of Nursing and to the UW Graduate School.
- Proof of English Language Proficiency. For questions about proof of English language proficiency, visit <http://nursing.uw.edu/node/310>, or contact the School of Nursing.
- A scholarly writing sample (25 pages or less) which should analyze a current clinical problem or professional issue using appropriate references to making an argument and supporting that position
- Letters of recommendation from three persons knowledgeable about the individual's potential for a research career in nursing.
- Statement of goals and research interests in response to specific questions listed on the application
- If admitted, the applicant is required to obtain criminal history/background check clearances via a service designated by the School of Nursing.

Degree Requirements

93 credits minimum, as follows:

1. *Theory and Domain of Knowledge (minimum 41 credits)*: Grounding in science and nursing science fundamental to examination of more specific issues in the relationship of human health and nursing.
2. *Scholarly Inquiry (minimum 52 credits)*: Means of developing knowledge. Exposure to variety of approaches with encouragement to develop advanced skills in at least one methodology. Includes 27 dissertation credits.

Financial Aid

A limited number of nurse traineeships are available for pre-master's study. Other financial aid is available on a limited basis. Teaching assistantships and research assistantships are available to a limited number of students. Priority for these appointments is given to pre-doctoral students.

Additional Information

For additional information on current graduate program content, admission criteria, deadlines, as well as application forms, visit the School of Nursing website at <http://nursing.uw.edu>. To contact the Office of Academic Services, School of Nursing, call (206) 543-8736 or 1- (800) 759-NURS or email sonas@uw.edu. Information sessions are offered periodically in the School of Nursing, Health Sciences Building T310, and an information session podcast is available.

School of Pharmacy

School Overview

Dean

Sean D. Sullivan

Associate Deans

Nanci L. Murphy
Stanley S. Weber

Established in 1894, the UW School of Pharmacy is proud of its strong commitment to excellence and the recognition given to its faculty, students, and graduates for their outstanding educational, research, and service activities. The School's Dean's Office and three departments - Medicinal Chemistry, Pharmaceutics, and Pharmacy - are located in the H-Wing of the Health Sciences Building and the South Campus Center. The School is a member of the American Association of Colleges of Pharmacy and its programs are accredited by the Accreditation Council on Pharmacy Education.

Doctor of Pharmacy Program

The School of Pharmacy offers a four-year program leading to the Doctor of Pharmacy (PharmD) degree. The curriculum of the PharmD program is designed to provide students the scientific background and clinical skills necessary to take the North American Pharmacist Licensure Examination (NAPLEX) and the Multistate Pharmacy Jurisprudence Examination (MPJE) to enter professional practice.

Limited class enrollment allows for individualized attention from instructors while students still enjoy the benefits of attending a large university. Instructional methods emphasize the critical thinking, problem-solving, and clinical skills necessary to provide rational drug therapy, reduce medication-related problems, promote healthy lifestyles and disease prevention, optimize health outcomes, enhance patient adherence, and render care in a changing health-care system. The School fosters a commitment to life-long learning and provides an environment where students develop the knowledge, attitudes, and skills consistent with the profession's high standards.

Admission

Admission is for autumn quarter only. Applicants who are current UW students or who are considered admissible to UW are not assured admission. Admission is competitive, based on a number of factors including cumulative and prerequisite GPAs, PCAT scores, written communication skills as demonstrated in application essays, interview results, and review of all application materials. Competitiveness varies from year to year, depending on size and strength of the applicant pool.

Because of limits on enrollment, the School cannot admit all qualified applicants. On average, over 600 students apply each year for 100 generally available positions. Admission is contingent upon satisfactory completion of all prerequisites, eligibility to obtain a Washington State Pharmacy Intern Certificate, and satisfactory results on the Criminal Background Check and Conviction/Criminal History Information Form. Accepted students are required to meet the University and health sciences immunization requirements.

After a preliminary assessment of the applicant pool, based on completeness of the application, review of all application materials, prerequisite and cumulative GPA thresholds and PCAT score thresholds, the most qualified applicants are invited for an interview in Seattle with members of the PharmD Admissions

Committee. Residents from states participating in the Western Interstate Commission for Higher Education (WICHE) Pharmacy Student Exchange Program (Alaska and Nevada) are encouraged to apply. Applicants who meet or exceed GPA and PCAT minimum thresholds are not guaranteed an interview. Offers of interview are dependent on the size and competitiveness of the applicant pool during each annual admission cycle.

Further information on admission requirements, application procedures, and program content is available from the School of Pharmacy Office of Academic and Student Programs or at sop.washington.edu/school-of-pharmacy/pharmd-admissions/applications-to-pharmd-program.html.

Graduate Programs

Graduate Program Coordinator
H375 Health Sciences, Box 357630
(206) 616-1383

The Department of Pharmacy offers graduate study leading to a PhD degree in pharmaceutical outcomes research and policy. Emphasis of this program is on the health and cost outcomes of pharmaceuticals and pharmaceutical services and policies. Graduate training in this program prepares students for career opportunities in teaching and research in universities, safety and economic evaluation of products in the pharmaceutical industry, policy analysis of governmental agencies, and drug use management within healthcare delivery and financing organizations.

Also offered is a track in the PharmD/MS program in pharmaceutical outcomes research and policy, which provides an opportunity for one-to-two students currently completing their PharmD training at the UW to enter the graduate program in their fourth year of training. The program requires completion of 64 credit hours, a written thesis, and a quarter of practicum in a managed care, government, industry, or other appropriate setting. At the end of this training, students may elect to receive a master's degree, or continue on toward a PhD degree.

The UW's biomedical regulatory affairs Master of Science program, offered by the UW School of Pharmacy in partnership with UW Educational Outreach, addresses a growing need for well-trained professionals in the regulatory field. The degree serves those who wish to advance their careers in the medical products industry or those entering the field from related areas.

Deadline for application for the PhD and the PharmD/MS programs is December 31. Applicants are notified of acceptance or rejection by March 30. Refer to the application deadline for the biomedical regulatory affairs master-of-science program posted at: www.biomedreg.uw.edu/admissions/deadlines.asp.

Application materials and additional information are available in the Department of Pharmacy or at program websites listed below:

sop.washington.edu/porpp/graduate-program/phd-program27.html.

sop.washington.edu/porpp/graduate-program/concurrent-pharmdms-degree-in-pharmaceutical-outcomes-research-a-policy.html.

www.biomedreg.uw.edu.

Residency and Fellowship Programs

The Department of Pharmacy offers several postdoctoral fellowships in pharmacotherapeutics and pharmaceutical outcomes, and advanced community residency programs, primarily intended for PharmD graduates. Additional information is available on the department's website: sop.washington.edu/pharmacy/about/fellowship-a-residency-opportunities.html.

Clinical and Affiliate Faculty

In addition to the School of Pharmacy's full- and part-time faculty listed above, a large number of practicing pharmacists contribute to the School's academic programs. Over 500 pharmacists throughout the Pacific Northwest are members of the clinical and affiliate faculty, representing a variety of pharmacy practice settings such as community, hospital, nursing home, government, and industry. Information on the names, addresses and practice settings of these faculty members is available from the Office of Professional Pharmacy Education.

Medicinal Chemistry

Department Overview

The department offers the doctor of philosophy degree, which includes didactic and research-based learning.

Students acquire the skills necessary to develop quantitative and qualitative methodologies necessary for the study of biochemical processes that occur at the cellular and subcellular levels. These include elucidation of biochemical transformations and interactions using techniques such as protein engineering, and a broad array of supportive spectroscopic techniques including mass spectrometry and NMR.

One major area of research is the role of biotransformation processes in toxification and detoxification of drugs and environmental contaminants. A second area is the determination of protein and small ligand structure and function using NMR, mass spectroscopy, and other biophysical techniques. Issues of biomedical importance include elucidation of mechanisms of drug-induced cell toxicity, drug-drug and drug-herbal interactions, identification of enzyme attributes that dictate substrate specificity and catalytic mechanism, pharmacogenetics, proteomics, and mechanisms of viral assembly.

Graduate Program

Graduate Program Coordinator
H164 Health Sciences, Box 357610
(206) 543-2224
medchem@uw.edu

Doctor of Philosophy

Admission Requirements

Students with undergraduate degrees in pharmacy or in the biological or physical sciences are accepted.

Degree Requirements

Minimum 90 credits

Proficiency in organic, medicinal and physical chemistry; pharmacology, biochemistry, and molecular biology. Most coursework is completed in the first two years. Two quarters of teaching experience required. The program is flexible and easily adaptable to meet individual interests and needs.

In the first year, students rotate through the laboratories of at least two faculty members. At the end of the first year, the student chooses a faculty sponsor and a dissertation research project.

1. *First year:* CHEM 530, CHEM 531, CHEM 532; MEDCH 501, MEDCH 502, MEDCH 503; MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
2. *Second year:* BIOC 530; MEDCH 527 MEDCH 541; PHCOL 510, PHCOL 511; MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600
3. *Third year:* MEDCH 520 (1 credit each quarter); MEDCH 582 (1 credit each quarter); MEDCH 600 (7 credits each quarter)

4. *Fourth year:* MEDCH 800

Financial Aid

Financial support in the form of research assistantships and fellowships may be available to students in good standing throughout their graduate careers. Availability of financial support varies from year to year, and prospective applicants should contact the Graduate Program Coordinator for additional information.

Pharmaceutics

Department Overview

The Department of Pharmaceutics offers a program of study leading to the Doctor of Philosophy degree.

Program Description

The doctoral degree program in pharmaceutics trains research scholars in the fundamental aspects of drug delivery, drug disposition, and drug action in animals and man. Drug disposition includes the facets of drug absorption, distribution, and elimination. Pharmacokinetics is the study of the time course of these processes and the time course of pharmacological effects. Drug delivery includes targeting of drugs and modulation of xenobiotic and drug transporters to tissues or specific cell types to improve their therapeutic effect. For further information, visit: sop.washington.edu/pharmaceutics/about/what-is-pharmaceutics.html.

Typically graduates interact with clinicians, medicinal chemists, biochemists, pharmacologists, analytical chemists, and physiologists. This is possible because their training is highly interdisciplinary at the didactic and research levels.

A wide range of career paths is available to graduates. Opportunities include research in the pharmaceutical industry; research in hospitals, institutes, and foundations; teaching and research in academic institutions; and positions with government regulatory agencies.

Graduate Program

Graduate Program Coordinator
H272 Health Sciences, Box 357610
(206) 543-9434
pceut@uw.edu

Doctor of Philosophy

Admission Requirements

1. One copy of official transcripts in a sealed envelope from each college attended
2. Official GRE score report
3. All foreign students must take the TOEFL and TSE test and send in the official score report
4. Statement of personal goals describing applicant's background, academic interests, and career objectives
5. A resume; or curriculum vitae listing educational and employment history
6. Three letters of recommendation from persons in a position to evaluate the applicant's potential for graduate school.

Degree Requirements

Minimum 90 credits of coursework, to include:

1. *Credits and Scholarship*: Minimum 41 credits of coursework, exclusive of thesis and non thesis research. 3.00 GPA in all numerically graded courses numbered 400 and 500. Minimum passing grade in any given course is 2.7, except required pharmaceuticals courses (PCEUT 501, PCEUT 502, PCEUT 503, PCEUT 506) in which a passing grade is 3.0. Credits earned for a master's degree may apply towards the doctoral degree.
2. *Teaching Experience*: Minimum two quarters of teaching assistant experience. Students are not asked to assist more than one class an academic quarter (less than 12 contact hours/week). Most students complete this requirement during the first three years in the program.
3. *Examinations and Progress Evaluation*: A series of preliminary, cumulative (written) examinations; a general examination (oral) for advancement to PhD candidacy; a final examination (defense of the thesis). See Appendix A, "Progression Steps in Relation to the Doctoral Degree," for an overview. Appendix B describes the cumulative examination, which precedes the general exam. Appendix C provides details about formation of a doctoral Supervisory Committee and its role in the general exam and thesis defense. Appendix D provides details about the structure and conduct of the general exam.
4. *Master's Degree Bypass*: Students who qualify for continuation to the PhD degree may be allowed to bypass the M.S. degree. See Appendix A for petition procedure.
5. *Seminars*: All students must present a minimum of two and a maximum of four seminars while in the doctoral program (PCEUT 520). In addition, a presentation of papers from current literature is required twice a year, starting at the beginning of the second year until defense of the thesis (PCEUT 583). See Appendix E, "Training in Oral Communication through Seminars and Journal Club" for additional details.
6. *Didactic*: Coursework for the doctoral program is divided into four components: (a) prerequisites which define the level of entry into the program; (b) a required core program which is analogous to the major; (c) elective courses, which are not required but are encouraged; (d) seminars and literature review.
 - a. Prerequisites:
 - MATH 124
 - MEDCH 400

Applicants with a PharmD degree should have fulfilled the medicinal chemistry requirement. MEDCH 400 can be taken in autumn quarter of the first year. Candidates are accepted on condition that any deficiencies in course requirements are rectified by the end of the first academic year.

- b. Core Program:
 - PCEUT 506
 - PCEUT 501
 - PCEUT 502
 - PCEUT 503
 - PCEUT 510, PHCOL 511, PHCOL 512, PHCOL 513
 - BIOST 511
 - BIOST 512
 - HCDE 509
 - PCEUT 600, PCEUT 800

Students entering with previous graduate-level coursework in the required areas may have some of the above courses waived. In addition, all students must attend the following training sessions, preferably during the first academic year: chemical safety, biological safety, and bioethics training. Radiation safety and animal care may also be required, if relevant to the student's thesis research.

c. Directed Electives:

Electives are not required. However, students are encouraged to take elective courses that might benefit their thesis project and career goals. Courses that might be of interest can be found in the disciplines of biotransformation/biochemistry, biologics/drug delivery, pharmacology/cell biology, and physiological modeling/biostatistics.

d. Seminars and Literature Review:

- PCEUT 520 (1 credit/quarter; 3 quarters/year until graduation)

Beginning the second year, students make one presentation each year, with a maximum of four presentations. A general topic seminar is presented in the second year; research presentations in subsequent years.

- PCEUT 583 (1 credit/quarter; 3 quarters/year until graduation)

Beginning the second year, students make two presentations each year until graduation. Journal club presentation is waived in the quarter during which the student is scheduled to make a PCEUT 520 seminar presentation.

7. *Research:*

- PCEUT 600, PCEUT 800

Students complete three research laboratory rotations (PCEUT 600), one per quarter, starting autumn quarter of their first year. A student may opt to complete a rotation in summer quarter, before the initiation of classes. This involves an early appointment in the department and, thus, decisions must be made at the time they accept the offer to enroll. Matching of available labs with each incoming student is facilitated by the first year graduate adviser. Student preferences are given due consideration.

Students must choose a thesis adviser by the end of spring quarter in their first academic year (See Appendix A for additional details).

Students must begin research in the lab of their adviser by summer quarter at the end of their first academic year (PCEUT 600). Most students may find that after-class and off-hours are the best and most productive time for laboratory research (See Appendix A1b for additional details).

After successful completion of the master's bypass requirements (see Appendix A for details), students sign up for PCEUT 800, until the defense of their thesis.

8. *Cumulative Examination*

Students begin taking cumulative exams in autumn quarter of their second academic year, and continue taking them at every offering until completion of pass requirements or until they take the maximum of eight exams. A total of eight exams are offered, two each in autumn, winter, spring, and summer quarters. For each exam, there two questions. Students must pass four of eight

exams to complete the cumulative requirement. Students who do not achieve this goal are given the option of completing requirements for a terminal master's degree or withdrawal from the program.

Financial Aid

All students in the program receive financial support in the form of research assistantships, Public Health Service predoctoral training fellowships, and other fellowships such as the William E. Bradley Graduate Fellowship or those from the American Foundation for Pharmaceutical Education or from several pharmaceutical companies.

Pharmacy

Graduate Program

Graduate Program Coordinator
H375 Health Sciences, Box 357630
(206) 616-1383

The Department of Pharmacy offers graduate study leading to a PhD degree in pharmaceutical outcomes research and policy. Emphasis of this program is on the health and cost outcomes of pharmaceuticals and pharmaceutical services and policies. Graduate training in this program prepares students for career opportunities in teaching and research in universities, safety and economic evaluation of products in the pharmaceutical industry, policy analysis of governmental agencies, and drug use management within healthcare delivery and financing organizations.

Also offered is a track in the PharmD/MS program in pharmaceutical outcomes research and policy, which provides an opportunity for one-to-two students currently completing their PharmD training at the UW to enter the graduate program in their fourth year of training. The program requires completion of 64 credit hours, a written thesis, and a quarter of practicum in a managed care, government, industry, or other appropriate setting. At the end of this training, students may elect to receive a master's degree, or continue on toward a PhD degree.

The UW's biomedical regulatory affairs Master of Science program, offered by the UW School of Pharmacy in partnership with UW Educational Outreach, addresses a growing need for well-trained professionals in the regulatory field. The degree serves those who wish to advance their careers in the medical products industry or those entering the field from related areas.

Deadline for application for the PhD and the PharmD/MS programs is December 31. Applicants are notified of acceptance or rejection by March 30. Refer to the application deadline for the biomedical regulatory affairs master-of-science program posted at: www.biomedreg.uw.edu/admissions/deadlines.asp.

Application materials and additional information are available in the Department of Pharmacy or at program websites listed below:

sop.washington.edu/porpp/graduate-program/phd-program27.html.

sop.washington.edu/porpp/graduate-program/concurrent-pharmdms-degree-in-pharmaceutical-outcomes-research-a-policy.html.

www.biomedreg.uw.edu.

Residency and Fellowship Programs

The Department of Pharmacy offers several postdoctoral fellowships in pharmacotherapeutics and pharmaceutical outcomes, and advanced community residency programs, primarily intended for PharmD graduates. Additional information is available on the department's website: sop.washington.edu/pharmacy/about/fellowship-a-residency-opportunities.html.

Clinical and Affiliate Faculty

In addition to the School of Pharmacy's full- and part-time faculty listed above, a large number of practicing pharmacists contribute to the School's academic programs. Over 500 pharmacists throughout the Pacific Northwest are members of the clinical and affiliate faculty, representing a variety of pharmacy practice settings such as community, hospital, nursing home, government, and industry. Information on the names, addresses and practice settings of these faculty members is available from the Office of Professional Pharmacy Education.

Professional Program

Doctor of Pharmacy

A four-year professional program leading to the Doctor of Pharmacy (PharmD) degree, the curriculum is designed to provide students the scientific background and clinical skills necessary to render pharmaceutical care in various healthcare settings. Individuals who wish to practice pharmacy in the United States must earn a Doctor of Pharmacy (PharmD) degree from an accredited college or school of pharmacy, complete required internship hours, pass licensing examinations, and meet other state-specific licensing requirements.

Admission Requirements

Consideration for admission to the professional program requires a minimum three years of pre-pharmacy training. An applicant who is admissible to the University is not assured admission to the School of Pharmacy. Admission is competitive, based on a number of factors. Academic preparedness, motivation, oral and written communication skills, critical-thinking ability, and decision-making skills are among the criteria used to determine a candidate's aptitude for the program. Following a preliminary assessment of the applicant pool, the most qualified applicants are selected for an interview in Seattle. A writing assessment is also conducted at that time. Further details on admission requirements, application procedures, and program content are available from the School's Office of Academic and Student Programs or its website.

1. Applicants to the UW School of Pharmacy PharmD program must **both** complete an on-line PharmCAS Application and submit a supplemental application to the UW School of Pharmacy, Office of Academic and Student Programs. Potential applicants should consult the School of Pharmacy website, sop.washington.edu/school-of-pharmacy/pharmd-admissions/applications-to-pharmd-program.html for additional admission requirements and the most current information regarding the PharmD program.
2. Please refer to the School's website for current entry-level Doctor of Pharmacy program information at sop.washington.edu/students/.
3. Pharmacy College Admission Test (PCAT) must be taken within two years of application. The UW School of Pharmacy accepts no other admission test (e.g., MCAT, GRE) in place of the PCAT.
4. Applicants who have completed all prerequisite (pre-pharmacy) coursework prior to application and those who have earned a prior bachelor's degree or higher are given preference in the process of screening for offer of interview. The admissions committee has established minimum cumulative and prerequisite (pre-pharmacy) GPA thresholds and PCAT scores for screening for offer of interview. Applicants who meet or exceed these minimums are not guaranteed an interview. Offers of interview are dependent on the size and competitiveness of the applicant pool.

5. Interview is required as part of the UW School's PharmD admission process. After a preliminary assessment of the applicant pool, the most-qualified applicants are invited for an interview in Seattle with members of the PharmD admissions committee. Admission preference is given to residents of Washington State and residents from states participating in the Western Interstate Commission for Higher Education (WICHE).
6. It is important for applicants to research carefully the pharmacy profession and the attributes, skills, and abilities essential for pharmacists in the provision of care. Although relevant experience is not required, applicants are strongly encouraged to gain pharmacy experience, either as a volunteer or employee.
7. Non-U.S. Citizens: Applicants who hold "Permanent Resident" or "Refugee/Asylee" visa status and international students with F-1 Visa status are eligible to apply. F-1 Visa students must take the TOEFL within two years of application. Please refer to the School's website for more information at sop.washington.edu/school-of-pharmacy/pharmd-admissions/international-applicants-eligibility-to-apply.html.
8. International Transcripts: All transcripts for coursework completed at foreign colleges or universities must be translated and evaluated course-by-course by one of the following certified agencies: the Education Credential Evaluators, World Education Services, Inc, or Educational-Perspectives.

Degree Requirements

Current degree requirements for entering classes are reflected in the graduating class of 2015 and later. (Graduating classes of 2014 and earlier have different course sequences as a result of this revision.) Below are the current degree requirements:

1. *Year 1 (47 core, 5 elective credits)*: CONJ 401, CONJ 402, CONJ 403; MEDCH 561 , MEDCH 570; PCEUT 531, PCEUT 532, PCEUT 533; PHARM 500; PHARM 558; PHARM 584, PHARM 585, PHARM 586; PHARMP 511, PHARMP 512; 5 elective credits; MEDCH 400 is required for students who do not pass the MEDCH qualifying exam, which if taken, can be credited as a professional elective.
2. *Year 2 (46 core, 5 elective credits)*: MEDCH 562, MEDCH 563, MEDCH 564; PHCOL 401, PHCOL 402; PHARM 509; PHARM 537; PHARM 539; PHARM 543, PHARM 543; PHARM 559; PHARM 563; PHARM 592, PHARM 593, PHARM 594; PHARMP 513, PHARMP 514; PHARMP 531; 5 elective credits
3. *Year 3 (33 core, 18 elective credits)*: PCEUT 510 (3); PHARM 541; PHARM 560; PHARM 561, PHARM 562); PHARM 564, PHARM 565); PHARMP 532, PHARMP 533, PHARM 541; 18 elective credits
4. *Year 4*: Nine required clinical rotations (6 credits each) for a total of 54 credits

PharmD/PhD Concurrent Program

PharmD/PhD Program Coordinator
H272 Health Sciences, Box 357610
(206) 543-0819

The accelerated dual-degree program is intended for outstanding students committed to earning the PharmD degree and a PhD degree in either Pharmaceutics or Medicinal Chemistry. Students are equipped to enter academic careers that require competence in clinical practice, teaching, and research. They will possess the breadth and depth of knowledge necessary to work with colleagues across multiple disciplines essential to performing integrated and translational medical and pharmaceutical research.

Many of our trainees have worked in research and developed an interest in public health and pharmaceutical sciences through that experience.

Students admitted to the concurrent degree program are able to complete the requirements for both degrees in about eight academic years, rather than the nine years normally required to receive both degrees.

Admission to the PharmD/PhD program is based on the recommendation of the admission committees of the professional degree program, the graduate program, and the PharmD/PhD program. For additional admission criteria, see respective programs.

Admission Requirements

Applicants must complete admission requirements of both the PharmD and PhD programs. Consideration for the PharmD/PhD program is contingent upon completion of a PharmD application, Graduate School application, and PharmD/PhD application (available online at: sop.washington.edu/school-of-pharmacy/degree-programs/concurrent-degree-opportunities.html).

1. PharmD program application is composed of (a) verified completion of all application materials by the deadline as stated on the school website, (b) PCAT scores, (c) prerequisite and cumulative GPA, (d) ability to complete prerequisite courses by the end of spring term prior to School of Pharmacy matriculation. For details, see PharmD admission requirements.
2. Graduate School application for medicinal chemistry or pharmaceuticals includes (a) undergraduate degree in chemistry, biochemistry, pharmacy, biology, or a closely related field, (b) statement of purpose, (c) GRE scores, (d) prior research experience, (e) three letters of recommendation. Graduate School application deadline as stated on the school website.
3. In addition, applicants are required to submit information requested in the PharmD/PhD concurrent program application checklist, available on the above stated website.

Financial Aid

Financial support in the form of research assistantships, teaching assistantships, and fellowships may be available to prospective and continuing students. Availability of financial aid is limited, typically to the first and second academic year. Prospective students should contact the Graduate Program Coordinator for more information on financial support.

Daniel J. Evans School of Public Policy and Governance

School Overview

Dean

Sandra O. Archibald
208E Parrington Hall

Associate Deans

Leigh Anderson

Joaquin Herranz

Robert Plotnick

The Daniel J. Evans School of Public Policy and Governance is a graduate professional school providing education and research for current and future leaders in pursuing challenging public-service careers in government, nonprofit, or private-sector organizations. To address the educational needs and professional interests of individuals at different stages of their careers, the school offers the Master of Public Administration (MPA), the Executive Master of Public Administration (Executive MPA), Peace Corps Master's International (PCMI), and the PhD in Public Policy and Management.

Master's-level programs enable students to acquire the policy analysis techniques, management knowledge, problem-solving skills, and political acumen required for effective leadership across sector boundaries and in regional, national, and international policy. MPA graduates hold leadership positions such as mayors and city managers; local and regional government administrators; foreign service officers; senior military and public safety positions; assistants to elected officials; analysts with budget offices, legislative staff units, and city councils; directors of social service agencies; leaders and managers of nonprofit organizations; and administrators of arts organizations. In addition, a number of alumni are employed in private sector positions involving substantial contact with public agencies.

The PhD program focuses on research that prepares students with a strong interdisciplinary perspective and a solid foundation of theory and methodology in policy analysis and management. The PhD program prepares students for successful careers as faculty in university programs in public policy and management, and in research positions in the public and nonprofit sectors.

Undergraduate Program

Adviser
Parrington Hall
Box 353055
(206) 543-1794
evansundergrad@uw.edu

The department offers the following program:

- A minor in public policy

Minor

Minor Requirements: 25 credits

1. PUBPOL 201 (5 credits)
2. 20 credits of 300- or 400-level PUBPOL courses, or other courses approved by the Evans School of Public Policy and Governance
3. Minimum 15 credits taken in residence through the UW Seattle campus
4. Minimum 2.00 cumulative GPA for all courses applied to the minor

Graduate Program

Graduate Program Coordinator
109 Parrington Hall, Box 353055
(206) 543-4900
evansuw@uw.edu

Master of Public Administration

Evans School MPA Program

Evans School MPA is designed for present and future leaders of the public, private, and nonprofit sectors, emphasizing broad-based public policy analysis and management knowledge. Degree requirements for the program are flexible and can be tailored for students who are early in their careers, as well as those who have additional years of progressively responsible work experience. While most students enroll full-time and generally take two years to complete their degree, flexible evening and part-time options are also available.

Degree Requirements

72 credits, with a minimum 60 credits from within the Evans School, as follows:

1. *Core Curriculum (36 credits):*
 - a. Managing Politics and the Policy Process (PB AF 511)
 - b. Managing Organizational Performance (PB AF 512)
 - c. Public Policy Analysis (PB AF 513)
 - d. Microeconomics (PB AF 516, PB AF 517)
 - e. Public Budgeting and Financial Management (PB AF 522)
 - f. Program Evaluation (PB AF 526)
 - g. Quantitative Analysis (PB AF 527, PB AF 528)
2. Concentrated study in a field of specialization, three courses minimum (12 credits)
3. Public affairs electives, two-course minimum (8 credits)
4. An internship (minimum 400 non-credit work hours)
5. 8-credit degree project (PB AF 608) or Public Service Clinics (PB AF 606, PB AF 607)

For full program details, visit evans.washington.edu/courses-degrees/mpa/

Executive MPA Program

The Executive MPA program is a cohort-based, modular program designed to meet the needs of senior-level managers and executives with 10 or more years of progressively responsible, professional experience (typically directors, senior managers in or near leadership positions, and high-level technical staff). Students must successfully complete 45 credits of coursework within a specially designed curriculum combining one intensive week, several weekend modules and numerous online assignments. Intensive learning emphasizes a variety of critical concepts in executive leadership, including: performance management and accountability; change management; communication skills; ethics and leadership; executive decision making; human resource management; strategic financial management; and strategic leadership. Emphasis is on decision making, practical application, and integration of learning with experience. The program relies on a cohort model, so entering students must begin their studies with a seven-day residential retreat. Students complete the program in approximately 18 months.

Degree Requirements

45 credits, as follows:

1. One "Foundation Week" in Strategic Leadership and Performance Challenges: PA EX 501
2. Twelve three-day weekend core modules in Executive Decision Making (PA EX 502), Strategic Financial Management (PA EX 503, PA EX 505), Executive Economics (PA EX 504), Mission Integrity (PA EX 506), Values and Personal Integrity (PA EX 507), Leading for Human Development (PA EX 508), Leading Across Boundaries (PA EX 509), Negotiation and Mediation (PA EX 510), and Strategic Communication (PA EX 511), Strategic Policy Making (PA EX 512), and Leading for a Legacy (PA EX 513)
3. Online assignments
4. Degree project not required

For full program details, visit evans.washington.edu/executive-education/mpa.

Peace Corps Master's International

Peace Corps Master's International (PCMI) students must successfully complete 51 credits of coursework along with two years of Peace Corps service in international nongovernmental organization development and a degree project. PCMI students generally complete all core courses in three quarters prior to leaving for Peace Corps service; upon returning to UW, students complete their coursework and a final degree project in one or two quarters. While on assignment overseas, students remain in touch with their faculty adviser and a returned volunteer from the Evans School. PCMI students generally create a plan of study focused on international nongovernmental management or other international management and policy issues, such as environmental or health policy. Students complete the program in approximately three to three-and-a-half years.

Degree Requirements

51 credits, as follows:

1. *Core curriculum:*
 - a. Managing Politics and the Policy Process (PB AF 511)

- b. Managing Organizational Performance (PB AF 512)
 - c. Public Policy Analysis (PB AF 513)
 - d. Microeconomics (PB AF 516, PB AF 517)
 - e. Public Budgeting and Financial Management (PB AF 522)
 - f. Program Evaluation (PB AF 526 or PB AF 536)
 - g. Quantitative Analysis (PB AF 527, PB AF 528)
2. Electives (including 9 credits of restricted electives: 3 credits each in economics, analysis, and values) (17 credits)
 3. Two years of Peace Corps service
 4. 6-credit degree project related to Peace Corps fieldwork

For full program details, visit evans.washington.edu/courses-degrees/mpa/peace-corps.

Doctor of Philosophy

The PhD in public policy and management is a research program that prepares its graduates for careers as faculty in university programs in public policy and management, and for research positions in the public and non-profit sectors. The interdisciplinary curriculum draws broadly on theoretical and methodological foundations in policy analysis and management. Substantive policy areas reflect such diverse faculty research agendas as education and social policy, environmental policy, international development, nonprofit management, and urban policy.

This highly competitive and selective program admits three to five excellent applicants each year, and provides funding and mentoring to help them succeed. The program aims to be one of the top programs in the field of public policy and management, serving not only the Pacific Northwest, but the national and the global market for scholars in this field.

Degree Requirements

90 credits, as follows:

Two years, or six full-time academic quarters, of coursework and examinations, research, and the writing of a dissertation beyond the two years.

The first-year core curriculum prepares doctoral students to undertake independent scholarship in public policy and management: Research Design (PPM 502), Institutional Perspectives on Management and Leadership (PPM 504), Microeconomics (PPM 506), Public Policy Processes (PPM 508), Policy Analysis and Evaluation (PPM 510), Quantitative Methods Sequence (SOC 505 and SOC 506 or ECON 580 and ECON 581), and a qualifying examination.

Second year doctoral students increase their analytic and methodological skills. Requirements include Data Analysis Practicum (PPM 512) at least one qualitative methods and one additional quantitative methods course, proposed by the student and approved by the PhD Program Coordinator. Students are encouraged to consider obtaining a statistics certificate from CSSS. At least three courses in a substantive policy field or in management studies are required.

Beyond the second year, requirements include: a general examination/dissertation proposal (advancing to candidacy), preparation of a dissertation of original research, and a final examination (dissertation defense).

Students are expected to complete the degree in four to five years, depending on the individual student. Prior coursework in calculus is expected before matriculation.

For full program details, visit: evans.washington.edu/courses-degrees/phd

Concurrent Degree Programs

The Evans School offers the MPA degree concurrently with the following five programs: Master of Urban Planning (MUP), Master of Arts in International Studies (MAIS), Master of Public Health (MPH), Master of Science in Forest Resources (MS), Juris Doctor (JD). Concurrent degree applicants must apply through, and be accepted into, both programs. Admission criteria are those of each individual program.

Admission Requirements

Admission to the Evans School is highly competitive and selective, and is based primarily on the applicant's demonstrated ability to complete the graduate program while sustaining a high level of achievement. The School's Admissions Committee reviews previous undergraduate or graduate (if applicable) coursework, grades and GRE test scores, and gives considerable weight to professional experience, previous academic awards or scholarships, volunteer work, letters of recommendation, and the applicant's writing skills as demonstrated in a personal essay. The School admits students annually for autumn quarter.

General Requirements

Applicants must hold a baccalaureate degree from an accredited college or university in the United States, or its equivalent from a foreign institution, and have achieved a minimum 3.0 GPA in the last 90-quarter (or 60 semester) credits of undergraduate work.

Graduate Record Examination (GRE) general test scores are required for admission to all programs except the Executive Master of Public Administration. TOEFL scores are required for international students only.

Visit evans.washington.edu/courses-degrees/mpa/concurrent for specific requirements of each program.

Application Deadlines

Because of class-size limitations in the competitive programs, applicants are encouraged to submit applications as early as possible.

Application materials to the MPA program and to the Peace Corps Master's International program must be received online and postmarked by January 15 for priority consideration. Applications received after this date are accepted for review on a space available basis until March 1.

Application materials for the Executive MPA degree program must be received online and postmarked by May 1. Applications received after this date are accepted for review on a space-available basis until July 1.

Application materials for the PhD program in public policy and management must be submitted and postmarked by February 1. Applications postmarked after February 1st are not reviewed.

Applicants to all programs must also apply to the UW Graduate School by the specific program deadlines above.

Financial Aid

For further information, visit: evans.washington.edu/prospective-students/financial-aid.

Evans School Fellowships

The Evans School offers several fellowships to entering students each year from the School's endowed fellowship funds. These typically consist of \$4000-\$5000 stipends awarded primarily on the basis of academic achievement and/or excellence in public service. Applicants interested in school fellowships must submit the Evans School Financial Aid Form with their Evans School application.

- *Daniel J. Evans Endowment for Excellence in Public Service:* Fellowships support students aspiring to excellence in public service.
- *Nancy Bell Evans Endowment for Excellence in Nonprofit Service:* Fellowships support students who aspire to excellence in nonprofit service and philanthropy.
- *Jon Brock Endowed Fellowship:* Supports outstanding master's students studying conflict resolution and management in public and nonprofit sectors.
- *Elaine Chang Endowed Fellowship:* Provides support to outstanding students pursuing studies in international peace and development.
- *Brewster C. Denny Endowed Fellowship:* Supports students committed to excellence in public service.
- *Robert J. and Micki E. Flowers Endowed Fellowship:* Provides support to outstanding students from diverse backgrounds pursuing careers in public and nonprofit service.
- *Margaret T. Gordon Endowed Fellowship:* Supports outstanding Evans School students.
- *Henry M. Jackson Endowed Fellowship:* Supports students pursuing careers in environmental policy and natural resources management.
- *Morton Kroll Endowed Fellowship:* Provides support to top students pursuing arts management internships.
- *Robert J. Lavoie Fellowship:* Provides funds to outstanding students preparing to work in public service.
- *Governor Gary Locke Endowed Fellowship:* Supports Asian/Pacific Islander students pursuing studies in public service and politics.
- *Hubert G. Locke Endowed Fellowship:* Provides support for students pursuing internships in nonprofit organizations devoted to social justice issues.
- *George A. Shipman Endowed Fellowship:* Supports outstanding students pursuing careers in public service.
- *Evans School Alumni Endowed Fellowship:* Supports recruiting of outstanding students.
- *Home Street Bank Fellowship:* Supports an outstanding graduate student pursuing a career in public affairs.
- *Scottish Rite Scholarship Foundation of Washington PCMI Fellowship:* Provides a stipend to an entering student accepted to the Peace Corps Master's International degree program.

- *William Shelton Fellowships*: Funded by the Scottish Rite Scholarship Foundation of Washington to promote better government through education.

Assistantships

The Evans School offers many research, teaching, and staff assistantship positions each year. Typically 10 to 20 hours per week, these positions include a monthly stipend, benefits, paid tuition, and health insurance. Hiring is competitive. Most announcements are posted in the spring, or as positions become available, on the Evans School Intranet.

Research assistantships are open to first- and second-year MPA students and to PhD students. First-year MPA students are eligible to apply upon acceptance. Students typically work on grant-funded studies, special conferences, and public policy colloquia series sponsored by the school's research centers. Research assistants are exposed to a wide range of policy issues, including regional growth management, international trade, state and federal entitlement programs, health-and-human-services delivery, and education reform. In addition, some research fellowships are offered each year to highly qualified applicants during the admission process. These fellowships guarantee a paid research assistantship for the first year of study and tuition support.

Teaching and staff assistantships are reserved for second year students and PhD students. Teaching assistants are hired for most core courses. Staff assistantships include such positions as coordinators for international programs, peer advisers, public service clinic/career services coordinators, and computer lab managers.

Work-Study Status

When hiring for hourly positions, the school often gives preference to students possessing work-study status. Work-study positions have included research assistance for faculty and grants, and staff support for the school's centers. Work-study status is one of several forms of aid granted by the University of Washington Financial Aid Office.

Facilities

Research Facilities

The school promotes the application of research to real-world policy contexts and its integration with the teaching enterprise. In addition to supporting the independent research of faculty members, the school houses several research and policy centers focusing on regional development, family and child welfare, poverty alleviation, nonprofit management and leadership, international development, consensus building and conflict resolution, and education reform.

These centers shape students' educational experiences by offering research assistantships, special events, career networking, degree-project advising, teaching, and guest lecturing in classes taught by center faculty. The availability of research assistantships is based on current projects.

Human Services Policy Center (HSPC)

The center pairs applied analytic research, preventive approaches, and promotion of comprehensive policies to improve the lives of children, families, and communities, especially those who are disadvantaged. Public communications and strategic partnerships ensure that the HSPC's research affects policy. Core programs include educating and caring for young children; communicating about policies for children and families; and profiling child well being (Washington Kids Count).

Marc Lindenberg Center for Humanitarian Action, International Development, and Global Citizenship

The Lindenberg Center prepares students and faculty for life and work in a global society through partnerships that expand teaching, research, and service opportunities in humanitarian action, international development, and global citizenship. The center's programs enable students to understand connections between poverty, hunger, health, and human security, and equip them with the skills and knowledge to create a better, more humane world. In partnership with international organizations, the center conducts research and multi-disciplinary academic training programs that prepare students for work in emergency and humanitarian relief and international development. The center also promotes responsible global citizenship through exchanges with developing countries, internationalization of curriculum, and collaboration with K-12 schools to change the way students see the world and think about global issues.

Nancy Bell Evans Center on Nonprofit Leadership and Philanthropy

The center enhances the understanding and vitality of the nonprofit sector through research, education, and community engagement. The center conducts research of importance to scholars, policy-makers, and practitioners. It also strives to connect scholars doing research with practitioners in the field. A special research focus is the changing service and policy roles of nonprofit organizations, particularly in the context of devolution, privatization, and globalization. The center serves as the hub of nonprofit studies across the UW campus and, in conjunction with the Cascade Center for Public Service, provides growth and learning opportunities for senior-level nonprofit professionals in the Pacific Northwest.

The William D. Ruckelshaus Center

The William D. Ruckelshaus Center, formerly known as the Policy Consensus Center, is a joint venture between the UW and WSU. The center draws together representatives from a wide network of agencies, advocacy groups, businesses, agribusiness, tribal governments, university researchers, and others to find long-term solutions to policy conflicts in Washington State, enhancing the region's capacity for effective, sustainable policy making and problem solving. Policy areas range from natural resources and economic development to labor issues in the business community and elsewhere. The center's activities focus on four major areas: providing an objective forum for conflict resolution or policy enhancement; building capacities through assessment, training, and consulting to broaden stakeholders' perspectives and improve collaboration; researching and disseminating best practices in conflict resolution and policy problem solving; and closing the gap between science and policy.

West Coast Poverty Center

This center serves as a regional hub for research, education, and policy analysis on the causes and consequences of poverty in the west coast states. At the UW, the center is a collaborative venture of the Evans School, the School of Social Work, and the College of Arts and Sciences, and is the newest of three regional poverty centers funded by the U.S. Department of Health and Human Services. The center fosters opportunities for cross-disciplinary exchanges and collaboration among poverty researchers and practitioners. It supports research on a broad range of poverty-related topics, such as labor market changes and consequences for economic security and social well-being; new patterns of work and family life, including transformations in family formation, employment, and care-giving arrangements for parents and children; and demographic trends and implications for poverty and public policy. Key activities include awarding grants to established and emerging poverty scholars and doctoral students; hosting seminars and research conferences on poverty and public policy; conducting outreach, dissemination, and dialogue with policymakers and practitioners; and mentoring the next generation of poverty scholars and practitioners.

Executive Training, Civic Engagement, and Outreach

Cascade Center for Public Service and Leadership

The Cascade Center, a public and nonprofit leadership training unit, provides executive and mid-level public and nonprofit sector leaders professional development opportunities to strengthen their management skills. A diverse complement of two-day, three-day, and five-day management courses, as well as a two-week executive program, helps meet a wide range of management training needs in the Northwest and the United States.

Cascade Center courses are offered at the UW campus in Seattle. With prior permission, traditional and mid-career MPA students may apply for a maximum of 12 elective credits to be waived from their degree requirements upon completion of Cascade courses, with approval from their adviser. Executive MPA students may apply for up to nine elective credits to be waived from their degree program, with approval from their adviser. Cascade courses are not graded and participants do not earn academic credits. Rather, the Evans School may accept completed Cascade coursework in lieu of required elective credit hours.

Civic Engagement

An important convener of public policy deliberations in the Puget Sound region, the Evans School provides a neutral forum in which leading scholars and practitioners can talk about practical solutions to emerging policy issues. Groups wanting a university partner in public events often turn to the Evans School. Through strategic alliances, the school attracts many people to engage in dialogue with faculty, students, and the greater policy community. Public lectures, conference, symposia, and panel discussions help students enrich their policy studies beyond the classroom. These include the Daniel J. Evans Lessons in Leadership Seminars, the Dael L. Wolfle Memorial Lecture in Science and Public Policy, the Betty Jane Narver Lecture on Women in Public Policy, the Civic Engagement for the Twenty-First Century Seminar Series, the Forum at the Evans School, and the quarterly Dean's Forum.

In addition, through service on commissions, organizational boards, and other means, Evans School professors and students actively assist governments, NGOs, nonprofits, community organizations, and companies to improve society in the United States and abroad. Whether through public service clinics or internships, trainings, or volunteer service projects, students can actively engage their knowledge in serving the public good.

Electronic Hallway

The Electronic Hallway, hallway.evans.washington.edu, is an internationally recognized, online resource for public affairs teaching and curriculum development. It supports the Evans School teaching mission and distributes cases and skill exercises to educators in public policy and management.

School of Public Health

School Overview

Interim Dean
Joel Kaufman

F350 Health Sciences

The UW School of Public Health prepares innovative and diverse public health leaders and scientists; provides research to advance public health science and policies; and offers service to promote health and well-being.

The School has five departments: Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Global Health, and Health Services -- plus interdisciplinary programs that include health services administration, maternal and child health, nutritional sciences, pathobiology, and public health genetics.

The School offers the following degrees: Master of Public Health (MPH); Master of Science (MS); Master of Health Administration (MHA); Doctor of Philosophy (PhD); and bachelor's degrees in public health, environmental health (also a minor), and health informatics and health information management (HIHM).

Concurrent degree programs with Anthropology, Dentistry, Foster School of Business, International Studies, Law, Medicine, Molecular and Cellular Biology, Nursing, Public Administration, and Social Work are also available.

Graduate certificate programs are offered in basic or advanced clinical research methods (Epidemiology), emergency preparedness and response (Health Services), global health (Global Health), health management (Health Services), health policy (Health Services), HIV and STIs (Global Health), maternal and child health (Health Services), public health practice (Health Services Executive MPH program), public health genetics (Public Health Genetics), and statistical genetics (Biostatistics).

For more information, see the school's academic catalog at sph.washington.edu/publications/catalog.asp or visit the homepage at sph.washington.edu.

Undergraduate Program

Public Health-Global Health Adviser
F-332 Health Sciences, Box 357230
(206) 221-4561
phmajor@uw.edu

The School of Public Health offers a Bachelor of Science in public health-global health; or a Bachelor of Arts with a major in public health-global health (or options in education and promotion; or in global health).

The Department of Environmental and Occupational Health Sciences offers a minor and a Bachelor of Science with a major in environmental health. The Department of Health Services offers a Bachelor of Science in Health Informatics and Health Information Management degree, as well as a baccalaureate

certificate, through the UW Evening Degree Program. A minor in global health is offered by the Department of Global Health. A minor in nutrition is offered by the Nutritional Sciences Program.

General Education

The following School of Public Health general education requirements apply to all degree programs mentioned above.

Basic Skills

1. English Composition (C) – 5 credits
2. Additional Writing (W) – 10 credits
3. Quantitative and Symbolic Reasoning (QSR) – One course (minimum 4 credits)

Areas of Knowledge

1. Visual, Literary, & Performing Arts (VLPA) – 10 credits*
2. Individuals & Societies (I&S) – 10 credits
3. Natural World (NW) – 20 credits
4. Additional Areas of Knowledge – 25 credits

*Although School of Public Health students are not required to study a foreign language, they are encouraged to do so by substituting first-year language courses for the VLPA requirement. Completion through the third quarter is required for VLPA credit.

Bachelor of Arts and Bachelor of Science Degree in Public Health-Global Health

Suggested First- and Second-Year Courses: anthropology, political science, psychology, sociology; distribution of general education and Areas of Knowledge courses as well as coursework that develops critical and analytical thinking, communication skills, and an understanding of public health.

Admission Requirements

1. Admission is capacity-constrained. Completing the prerequisites and submitting an application guarantees consideration but not admission.
2. Admission is twice a year, for autumn and winter quarters. Applications, due the first Friday of spring for autumn admission and the third Friday of autumn for winter admission, are available from the public health major website at sph.washington.edu/uph. Transfer students must also apply for admission to the UW. For the admission process, see admit.washington.edu.
3. Evaluation of applications is based on overall academic record, grades in major relevant coursework, selection of and preparation for appropriate BA or BS path, ability to make satisfactory progress toward the degree, and understanding of and potential fit with the major as demonstrated in the personal statement.
4. Applicants are strongly encouraged to attend an information session before submitting an application.
5. Transfer students may use any transferable equivalent course(s) for prerequisite coursework. Consult the UW Equivalency Guide or a UW adviser to verify transferability of coursework.

Early Admission

Students apply to the early admission option during spring of their first year for entry in autumn of their second year or during autumn of their second year for entry in winter of their second year.

Applicants must complete the following by the application deadline:

1. Minimum 30 college credits
2. Minimum 3.00 cumulative GPA
3. Minimum 2.0 in English composition (5 credits)
4. Minimum 3.0 grade in one introductory public health course from the following: ENV H 111, ENV H 205, EPI 201, EPI 220, G H 101, HSERV 100, NUTR 200, PHG 200 (HSERV 100 required for BA Education and Promotion Option; NUTR 200 required for BS Nutritional Sciences Option)
5. Minimum 3.0 grade in one introductory science from the following: BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or MICROM 301/MICROM 302

Upper Division Admission

Upper division admission is typical for most students either at the UW or transferring from other institutions.

Applicants must complete the following by the application deadline:

1. Minimum 60 college credits
2. Minimum 2.50 cumulative GPA
3. Minimum 2.0 in English composition (5 credits)
4. Minimum 2.5 grade in one introductory public health course from the following: ENV H 111, ENV H 205, EPI 201, EPI 220, G H 101, HSERV 100, NUTR 200, PHG 200, or one 5-credit course from Anthropology (ANTH only), Geography (GEOG), Political Science (POL S), Psychology (PSYCH), or Sociology (SOC)
5. For BA path students, minimum 2.5 grade in one introductory science from the following: BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or MICROM 301/MICROM 302
6. For BS path students, minimum 2.5 grades in at least two courses of a year-long sequence in introductory science, with laboratories, or mathematics, chosen from biology (BIOL 180, BIOL 200, BIOL 220); chemistry (CHEM 142, CHEM 152, CHEM 162); organic chemistry (CHEM 237, CHEM 238, CHEM 239; CHEM 241, CHEM 242); physics (PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119, or PHYS 121, PHYS 122, PHYS 123); or mathematics (MATH 124, MATH 125, MATH 126)

Bachelor of Arts

Major Requirements

109-110 credits

1. *Integrated Core (20 credits)*: minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
2. *Public Health Foundation (8-9 credits)*: statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (4 credits), EPI 320

3. *Diversity Seminar (1 credit)*: SPH 489
4. *Social and Behavioral Sciences Breadth (25 credits)*: one 5-credit course from each of the following departments: Anthropology (ANTH only), Geography (GEOG), Political Science (POL S), Psychology (PSYCH), and Sociology (SOC); minimum 20 credits at the 200 level or above
5. *Natural Science (10 credits)*: 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302; 5 credits from CHEM 120, CHEM 142, CHEM 145
6. *Bachelor of Arts (BA) Selectives (20 credits)*: Courses identified to address competency areas in advocacy, community dynamics, communication, economics, education, ethics, health promotion, law, policy, social justice, and writing. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
7. *Public Health Electives (20 credits)*: 300- and 400-level courses to build competency areas in public health. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
8. *Public Health Capstone (5 credits)*: minimum 2.0 grade in each of SPH 491 and SPH 492 (minimum 2.0 grade)
9. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the School of Public Health.

Bachelor of Arts (Education and Promotion Option)

Major Requirements

109-110 credits

1. HSERV 100 – Required for admission. (Counts toward the 20-credit selectives requirement shown in 7, below.)
2. *Integrated Core (20 credits)*: minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
3. *Public Health Foundation (8-9 credits)*: statistics (4-5 credits) from BHOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (4 credits), EPI 320
4. *Diversity Seminar (1 credit)*: SPH 489
5. *Social and Behavioral Sciences Breadth (25 credits)*: one 5-credit course from each of the following departments: Anthropology (ANTH only), Geography (GEOG), Political Science (POL S), Psychology (PSYCH), and Sociology (SOC); minimum 20 credits at the 200 level or above
6. *Natural Science (10 credits)*: 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302; 5 credits from CHEM 120, CHEM 142, CHEM 145
7. *Bachelor of Arts (BA) Selectives (20 credits)*: Courses identified to address competency areas in advocacy, community dynamics, communication, economics, education, ethics, health promotion, law, policy, social justice, and writing, including HSERV 100, HSERV 204. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
8. *Public Health Electives (20 credits)*: 300- and 400-level courses to build competency areas in public health, including HSERV 343, HSERV 344, HSERV 345, and SPH 495 PH internship. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
9. *Public Health Capstone (5 credits)*: minimum 2.0 grade in each of SPH 491 and SPH 492

10. Minimum 2.00 cumulative GPA for courses applied to the major.

In addition to the major requirements shown above, students must complete the general education requirements for the School of Public Health.

Bachelor of Arts (Global Health Option)

Major Requirements

109-110 credits

1. GH 101 (admission requirement)
2. *Integrated Core (20 credits)*: minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
3. *Public Health and Global Health Foundation (8-9 credits)*: statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (4 credits), EPI 320
4. *Diversity Seminar (1 credit)*: SPH 489
5. *Social and Behavioral Sciences Breadth (25 credits)*: one 5-credit course from each of the following departments: Anthropology (ANTH only), Geography (GEOG) Political Science (POL S), Psychology (PSYCH), and Sociology (SOC); minimum 20 credits at the 200 level or higher
6. *Natural Science (10 credits)*: 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302, and 5 credits from CHEM 120, CHEM 142, CHEM 145
7. *Bachelor of Arts (BA) Selectives (20 credits)*: Courses identified to address competency areas in key domains. See website or adviser for approved list. Courses not on the list must be approved by the adviser.
8. *Public Health Electives (20 credits)*: 300- and 400-level courses to build competency areas in global health. Minimum 15 credits G H-prefix courses; all students required to take G H 305 (3 credits) and G H 401, G H 402 (3 credits each). See website or adviser for approved list. Any course not on the list must be approved by the adviser.
9. *Public Health Capstone (5 credits)*: minimum 2.0 grade in SPH 491 and SPH 492
10. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the School of Public Health.

Bachelor of Science

Major Requirements

119-130 credits

1. *Integrated Core (20 credits)*: minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
2. *Public Health Foundation (8-9 credits)*: statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (4 credits), EPI 320
3. *Diversity Seminar (1 credit)*: SPH 489

4. *Social and Behavioral Sciences Breadth (25 credits)*: one 5-credit course from each of the following departments: Anthropology (ANTH only), Geography (GEOG), Political Science (POL S), Psychology (PSYCH), and Sociology (SOC); minimum 20 credits at the 200 level or above
5. *Natural Science (10 credits)*: 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302; 5 credits from CHEM 120, CHEM 142, CHEM 145
6. *Bachelor of Science (BS) Selectives (40 credits)*: Students taking BIOL 180 and CHEM 142 may count these two courses toward both the Natural Science and the BS Selectives: Two year-long sequences of introductory science, with laboratories: biology (BIOL 180, BIOL 200, BIOL 220); chemistry (CHEM 142, CHEM 152, CHEM 162); remaining credits chosen from biochemistry (BIOC 405, BIOC 406), organic chemistry (CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242, or CHEM 223, CHEM 224); physics (PHYS 114/PHYS 117, PHYS 115/PHYS 118, PHYS 116/PHYS 119, or PHYS 121, PHYS 122, PHYS 123); or mathematics (MATH 124, MATH 125, MATH 126)
7. *Public Health Electives (20 credits)*: 300- and 400-level courses to build competency areas in public health. See website or adviser for approved list. Any course not on the list must be approved by the public health adviser.
8. *Public Health Capstone (5 credits)*: Minimum 2.0 grade in SPH 491 and SPH 492
9. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the school of Public Health.

Bachelor of Science (Nutritional Sciences Option)

Major Requirements

119-130 credits

1. NUTR 200: Required for admission, but not counted toward the minimum 119-130 major credits required
2. *Integrated Core (20 credits)*: minimum 2.00 cumulative GPA with no grade below 1.7 in SPH 380, SPH 381, SPH 480, SPH 481
3. *Public Health Foundation (8-9 credits)*: statistics (4-5 credits) from BIOST 310 (preferred), Q METH 201, STAT 220, STAT 221, STAT 311, or Q SCI 381; epidemiology (4 credits), EPI 320
4. *Diversity Seminar (1 credit)*: SPH 489
5. *Social and Behavioral Sciences Breadth (25 credits)*: one 5-credit course from each of the following departments: Anthropology (ANTH only), Geography (GEOG), Political Science (POL S), Psychology (PSYCH), and Sociology (SOC); minimum 20 credits at the 200 level or above
6. *Natural Science (10 credits)*: 5 credits from BIOL 118, BIOL 180, MICROM 301/MICROM 302; 5 credits from CHEM 120, CHEM 142, CHEM 145
7. *Bachelor of Science (BS) Selectives (40 credits)*: Students taking BIOL 180 and CHEM 142 may count these two courses toward both the Natural Science and the BS Selectives: Two year-long sequences of introductory science with laboratories: biology (BIOL 180, BIOL 200, BIOL 220 and chemistry (CHEM 142, CHEM 152, CHEM 162). Remaining credits chosen from biochemistry (BIOC 405, BIOC 406); organic chemistry (CHEM 237, CHEM 238, CHEM 239, CHEM 241, CHEM 242, or CHEM 223, CHEM 224
8. *Public Health Electives (20 credits)*: At least 9 credits from NUTR 310, NUTR 405, NUTR 406, NUTR 411, NUTR 420 or NUTR 446; balance of 15 credits from NUTR 302, NUTR 303, NUTR

400 (max. 2), NUTR 412 or NUTR 465; and remaining 5 credits, if necessary, of 300- and 400-level courses from approved list

9. *Public Health Capstone (5 credits)*: Minimum 2.0 grade in SPH 491 and SPH 492
10. Minimum 2.00 cumulative GPA for courses applied to the major

In addition to the major requirements shown above, students must complete the general education requirements for the School of Public Health.

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: Public Health is a school-wide liberal arts major, leading to a Bachelor of Arts or Bachelor of Science, which uses public health questions, concepts, and tools to teach critical thinking skills. Students learn to ask questions, challenge assumptions, and explore answers to promote the health and well-being of communities, locally, nationally, and globally. By integrating the diverse areas of public health, students are introduced to the determinants of health, emerging diseases, access to health care and modes of health-care delivery, the geography of health, and the effects of environment on health and disease. The major provides undergraduates with [competencies](#) in health, ethics and social justice, social science, natural science, policy and politics, and environment with particular emphasis on collaboration, communication, and critical thinking across these domains. An undergraduate degree in public health provides a grounding in science, values, passion, and commitment which is valuable for a range of career and educational options across multiple disciplines.
- *Instructional and Research Facilities*: The School of Public Health has five departments -- Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, Global Health, and Health Services -- as well as interdisciplinary programs such as the Public Health major, Maternal and Child Health, Nutritional Sciences, Pathobiology, and Public Health Genetics. The School has over 30 research centers, including Institute for Public Health Genetics, Northwest Center for Public Health Practice, Center for Public Health Nutrition, Institute for Health Metrics and Evaluation, and the Health Promotion Research Center. Administration and teaching are primarily in the Magnuson Health Sciences Center.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: Majors are encouraged to engage in experiential learning. See adviser for details.
- *Department Scholarships*: See adviser for details.
- *Student Organizations/Associations*: Undergraduate Student Public Health Association (USPHA). Public Health Dawgs (PhDs).

Graduate Program

The School of Public Health (SPH) offers graduate programs leading to the degrees of Master of Public Health (MPH), Master of Health Administration (MHA), Master of Science (MS), and Doctor of Philosophy (PhD). Admission requirements are described in the sections for each department.

Master of Public Health Degree: The MPH provides broad training in public health and is offered in all SPH departments. Students choose from areas including biostatistics; community-oriented public health practice; environmental and occupational health; epidemiology; Executive MPH program; health metrics and evaluation; health services; health systems and policy; global health (in Epidemiology or Global Health); leadership, policy, and management; maternal and child health (in Epidemiology or Health Services); nutritional sciences (with optional dietetics training); occupational and environmental medicine; public health genetics; or Peace Corps Master's International. The Executive MPH, a three-year, part-time program, allows mid-career public health professionals to pursue the degree in community practice, environmental health, global health, health education, or maternal and child health while continuing their employment.

Master of Health Administration Degree: The MHA is offered either as a full-time, in-residence program or a part-time executive program that prepares students for careers in management, planning, and policy analysis. The curriculum integrates the knowledge, skills, and experience that encompass health services management, planning, and policy analysis. Students develop skills that enable them to better understand and manage change; analyze information and make decisions; and manage organizations and the people in them. The Executive MHA program, is a part-time program for mid-career health services professionals (including physicians and other experienced clinicians), who wish to continue their employment while pursuing the degree.

Master of Science and Doctor of Philosophy Degrees: The MS and PhD programs in the departments of Biostatistics, Environmental and Occupational Health Sciences, Epidemiology, and Health Services prepare students for academic or research careers. The MS and PhD in the Nutritional Sciences and the Pathobiology programs, and the PhD program in the Institute for Public Health Genetics are administered in the School of Public Health.

The MS programs in biostatistics, environmental health (general, occupational and environmental exposure sciences, and toxicology tracks), epidemiology (general, global, or clinical research tracks), health services (healthcare and population health), nutrition (with optional dietetics training), pathobiology, and genetic epidemiology offer focused research training in specific disciplines. Graduates often assume positions as senior technical staff in laboratories or other organizations and as research project coordinators, or pursue further graduate training. In the PhD program more courses emphasize the concepts underlying methodological approaches rather than the ability to independently design a major research program.

The PhD programs in biostatistics (general or statistical genetics tracks), environmental and occupational health sciences (environmental and occupational hygiene and toxicology tracks), epidemiology, health services, nutritional sciences (with optional dietetics training), pathobiology, and public health genetics, train future academicians as highly qualified independent investigators and teachers, and as well-trained practitioners.

Concurrent Degree Programs: Enrollment in a concurrent degree program permits a student to proceed towards sequential completion of both degrees in a shortened period of time. Some options available are not formal concurrent programs, but the degrees listed can be pursued in parallel with the Global Health MPH. Most concurrent degrees begin with successful application to the other school, followed by an application to the MPH during the first year.

The SPH has concurrent degree programs with the Foster School of Business (MHA/MBA) and the Daniel J. Evans School of Public Affairs (MHA/MPA, MPH/MPA, MS/MPA). The School also offers concurrent degree programs with the Henry M. Jackson School of International Studies (MPH/MAIS), the Law School (MHA/JD, MPH/JD), Molecular and Cellular Biology (PhD/MS), and Anthropology (MPH/PhD). Concurrent degrees with other health sciences schools include Dentistry (MPH/MSD), Medicine (MHA/MD, MPH/MD, PhD/MD), Nursing (MPH/MN), and Social Work (MPH/MSW).

Residency Programs: SPH offers a residency in occupational and environmental medicine (MPH). Physicians may apply to any of the school's other graduate programs.

Certificate and Graduate Certificate Programs: Programs include basic or advanced clinical research methods (Epidemiology); emergency preparedness and response (Health Services); global health (Global Health); global health of women, adolescents, and children (Global Health); global injury and violence prevention (Global Health); health economics and outcomes research (with the School of Pharmacy); health management (Health Services); health policy (Health Services); HIV and STIs (Global Health); maternal and child health (Health Services); public health practice (Health Services Executive MPH program); public health genetics (Public Health Genetics) and statistical genetics (Biostatistics).

Biostatistics

Department Overview

The department is a center for development and application of statistical methodology across the health sciences, and has collaborative partnerships with Fred Hutchinson Cancer Research Center, Seattle Children's hospital Research Institute, Group Health Cooperative, and the Veterans' Administration. To complement research, the department recently established the Center for Biomedical Statistics to provide consulting and collaborative services.

Graduate Program

Graduate Program Coordinator
H655 Health Sciences, Box 357232
(206) 543-1044
bioadmit@uw.edu

The department offers master of science, master of public health, and doctor of philosophy degrees in quantitative methods applied to the medical and biological sciences. As technological advances generate huge quantities of information, biostatistical tools and concepts are critical for the analysis of these data. Techniques and viewpoints of mathematics and statistics, traditionally peripheral to biology and medicine, are now woven into the life sciences, thereby providing new opportunities in research and teaching.

The biostatistics graduate program equips students to develop and apply the quantitative techniques of mathematics, statistics, and computing appropriate to medicine, biology, and other health-science disciplines.

The department produces graduates at all levels. Students are recruited from programs in mathematics, statistics, and biology and are selected on the basis of quantitative ability.

Master of Public Health

Combines broad training in public health with specific training in biostatistics. Includes core courses in biostatistics, environmental health, epidemiology, health services, and social and behavioral sciences. Successful candidates complete a public health practicum and write a research-based master's thesis. For individuals who anticipate careers as data analysts in public health research or practice and for individuals who plan doctoral work in public health or biomedical field, but who want more methodological training than those PhD programs offer.

Admission Requirements

Doctoral-level degree in another field (e.g., MD, PhD, JD) or currently working on such a doctoral degree. Candidates are not awarded the biostatistics-pathway MPH until they are awarded their doctoral degree. All other prerequisites and required materials are the same for MS, MPH, and PhD applicants.

Degree Requirements

63 credits

1. *Biostatistics Core Courses:* BIOST 514, BIOST 515; BIOST 524; BIOST 536, BIOST 537; BIOST 580; BIOST 590. BIOST 514, BIOST 515, BIOST 524, BIOST 536, and BIOST 537 – all taken for a numerical grade, with a minimum 3.0 grade in each course.
2. *Non-biostatistics Core Courses:* EPI 512, EPI 513; HSERV 510, HSERV 511; ENV H 511; G H 515. All non-biostatistics core courses taken for a numerical grade, with a minimum 2.7 grade in each non-biostatistics core course and a minimum 3.00 cumulative GPA.
3. *Biostatistics Elective Courses:* 6 credits of any approved biostatistics MS elective, or STAT 512 or STAT 513
4. *Biostatistics MPH Practicum:* BIOST 595 (3). Three credits in an organization or agency that provides planning or services relevant to public health.
5. *Master's Thesis:* 9 credits of BIOST 700.

See [department website](#) for further information on degree requirements.

Master of Science

Offers advanced training in biostatistics. Includes coursework in biostatistics, statistics, and one or more biomedical fields. Successful candidates pass a master's theory examination and write a research-based master's thesis. For individuals who anticipate a career as a data analyst in public health or biomedical research or practice and for individuals who plan doctoral work in a public health or biomedical field, but want more methodological training than those PhD programs offer.

Admission Requirements

1. 30 or more quarter credits in mathematics and statistics, to include two years of calculus (including multivariate calculus), one course in linear algebra, and one course in probability theory.
2. Students may apply from an undergraduate major in mathematics, statistics, or a biological field, or are occasionally admitted with backgrounds in other fields.

Potential MS students may enter the graduate program in biostatistics from an undergraduate major in mathematics, statistics, or a biological field. Students are occasionally admitted with backgrounds in other fields; however, all applicants must have 30 or more quarter credits in mathematics and statistics to include two years of calculus (including multivariate calculus), one course in linear algebra, and one course in probability theory.

Degree Requirements

63 credits

1. *Required Courses:* BIOST 514, BIOST 515, BIOST 536, BIOST 537, BIOST 580, BIOST 590, STAT 512, STAT 513. Minimum 3.0 grade in each required course (except BIOST 580 and BIOST 590). Required courses may be waived based on prior coursework; the minimum 3.0 grade requirement may be waived when subsequent performance on a relevant qualifying examination is excellent.
2. *Elective Credits:* 12 elective credits, including minimum 6 credits with a methodology emphasis, and 6 credits with a biology or public health emphasis (See department for elective-credit lists.)
3. *Examinations:* Students who enroll in STAT 512 and STAT 513 must take the MS theory examination the following summer, and if failed, must pass it the following year.

4. *Master's Thesis*: BIOST 700 (18 credits). Waived for students who have passed all PhD qualifying examinations at a level appropriate for PhD students. If BIOST 700, BIOST 536, and BIOST 537 are waived, the student must take and pass all required coursework for the PhD degree, including BIOST 533, BIOST 570, STAT 581, STAT 582, STAT 583 and, depending on the pathway, BIOST 571 and BIOST 572, or BIOST 550, BIOST 551, and BIOST 552.

See [department website](#) for further information on degree requirements.

Doctor of Philosophy

Includes coursework in biostatistics, statistics, and one or more public health or biomedical fields. Successful candidates must pass PhD applied and theory examinations, complete a biology project, and write a dissertation that reports the results of new biostatistical research undertaken by the candidate.

Admission Requirements

1. 30 or more quarter credits in mathematics and statistics, to include two years of calculus (including multivariate calculus), one course in linear algebra, and one course in probability theory.
2. Students apply from programs in mathematics, statistics, or a biological field, or are occasionally admitted with backgrounds in other fields.

Degree Requirements

Minimum 103 credits

Standard Pathway

1. *Required Courses*: BIOST 514; BIOST 515; BIOST 533; BIOST 570; BIOST 571; BIOST 572; BIOST 580, BIOST 590, BIOST 800; MATH 576, or equivalent; STAT 512, STAT 513; STAT 581, STAT 582, STAT 583
2. Minimum 3.0 grade in each required course (except BIOST 580, BIOST 590, or BIOST 800). A placement examination may be taken to waive STAT 512 and STAT 513. Required courses may be waived based on prior coursework; minimum 3.0 grade may be waived when subsequent performance on a relevant qualifying examination is excellent.
3. *Electives (15 credits)*: Minimum 6 credits with a methodology emphasis and 9 credits with a biology or public health emphasis. Minimum 2.7 grade for elective courses. See department for elective-credit lists.
4. *Examinations*: A PhD student who enrolls in STAT 512 and STAT 513 takes the MS theory examination the following summer; the PhD statistical theory examination within two years following first-time completion of STAT 581, STAT 582, STAT 583; the PhD applied examination within two years of first-time completion of BIOST 570; and general and final examinations.
5. *Teaching Assistant*: Serve as a TA for at least one quarter.

Statistical Genetics Pathway

1. *Prerequisites*: GENOME 371 (or equivalent); GENOME 372, GENOME 453, or GENOME 465 (or equivalent)

2. *Required Courses:* BIOST 514, BIOST 515, BIOST 533, BIOST 550, BIOST 551, BIOST 552, BIOST 570, BIOST 581, BIOST 590, BIOST 800; STAT 512, STAT 513, STAT 581, STAT 582, STAT 583; MATH 576 (or equivalent); GENOME 540 or GENOME 541; GENOME 562
3. Minimum 3.0 grade in each required course (except BIOST 581, BIOST 590, or BIOST 800). A placement examination may be taken to waive STAT 512 and STAT 513. Required courses may be waived based on prior coursework; minimum 3.0 grade in selected courses may be waived when subsequent performance on a relevant qualifying examination is excellent.
4. *Elective Credits:* at least 4 credits of elective courses with a methodology emphasis. Minimum 2.7 grade. See department for elective course list
5. *Examinations:* A PhD student who enrolls in STAT 512 and STAT 513 takes the MS theory examination the following summer; the PhD statistical theory examination within two years following first-time completion of STAT 581, STAT 582, STAT 583; the PhD applied examination within two years of first-time completion of BIOST 570; and general and final examinations.
6. *Teaching Assistant:* Serve as a TA for at least one quarter.

See the [department website](#) for further information on degree requirements.

Environmental and Occupational Health Sciences

Department Overview

F461 Health Sciences

Environmental health focuses on identifying, evaluating, and controlling environmental conditions that may have an adverse impact on human health. Examples of problem areas requiring environmental health expertise are assuring adequate quality and quantity of food and drinking water, safe treatment and disposal of domestic and industrial waste materials, limiting or reducing air and noise pollution, limiting occupational exposure to hazardous substances and unsafe conditions, assuring safe and healthful housing, controlling the spread of insect- and rodent-borne illness, proper selection and use of pesticides, and understanding the effects of global changes in climate and the atmosphere on human health.

Undergraduate Program

Adviser
F461D Health Sciences, Box 357234
(206) 543-4207
ehug@uw.edu

The department offers the following programs of study:

- The Bachelor of Science degree with a major in environmental health
- A minor in environmental health

Bachelor of Science

Suggested First- and Second-Year College Courses: chemistry, organic chemistry, biology, calculus, statistics, English composition

Department Admission Requirements

1. Minimum requirements major. First- and second-year students complete early admission prerequisites (shown below). Third-year students complete upper-division admission prerequisites (shown below). Prospective students apply the quarter they plan to complete prerequisites for entry the following quarter.
2. Students are admitted all quarters. Applications, due the second Friday of each quarter, may be downloaded from the Environmental Health website at: deohs.washington.edu/undergraduate. Applicants who meet stated requirements are admitted in time to register the following quarter as majors.
3. Students should meet with an adviser before applying.
4. Transfer students may use transferable equivalent course(s) for prerequisite coursework.

Early Admission Prerequisites

1. Minimum cumulative 3.00 GPA, with a minimum 2.0 grade in each individual course below
2. 5 credits English composition
3. CHEM 142, CHEM 152
4. MATH 124 or Q SCI 291

Upper-Division Admission Prerequisites

1. Minimum cumulative 2.50 GPA, with a minimum 2.0 grade in each individual course below
2. 5 credits English composition
3. MATH 124 or Q SCI 291
4. BIOL 180, BIOL 200, BIOL 220
5. One of the following general and organic chemistry sequences
 - a. CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, CHEM 241
 - b. CHEM 142, CHEM 152, CHEM 223, CHEM 224, CHEM 241
 - c. CHEM 142, CHEM 152, CHEM 220

Degree Requirements

180 credits

General Education Requirements

See School of Public Health requirements

Major Requirements

119-132 credits

1. *Environmental Health Supporting Science (49-61 credits):*
 - a. Either MATH 124 or Q SCI 291 (5 credits)
 - b. Either BIOST 310 (recommended), STAT 220, STAT 311, or Q SCI 381 (4-5 credits)
 - c. BIOL 180, BIOL 200, BIOL 220 (15 credits)
 - d. One of the following general and organic chemistry sequences
 - i. CHEM 142, CHEM 152, CHEM 162, CHEM 237, CHEM 238, CHEM 241 (26 credits)
 - ii. CHEM 142, CHEM 152, CHEM 223, CHEM 224, CHEM 241 (21 credits)
 - iii. CHEM 142, CHEM 152, CHEM 220 (15 credits)
 - e. PHYS 114/PHYS 117, PHYS 115/PHYS 118 (10 credits)
2. *Environmental Health Core (minimum 37 credits):* ENV H 311, ENV H 320, ENV H 405, ENV H 432, ENV H 433, ENV H 472, ENV H 473, ENV H 480, ENV H 482 (2 credits minimum), EPI 320, MICROM 301, MICROM 302

3. *Environmental Health Selectives (12-13 credits)*: Minimum four courses chosen from ENV H 310, ENV H 406, ENV H 417, ENV H 418, ENV H 439, ENV 440, ENV H 441, ENV H 442, ENV H 443, ENV H 444, ENV H 445, ENV H 446, ENV H 447, ENV H 448, ENV H 451, ENV H 452, ENV H 453, ENV H 460, and ENV H 462
4. 21 additional credits of approved electives. See adviser for approved list.
5. Minimum 2.0 grade in each course required for the major

Minor

Minor Requirements:

1. *Core (3 credits)*: either ENV H 111 or ENV H 311.
2. *Approved Selectives (9 credits)*: three courses chosen from ENV H 431, ENV H 440, ENV H 445, ENV H 448, ENV H 451, ENV H 453, ENV H 472
3. Minimum 15 credits of approved ENV H electives
4. Minimum 14 credits in upper-division courses

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes*: In the Bachelor of Science program in environmental health, students learn to utilize tools of scientific inquiry to identify, prevent, and control environmental factors that can damage human health. As part of their training, students are introduced to basic principles of risk assessment, microbiology, epidemiology, sampling, and toxicology, and can choose to focus in one of three interest areas: biomedical sciences, health and environmental science, and environmental public health practice.
- *Instructional and Research Facilities*: The department houses thirteen centers and institutes and twenty labs.
- *Honors Options Available*: With College Honors (Completion of Honors Core Curriculum and Departmental Honors); With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
- *Research, Internships, and Service Learning*: The department operates an internship program in cooperation with government agencies and private employers throughout the state. Each student intern works under the supervision of an experienced employee, with guidance from a faculty member. Internship placements are available throughout the year for variable amounts of academic credit.
- *Department Scholarships*: None offered.
- *Student Organizations/Associations*: UW Student Environmental Health Association

Graduate Program

Graduate Program Coordinator
F461 Health Sciences, Box 357234
(206) 543-3199

The department offers three graduate degrees: Master of Science, Master of Public Health, and Doctor of Philosophy. Areas of emphasis are environmental and occupational hygiene (PhD), occupational and environmental exposure sciences (MS), environmental toxicology (PhD/MS), environmental health (MS), and occupational and environmental medicine or environmental and occupational health (MPH).

The PhD in environmental and occupational hygiene option focuses on assessment of exposures, health effects, and control strategies in community and work environments. The program emphasizes expertise in exposure assessment to evaluate human health risks from chemical, physical, and biological agents.

Research opportunities include: laboratory and field investigations of environmental exposures and health outcomes; air, soil and water pollution monitoring; ambient, indoor, and personal exposure modeling; evaluation of biomechanical stress factors and organization of the work environment; development of new instruments, biomarkers, and novel methods for assessing human exposures; and evaluation of effective control strategies for the prevention or reduction of illness and injury.

The MPH in environmental and occupational health provides recognition, assessment, and control of environmental and occupational hazards, the impact of these hazards on health and society, and approaches to regulations, enforcement, and policy development. It emphasizes development of skills essential to science-based public health practice. In addition to coursework, students complete a field practicum and research in any of the department's research facilities or in a field setting.

The MPH in occupational and environmental medicine, for individuals with an earned doctorate, provides training in the public health sciences with a focus on occupational and environmental health. The program provides didactic instruction and participation in field studies. Research efforts focus on understanding, preventing, and managing environmental and occupational disease, injury, and disability. Physicians also have the option of applying for a concurrent fellowship or residency in occupational and environmental medicine.

The concurrent MPH/MPA or MS/MPA degree programs with the Daniel J. Evans School of Public Affairs educate students who bring substantive public health knowledge and a strong policy and management orientation to their professional careers. Several courses satisfy degree requirements in both programs, students are able to earn the two degrees in a shorter period of time than if the degrees were taken separately. Applicants must apply to both programs.

Master of Public Health, Environmental and Occupational Health

Focuses on recognition, assessment, and control of environmental and occupational hazards; impact of these hazards on public health and society; and approaches to regulations, enforcement, and policy development. Nurses with a BN can opt for a special emphasis MPH track to train in delivery of health and safety services to worker populations and communities.

Admission Requirements

1. Bachelor's degree in science or engineering, with coursework in biology, chemistry, calculus, and physics. Applicants with non-science majors are considered if prerequisite courses have been completed.
2. Strong grades and GRE scores
3. Statement of personal goals
4. Letters of reference
5. International applicants submit TOEFL scores - minimum 580 (237 computer)

Degree Requirements

63 credits

1. *Core Requirements:* EPI 511 (or EPI 512, EPI 513), BIOST 511 (or BIOST 517). MPH/MPA students are also required to take BIOST 512 (or BIOST 518), HSERV 510, and HSERV 511.
2. *Required Courses:* ENV H 505 (or ENV H 514, ENV H 515, and ENV H 516), ENV H 453 (or ENV H 553 or ENV H 551), ENV H 570, ENV H 577 (or ENV H 572 or ENV H 543), ENV H 446 (or ENV H 490, or ENV H 541, or ENV H 545, or ENV H 552, or ENV H 548). Courses in

environmental health not chosen can be taken as electives to satisfy course requirements. Students have a choice of either completing a thesis (ENV H 700) or a project (ENV H 598B).

3. *Electives (varies by track)*
 - a. *Thesis Track:* At least two additional 400- or 500-level departmental courses (minimum 6 credits) required to fulfill elective requirements.
 - b. *Project Track:* Students who take 6-8 credits of ENV H 598A must take 3 additional 400- or 500-level classes. Students who take 9 or more ENV H 598A credits must take two additional 400- or 500-level elective credits.
4. *Practicum:* ENV H 599 (at least 120 hours)

Master of Public Health, Occupational and Environmental Medicine

Admission Requirements

1. Doctoral degree (MD, DO, or equivalent) with prior coursework in physics, chemistry, calculus, and biology.
2. Concurrent UW residency applicants must offer graduation from a Class A medical school (U.S., Canada, or equivalent) and completion of one year of approved internship. Three years in primary care specialty also encouraged.

Gives physicians a better understanding of the clinical and scientific principles in environmental and occupational health. Training focuses on epidemiology, occupational and environmental hygiene, biostatistics, health services, and environmental toxicology. A concurrent residency/fellowship program is available.

Degree Requirements

64 credits

Master of Science, Environmental Health

Students identify sources of contamination in air, water, food, and soil, and on surfaces; how contamination is spread; strategies to prevent or control effects on human health or environmental quality; and the means of communicating risk information to the public and health professionals.

Admission Requirements

1. Bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics. Applicants with non-science majors are considered if prerequisite courses have been completed.
2. Strong grades and GRE scores
3. Statement of personal goals
4. Letters of reference
5. International applicants submit TOEFL scores - minimum 580 (237 computer)

Degree Requirements

64 credits

1. *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700, BIOST 511 (or BIOST 517 or higher), EPI 511
2. *Required Courses:* ENV H 505, ENV H 453, ENV H 541, ENV H 543 (or ENV H 577), ENV H 552, ENV H 594, ENV H 445 (or ENV H 446), ENV H 548, ENV H 545
3. *Representative Electives:* 9 graded elective credits, approved by the student's academic adviser.

Master of Science, Occupational and Environmental Exposure Sciences

Students learn to quantify and manage human exposures to chemicals, air pollutants, aerosols, and physical agents found in a wide variety of community and occupational settings. Program emphasizes rigorous academic training, internships, career guidance, and practical skills needed for graduates to establish long-term careers as environmental health and safety professionals. A flexible curriculum offers options for either a thesis or professional portfolio alternative.

Admission Requirements

1. Bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics. Applicants with non-science majors are considered if prerequisite courses have been completed.
2. Strong grades and GRE scores
3. Statement of personal goals
4. Letters of reference
5. International applicants submit TOEFL scores - minimum 580 (237 computer)

Degree Requirements

63 credits

1. *Core Courses:* ENV H 580, ENV H 581, ENV H 583, ENV H 700 (or appropriate section of ENV H 598, and ENV H 559, and appropriate section of ENV H 599) BIOST 512 (or BIOST 518, or higher), EPI 511. Higher level biostatistics and epidemiology courses can be substituted for BIOST 511 or BIOST 517, and for EPI 511. Students completing a project are required to take only BIOST 511 and are not required to take ENV H 583, but are required to complete an internship (ENV H 599).
2. *Required Courses:* ENV H 551, ENV H 553, ENV H 557
3. *Learning Emphasis Required Courses:*
 - o *Occupational Hygiene:* ENV H 505, ENV H 555, ENV H 557, ENV H 560, ENV H 570
 - o *Ergonomics and Human Factors:* ENV H 537, ENV H 549, ENV H 560, ENV H 566, ENV H 596
 - o *Health and Safety Management and Policy:* ENV H 560, ENV H 577, ENV H 584, ENV H 599
 - o *Exposure Biomarkers:* ENV H 505, ENV H 506, ENV H 554, ENV H 570, P BIO 506
4. *Electives:* Electives to complete 63-credit degree requirement

Master of Science, Environmental Toxicology

Focuses on understanding the mechanisms of action of environmental chemicals and their effects on human health and in the environment. Research areas include chemical effects on organ systems

(neurological, hepatic, renal, cardiovascular, reproductive, and respiratory) and also developmental toxicology, environmental carcinogenesis, and dietary chemoprotection. Also offers a strong focus on human risk assessment as well as in toxicological issues that cross ecological and human health disciplines.

Admission Requirements

1. Bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics. Applicants with non-science majors are considered if prerequisite courses have been completed.
2. Strong grades and GRE scores
3. Statement of personal goals
4. Letters of reference
5. International students submit TOEFL scores – minimum 580 (237 computer)

Degree Requirements

63 credits

1. *Core Courses:* ENV H 580, ENV H 581, EHV H 583, ENV H 700, BIOST 511 (or BIOST 517, or higher), EPI 511.
2. *Required Courses:* ENV H 514, ENV H 515, ENV H 516, ENV H 552, ENV H 577; BIOC 405, BIOC 406 (or BIOC 440, BIOC 441, BIOC 442); ENV H course in industrial hygiene or occupational medicine.
3. *Representative Electives:* Toxicology students who take the two-quarter biochemistry series (BIOC 405, BIOC 406) must have an additional 9 graded elective credits. Students who choose the three-quarter biochemistry series (BIOC 440, BIOC 441, BIOC 442) must have an additional 3 graded elective credits. Electives must be approved by the student's academic adviser. Electives may include ENV H 511, ENV H 512, ENV H 531, ENV H 532, ENV H 533, ENV H 550, ENV H 553, ENV H 555, ENV H 567, ENV H 570, ENV H 584, ENV H 591, BIOL 411, BIOST 521, C MED 407, C MED 590, MICROM 441, MICROM 442, MICROM 518, PATH 444, PATH 544, PATH 555, P BIO 500-level courses, P BIO 505, P BIO 506, P BIO 507, PHCOL 401, PHCOL 402.

Doctor of Philosophy, Environmental and Occupational Hygiene

Students learn to identify, evaluate, and manage health risks found in a wide variety of community and occupational settings, obtaining advanced research training in exposure assessment and control methods.

Admission Requirements

1. Bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics.
2. Master's degree in related field recommended
3. Honors-level GPA
4. Statement of personal goals
5. Letters of reference
6. High GRE scores

7. International applicants submit TOEFL scores – minimum 580 (237 computer)

Degree Requirements

Minimum 92 credits

1. *Core Sciences (11-12 credits)*: Sequence of three courses in one area, as approved by adviser. Typical core choices are biochemistry, chemistry, engineering, applied mathematics, epidemiology, microbiology, or physiology.
2. *Biostatistics (3 credits)*: BOST 512 (or BOST 518 or higher)
3. *Epidemiology (4 credits)*: EPI 511 (or higher)
4. *Environmental and Occupational Health Seminar (6 credits)*: ENV H 580
5. *Dissertation (27 credits)*: ENV H 800
6. *Laboratory Rotations (6-9 credits)*: ENV H 595
7. *Required courses*:
 - a. *Industrial Hygiene (6 credits)*: ENV H 553 and ENV H 555
 - b. *Toxicology (3 credits)*: ENV H 405 (or more advanced)
 - c. *Environmental Chemistry (3 credits)*: ENV H 552
 - d. *Occupational and Environmental Epidemiology (3 credits)*: ENV H 570
 - e. *Electives (20 credits)*: 10 elective credits are unspecified and 10 must be in courses taught by occupational and exposure sciences or environmental health program faculty.

Doctor of Philosophy, Environmental Toxicology

Focuses on understanding the mechanisms of the action of environmental chemicals and their effects on human health and in the environment. Research areas include chemical effects on organ systems (neurological, hepatic, renal, cardiovascular, reproductive, and respiratory) as well as developmental toxicology, environmental carcinogenesis, and dietary chemoprotection. The program also offers a strong focus on human risk assessment and toxicological issues that cross ecological and human health disciplines.

Admission Requirements

1. Bachelor's degree in science or engineering with coursework in biology, chemistry, calculus, and physics.
2. Master's degree in related field recommended
3. Honors-level GPA
4. Statement of personal goals
5. Letters of reference
6. High GRE scores
7. International applicants submit TOEFL scores – minimum 580 (237 computer)

Degree Requirements

104 credits

1. *Core Sciences (11-12 credits)*: Sequence of three courses in biochemistry.
2. *Biostatistics (3 credits)*: BIOST 512 (or BIOST518 or higher)
3. *Epidemiology (4 credits)*: EPI 511 (or higher)
4. *Environmental and Occupational Health Seminar (6 credits)*: ENV H 580
5. *Dissertation (27 credits)*: ENV H 800
6. *Laboratory Rotations (6-9 credits)*: ENV H 595
7. *Required courses*:
 - a. *Toxicology (9 credits)*: ENV H 514, ENV H 515, ENV H 516
 - b. *Toxicology Seminar (9 credits)*: Of the 9 credits (minimum) of current topics courses, at least six credits must be in ENV H 591. The other credits can be chosen among other current topics courses offered by the Department of Environmental Health or other departments, with approval of student's advisory committee.
 - c. *Advanced Toxicology*: 6 credits from approved list
 - d. *Physiology*: 3 credits from approved list
8. *Electives (20 credits)*: Of the minimum four required electives, two must be departmental courses and two may be taken outside the department. The two departmental courses must be from two different non-toxicology programs. All elective credits must be approved by the student's advisory committee.

Financial Aid

Support is available for many students in the form of traineeships or research assistantships, which include tuition.

Research Facilities

Specialized laboratories exist for research in industrial hygiene chemistry, optical remote sensing of chemicals, industrial ventilation, ergonomics, trace organics and heavy metals, environmental microbiology, electron microscopy, controlled exposure to environmental agents, and toxicology (including toxicogenomics and analytical cytology). Field research is facilitated through an extensive consultation-service program conducted by the department for labor and industry in Washington State.

Epidemiology

Graduate Program

Epidemiology Program Office
F262 Health Sciences, Box 357236
(206) 543-6302 or (206) 543-8226
epiapply@uw.edu
depts.washington.edu/epidem

The Department of Epidemiology offers the following three graduate degrees: Doctor of Philosophy, Master of Science, and Master of Public Health, for individuals intending to become academicians, highly qualified research specialists, or well-trained public health practitioners, respectively. The department also offers a number of degree tracks within the master's degree programs, as well as several graduate certificates.

Admission Requirements for All Degrees

Admission to all graduate programs is highly competitive and is based on the following:

1. Background in epidemiology or other health-related fields (such as medicine, health or biological sciences, mathematics, quantitative social sciences), including prior areas of study and work experience, especially quantitative public health research
2. Undergraduate and graduate grades (if applicable)
3. GRE scores (exceptions are often made for master's degree applicants with a prior PhD, MD, DO, DDS, DVM, or equivalent health-related degree from a U.S. university; MD/MPH applicants at UW; and MD/PhD applicants funded by the Medical Scientist Training Program at UW. No exceptions to GRE requirement are made for PhD program applicants.)
4. TOEFL or IELTS score from international applicants, unless bachelor's degree taught entirely in English
5. Applicant interests that are aligned with those of Department of Epidemiology faculty. (It is not expected that applicants locate a faculty mentor in advance.)
6. Compelling motivation for pursuing training in epidemiology as demonstrated through a well-written goal statement
7. Letters of reference

The Master of Public Health (MPH) degree in epidemiology requires coursework in health services and environmental health, in addition to epidemiology and biostatistics, as well as a thesis and a practicum as preparation for a career in public health practice or as a prelude to the PhD program. Three tracks are available: the general track, which is selected by most students and allows specialization via the choice of electives and thesis topic; the global health track (GH); and the maternal and child health track (MCH). The global health track requires approximately two years of prior health science work experience in a developing country, although some of the two years may be health-related work with immigrant or underserved groups in the United States. (The epidemiology global health track is not the same as the MPH general track through the Global Health Department in that it focuses on epidemiology and biostatistics rather than on health services-oriented training, but it does incorporate some of the same classes.) Applicants without the requisite experience may apply to both the Epidemiology general track and the global health graduate certificate (listed below) which combined offer equivalent training. The

MCH track expects prior U.S. MCH experience for admission. Applicants without this experience may apply to both the general track and the MCH graduate certificate (listed below) which combined offer the similar training.

Formal concurrent degree programs involving the epidemiology MPH include the following: Doctor of Medicine (MD), Doctor of Philosophy (PhD) in Anthropology, Master of Arts in International Studies (MAIS), and Master of Public Affairs (MPA). A master's or doctorate from another department at the UW may be combined with the MPH with the approval of both programs.

The Master of Science (MS) degree in epidemiology requires concentration on courses and research in epidemiology and biostatistics as preparation for a research specialization or as a prelude to the PhD program. It also requires electives from the School of Public Health. Two tracks are available, the general track, which allows specialization via the choice of electives and thesis topic and the clinical research track (CR). The MS CR is intended chiefly for professionals who have already completed clinical training, and who plan to conduct research with patients in healthcare settings as a significant part of their future careers.

A formal concurrent degree program combines the epidemiology general track MS with the PhD in molecular and cellular biology. A master's or doctorate from another department at the UW may be combined with the MS with the approval of both programs.

Applicants interested in an MS in genetic epidemiology, administered by the Institute for Public Health Genetics (a School of Public Health program that is not part of the Department of Epidemiology), should visit <http://depts.washington.edu/phgen/programs/msge.html>.

The Doctor of Philosophy is designed to produce academics who are highly qualified as independent investigators, teachers, and practitioners. The requirements for the PhD degree in epidemiology differ from the MS program requirements primarily in the scope and complexity of research for the dissertation. Coursework includes a core series in epidemiology and biostatistics, as well as epidemiology electives and other electives from the School of Public Health.

Admission Requirements Specific to the PhD

1. Master's degree in epidemiology or other health-related field, including mathematics and quantitative social sciences.
 - a. A prior doctorate without a health-related master's degree is not acceptable.
 - b. An applicant with a doctorate only and no master's degree should apply to the MS or MPH first.
 - c. All courses and credits from the MS or MPH in epidemiology at the UW count directly toward the PhD in epidemiology.
2. GRE from all applicants, including those who hold a U.S. doctorate, except MSTP MD students at UW.

The Epidemiology Department and other School of Public Health departments offer several graduate certificate programs open to any qualified graduate student at the University (sph.washington.edu/prospective/edprograms.asp#cert). Some certificate programs are open to Graduate Non-Matriculated students, if indicated on the certificate websites. Following is a partial listing of certificate programs:

- *Advanced Clinical Research*
Methods: depts.washington.edu/epidem/Certificates/acrc.shtml (May not be combined with an epidemiology PhD degree at UW)

- *Basic Clinical Research Methods*: depts.washington.edu/epidem/Certificates/bcrc.shtml (May not be combined with an epidemiology PhD degree at UW)
- *Global Health Graduate Certificates*: globalhealth.washington.edu/academics/certificates-and-fellowships
 - *General Global Health*
 - *Global Health of Women, Adolescents, and Children*
 - *Global Injury and Violence*
 - *HIV and Sexually Transmitted Infections*
- *Maternal and Child Health*: depts.washington.edu/mchprog/certificate/
- *Public Health Genetics*: depts.washington.edu/phgen/certificateprogram/Certificate.shtml
- *Statistical Genetics*: www.stat.washington.edu/statgen/index.php?page=certificate (Offered by the Biostatistics department)

Master of Public Health

Degree Requirements

Minimum 63 credits, as follows:

1. 45 to 49 class credits
2. *Core Courses*: 33 graded credits, including EPI 512, EPI 513, EPI 514, BIOST 511, BIOST 512, BIOST 513, either ENV H 510 or ENV H 511, HSERV 510, HSERV 511. BIOST 517-BIOST 518 may be substituted for BIOST 511, BIOST 512, BIOST 513
3. EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS and Stata programming experience
4. *Electives*: 6 credits of EPI course electives of 2 or more credits each (See acceptable electives in the on the courses webpage at depts.washington.edu/epidem/courses/)
5. 3 to 6 credits (120 to 240 hours) in a field-based practicum (EPI 595)
6. 9 to 18 thesis (EPI 700) credits
7. Students may enroll in additional elective courses in epidemiology and other courses with substantial public health content with departmental approval, and for independent study (EPI 600) to bring the total to 63 credits. Public health-related 400-level courses taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework without substantial public health content, and at the 300-level or below, does not count toward the degree.

MPH Specialized Program Options: The MPH degree offers specialized tracks as listed below. They have additional course, practicum and thesis requirements detailed on the program websites.

- *Global Health Track*: Requires additional coursework specific to international health. More information about this track is at depts.washington.edu/epidem/program/globalhealth.shtml.
- *Maternal and Child Health Track*: Requires additional coursework related to maternal and child health in the U.S. More information about this track is at depts.washington.edu/mchprog/academic/.

Master of Science

Degree Requirements

60 credits, to include:

- 36 to 40 class credits
- *Core Courses*: 24 graded credits, including EPI 512, EPI 513, EPI 514, BIOST 511, BIOST 512, BIOST 513. BIOST 517-BIOST 518 may be substituted for BIOST 511, BIOST 512, BIOST 513.
- EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS and Stata programming experience.
- *Electives*: 6 credits of EPI course electives of 2 or more credits each. (See acceptable electives on the courses webpage at depts.washington.edu/epidem/courses)
- *School of Public Health Electives*: Two additional 500-level courses (2 or more credits each) in any department of the School of Public Health (including Epidemiology) or other UW courses with significant public-health content. (See acceptable electives in the appropriate degree requirements checklist at depts.washington.edu/epidem/CurrentStudents.)
- 9 to 18 thesis credits (EPI 700)

Students may enroll in additional elective courses in epidemiology and other relevant departments, and for independent study (EPI 600) to bring the total to 60 credits. Public health-related 400-level coursework taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework unrelated to public health and at the 300-level or below does not count toward the degree.

MS Specialized Program Options:

- *MS Clinical Research Track*: Requires specific coursework in place of most of the electives for the MS General Track. For specific requirements, visit the program website at depts.washington.edu/epidem/program/cr.shtml.

Doctor of Philosophy

The curriculum includes courses on epidemiologic methods, and biostatistics. Electives in substantive disease and exposure areas, as well as research methods, are required. Requisite general electives from the School of Public Health are also part of the curriculum.

Degree Requirements

Minimum 90 total credits:

1. Minimum reduced to 60 credits for students with a prior relevant master's degree (All course requirements must be satisfied even if more than 60 credits are needed to do so.)
2. 54 to 66 class credits
3. *Core Courses*: 32 graded credits including EPI 512, EPI 513, EPI 514, EPI 515, EPI 536 EPI 537, BIOST 517, BIOST 518. BIOST 511, BIOST 512, BIOST 513 may be substituted for BIOST 517-BIOST 518.
4. EPI 510, a prerequisite for EPI 514, is required for students without substantial SAS or Stata programming experience.

5. *Required Non-graded Courses:* EPI 528 (3), two quarters of EPI 584, EPI 588
6. Minimum three required epidemiology electives (minimum 2 credits each). (See acceptable electives in the appropriate degree checklist at depts.washington.edu/epidem/CurrentStudents/.)
7. Three additional electives (minimum 2 credits each) from any department of the School of Public Health, including Epidemiology, or other UW courses with significant public health content
8. Students are encouraged to take EPI 583 (1) each quarter of the first year and EPI 591 (1) each quarter after the first year.
9. *Dissertation:* 27 credits of EPI 800
10. The student's supervisory committee may require additional courses, including English language courses, to ensure that the student has adequate training in the area of epidemiology he or she is pursuing.
11. Additional epidemiology courses and EPI 800 credits, independent study (EPI 600), and courses with substantial public health content offered by other departments or schools (with permission), may be applied to the total PhD credits. Public health-related, 400-level coursework taken as a graduate student at the UW may count toward total credits with departmental approval. Coursework unrelated to public health, and at the 300-level or below does not count toward the degree.

Financial Aid

Research assistantships (RA) for work on various projects provide salary and tuition waivers for students working 20 hours a week. Although funding is not guaranteed with admission, many new PhD and a few master's students find a research assistantship by the start of their first autumn quarter. Most doctoral students have found an RA by their second or third quarter in the program, and many master's students do so by their second year, when they have more of the skills that faculty supervisors need. Research training stipends with partial tuition support are available on a limited basis, especially for more advanced doctoral students. Teaching assistantships are available competitively for second-year and higher-level students. More information is at <http://depts.washington.edu/epidem/funding/index.shtml>.

Research Facilities

University facilities include an excellent library system and access to computers. Many varied opportunities for field research and practica are provided in Seattle and elsewhere in the state and nation, at institutions such as Seattle Children's hospital, Fred Hutchinson Cancer Research Center, Group Health Research Institute, Harborview Medical Center, the Center for AIDS and STD, Public Health: Seattle-King County, Washington State Department of Health, VA Puget Sound Healthcare Systems, and many other local health institutions. Cooperating organizations focusing on global health also are available in Seattle and internationally. Additional, but not exhaustive, lists of cooperating agencies are at depts.washington.edu/epidem/research/Other_Institutions.shtml. A partial list of agencies and funding related to international health are listed at <http://globalhealth.washington.edu/ghrc/funding-and-fieldwork>.

Health Services

Department Overview

H664 Magnuson Health Sciences Center
Box 357600

The mission of the department is to work with partners in public health and healthcare to prepare leaders, design solutions, and conduct innovative research that translates into practice and policy. The department offers rigorous academic preparation that integrates learning, service, and research opportunities, emphasizing practical experience and student-faculty collaboration. Through this approach, students master competencies needed for success.

The department offers rigorous academic preparation that integrates learning, service, and research opportunities, emphasizing practical experience and student-faculty collaboration. Through this approach, students master competencies needed for success.

Bachelor's and master's degrees are available in public health, health services administration, health information management, and health services research. Additionally, doctorate and post-doctoral opportunities are available in health services research.

Undergraduate Program

Adviser
UW Tower, Box 359455
(206) 543-8810
hihim@uw.edu
healthinformationmanagement.uw.edu

Health Informatics and Health Information Management (HIHIM) offers both a Bachelor of Science degree and a postbaccalaureate certificate. Both the degree and certificate program require 78 credits, which may be completed in either two or three academic years.

Bachelor of Science

Suggested First- and Second-Year College Courses: Human anatomy and physiology (laboratory course); statistics; medical terminology; English composition; technical writing; interpersonal communication; public speaking; and distribution of general education and Areas of Knowledge courses

Admission Requirements

Admission is competitive. Admission is for autumn quarter.

Early Admission

1. Application for early admission submitted between November and February 15
2. All courses required for admission must be completed at the time of application:
 - a. Introductory statistics: see department website for list of approved courses
 - b. Human anatomy and physiology (laboratory preferred): see department website for list of approved courses
3. Minimum 90 transfer or UW credits completed at time of application
4. Transfer applicants apply to UW Admissions for autumn quarter and also submit the HIHIM application to the department.
5. Current UW students submit the HIHIM application to the department.
6. Returning UW students (one or more quarters of non-enrollment) submit the returning student application to the UW Registrar's Office and the HIHIM application to the department.
7. Acceptance to the two-year schedule is competitive.
8. Minimum 90 earned UW or transferable credits
9. Grades
 - a. Minimum cumulative 2.50 overall GPA
 - b. Minimum cumulative 2.50 GPA in courses required for admission
 - c. Minimum 2.0 grade in each course required for admission

Regular Admission

1. Application for regular admission submitted mid-January to May 1
2. Priority given to applicants with all courses completed at time of application:
 - a. Introductory statistics: see department website for list of approved courses
 - b. Human anatomy and physiology (laboratory preferred): see department website for list of approved courses
3. Minimum 90 transfer or UW credits completed at time of application
4. Transfer applicants apply to UW Admissions for autumn quarter and also submit the HIHIM application to the department.
5. Current UW students submit the HIHIM application to the department.
6. Returning UW students (one or more quarters of non-enrollment) submit the returning student application to the UW Registrar's Office and the HIHIM application to the department.
7. Acceptance to the two-year or three-year schedule is competitive.
8. Minimum 90 earned UW or transferable credits

9. Grades

- a. Minimum cumulative 2.50 overall GPA
- b. Minimum cumulative 2.50 GPA in courses required for admission
- c. Minimum 2.0 grade in each course required for admission

Major Requirements

78 credits

1. HIHIM 400, HIHIM 405, HIHIM 408, HIHIM 409, HIHIM 410, HIHIM 411, HIHIM 414, HIHIM 415, HIHIM 420, HIHIM 421, HIHIM 425, HIHIM 450, HIHIM 454, HIHIM 455, HIHIM 456, HIHIM 460, HIHIM 461, HIHIM 462, HIHIM 470, HIHIM 480
2. Minimum 2.0 cumulative GPA and minimum 2.0 grade in all courses applied to the major

In addition to major requirements shown above, students complete the general education requirements for the School of Public Health.

For additional information on application and program completion requirements, visit the [Health Informatics and Health Information Management program website](#).

Continuation Policy

All students must make satisfactory academic progress in the major. Failure to do so results in probation, which can lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Postbaccalaureate Certificate

Admission Requirements

Admission is competitive. Admission is for autumn quarter.

Early Admission

1. Baccalaureate degree from an accredited college or university with a minimum 2.50 cumulative GPA.
2. Application submitted between November and February 15
3. Courses, as indicated below, completed at the time of application
 - a. Introductory statistics: see department website for list of approved courses
 - b. Human anatomy and physiology (laboratory preferred): see department website for list of approved courses

Requisite professional knowledge and skills pertaining to human anatomy and physiology; basic computer applications such as spreadsheets, data bases, word processing, or introductory programming; principles of management; statistics (any discipline) may be considered on a case-by-case basis.

4. Grades
 - a. Minimum overall 2.50 cumulative GPA
 - b. Minimum 2.0 grade in each course required for admission
 - c. Minimum 2.50 cumulative GPA in courses required for admission

Regular Admission

1. Baccalaureate degree from an accredited college or university with a minimum 2.50 cumulative GPA.
2. Application submitted mid-January to May 1
3. Courses required for admission. (Priority given to applicants with all courses completed at time of application.)
 - a. Introductory statistics: see department website for list of approved courses
 - b. Human anatomy and physiology (laboratory preferred): see department website for list of approved courses

Requisite professional knowledge and skills pertaining to human anatomy and physiology; basic computer applications such as spreadsheets, data bases, word processing, or introductory programming; principles of management; statistics (any discipline) may be considered on a case-by-case basis.

4. Grades
 - a. Minimum overall 2.50 cumulative GPA
 - b. Minimum 2.0 grade in each course required for admission
 - c. Minimum 2.50 cumulative GPA in courses required for admission

Certificate Requirements

78 credits

1. HIHIM 400, HIHIM 405, HIHIM 408, HIHIM 409, HIHIM 410, HIHIM 411, HIHIM 414, HIHIM 415, HIHIM 420, HIHIM 421, HIHIM 425, HIHIM 450, HIHIM 454, HIHIM 455, HIHIM 456, HIHIM 460, HIHIM 461, HIHIM 462, HIHIM 470, HIHIM 480
2. Minimum 2.0 cumulative GPA and minimum 2.0 grade in all courses applied to the certificate

For additional information, visit the [Health Informatics and Health Information Management website](#).

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The bachelor's degree program is designed to prepare individuals for careers in the management and use of healthcare information, and prepares students for the Registered Health Information Administrator (RHIA) national certifying examination of the American Health Information Management Association. The program gives students the tools to work in a wide variety of healthcare positions upon graduation, including health information management, health informatics with emphasis on electronic health records, healthcare quality improvement, decision support analysis, research, health insurance, and consulting. Graduates pass a national credential examination, with a majority working within the health information management field.
- *Instructional and Research Facilities:* None
- *Honors Options Available:* None
- *Research, Internships, and Service Learning:* Students complete two internships, one of which is the capstone project.
- *Department Scholarships:* None
- *Student Organizations/Associations:* Students are invited to join the health information management professional association at reduced rates.

Graduate Program

Graduate Program Coordinator
(206) 616-2926
hservmph@uw.edu

The Department of Health Services offers a two-year graduate program in health services leading to the Master of Public Health or Master of Science degree. The MPH degree prepares future health practitioners, managers, and researchers to conduct the unfinished work of improving the well being of communities in the United States and throughout the world. Graduates take jobs in health system management, health program design and evaluation, health promotion, public health practice, and policy analysis. Among other options, the department offers an MPH in community-oriented public health practice (COPHP). This program uses problem-based learning methods, and integrates classroom instruction and experiential fieldwork to prepare students to work in community and public health practice settings. Students may also pursue any of the MPH specialty options. The department also offers a three-year extended degree program in community health management, leading to the MPH degree for employed professionals working fulltime.

The department also maintains primary responsibility for the graduate program in Health Services Administration (an interdisciplinary degree-granting program of the Graduate School described in the Interdisciplinary Graduate Degree Programs section of this catalog). In addition,

an executive version of the traditional MHA degree, designed for mid-career healthcare professionals, is offered. The MHA degree provides full academic preparation for careers in management and policy positions in health systems, hospitals, medical groups, health plans, and other types of healthcare organizations.

The department, in conjunction with UW Professional and Continuing Education, offers a fee-based master's degree in Health Informatics and Health Information Management.

The department offers a PhD in health services and participates in the training of doctoral fellows.

Master of Public Health

For current listings of MPH options and their requirements, see the [MPH program website](#).

Admission Requirements

1. One set of official transcripts from all institutions of higher learning
2. Official scores from the general Graduate Record Examination (GRE) (required for applicants who have not already earned a doctoral-level degree from a U.S. institution of higher learning)
3. Test of English as a Foreign Language (TOEFL) scores, if applicable.
4. Written statement, including a description of the applicant's professional background, career goals, and educational objectives
5. Three recent letters of recommendation, preferably from former supervisors and teachers.
6. An in-person or telephone interview with a Health Services faculty person is highly recommended. Complete application details can be viewed at depts.washington.edu/hservmph/admission.

Degree Requirements

63 credits for each program (specialty option) listed below. For detailed requirements, see depts.washington.edu/hservmph.

Community-Oriented Public Health Practice Program

63 credits, to include:

1. Problem-based learning (PBL) core curriculum - 36 credits
2. Integrated fieldwork - 6 credits (first year)
3. Seminars - 6 credits
4. Capstone project - 9 credits (second year)

5. Electives - 6 credits from School of Public Health and Community Medicine and other schools/colleges at the UW, as appropriate

Health Systems and Policy

63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 credits are from Health Services courses.
2. 3 credits - practicum
3. Thesis or capstone project: 9 credits

Maternal and Child Health

63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 credits are from Health Services courses.
2. Practicum: 3 credits
3. Thesis: 9 credits

Social and Behavioral Sciences

63 credits, to include:

1. At least 30 credits from graduate-level-in-classroom courses of which at least 18 credits are from Health Services courses.
2. Practicum: 3 credits
3. Thesis: 9 credits

Master of Health Administration

See UW General Catalog listing

at www.washington.edu/students/genocat/academic/health_services_administration.html.

Master of Science

Admission Requirements

For current information, see the [MS program website](#).

1. One set of official transcripts from all institutions of higher learning
2. Official scores from the general Graduate Record Examination (GRE) (required for applicants who have not already earned a doctoral-level degree from a U.S. institution of higher learning)

3. Test of English as a Foreign Language (TOEFL) scores, if applicable
4. Written statement, including a description of the applicant's professional background, career goals, and educational objectives
5. Three recent letters of recommendation, preferably from former supervisors and teachers
6. An in-person or telephone interview with a Health Services faculty person is highly recommended

Degree Requirements

Minimum 63 credits, to include:

1. At least 30 credits from graduate-level courses, of which at least 18 are from Health Services courses
2. Participation in a program research seminar Either HSERV 587, HSMGMT 513, or HSMGMT 514
3. Thesis: 9 credits

Master in Health Informatics and Health Information Management

The Master of Health Informatics and Health Information Management (MHIHIM) program prepares individuals for leadership in health informatics and technology, enterprise information management, and health administration. The curriculum pairs advanced health informatics and health information management courses with master of health administration courses.

The program trains professionals from the fields of health information management, health administration, business, information technology, and healthcare, to strategically lead, develop, and direct health information initiatives and systems. Graduates are prepared to take on senior management roles in this rapidly growing segment of the industry. The program prepares graduates for work in diverse healthcare delivery systems, such as hospitals, clinics, consulting and vendor organizations, and government agencies.

The MHIHIM program develops professionals who understand and assess the delivery system landscape and the growing role of enterprise information governance, technology drivers, and changing requirements for sharing health and patient information through exchange practices.

The curriculum enables students to build and enhance current strengths and acquire new skills. Students study comprehensive management strategies and apply practical methods in planning, analyzing, and manipulating health data to meet institutional needs and resource management. Students address data and technology management policies and tools. They learn to market, design, sponsor, and apply problem solving techniques to complex situations. In addition, students expand their collaboration and communication skills to participate in, and lead, high level leadership teams. Team-based learning, capstone projects, and involvement from healthcare community leaders, are all program hallmarks.

MHIHIM classes convene in Bellevue, Washington, for a three-day period (Thursday through Saturday) once each month for 21 months. Additionally once each week faculty lead students in a web-based session, ideal for practicing professionals who plan to continue their careers while gaining a graduate degree.

The program operates under a fee-based structure and is administered in collaboration with UW Professional & Continuing Education. Complete application details can be viewed at <http://www.health-informatics.uw.edu/admissions/application-details/>.

Financial Aid

Students are eligible for federal financial aid, as well as most other types of financial support that are not funded by state tuition revenues. When exploring financial aid options, students should emphasize they are applying for a fee-based program. Financial aid questions should be directed to the UW Office of Student Financial Aid (206) 543-6101, osfa@uw.edu.

Doctor of Philosophy

For the most current information, visit the [PhD program website](#).

Admission Requirements

Admission priority is given to applicants who have graduated from a master's program with high academic standing. Applicants who have a bachelor's, master's, or professional degree in a field related to health services are given preferential review. Students with only a bachelor's degree are occasionally admitted. Applicants with relevant research experience and publications are the most competitive.

Students admitted to the program generally have GRE scores in or above the 75th percentile.

International applicants must submit the results of the Test of English as a Foreign Language (TOEFL), unless they meet UW criteria for waiving the requirement. Scores must show high English language proficiency. A minimum score of 580 (paper based) or 237 (computer based) on the TOEFL is required to be considered for admission to the UW.

Degree Requirements

100 credits minimum, as follows:

1. *Required core competencies (35 credits):* HSERV 512, HSERV 513, HSERV 514, HSERV 523, HSERV 524, HSERV 525; one of the following: HSMGMT 514, HSERV 587, or ECON 500; HSERV 522; BIOST 517, BIOST 518, or BIOST 511, BIOST 512, BIOST 513, or BIOST 514, BIOST 515; EPI 512, EPI 513
2. *Area of emphasis:* Five courses or 15 credits in an area of emphasis. Suggested areas of emphasis: economics or finance; health behavior and health promotion; occupational health; cancer prevention and control; evaluation sciences; population health - the social

determinants; global health; maternal and child health; sociology/demography; bioinformatics. For a customized area of emphasis, specific courses taken are selected by the student and the adviser, based on the student's past coursework, experience, proposed dissertation topic, and future career goals.

3. Doctoral courses in advanced theory and methods in health services: 50 credits, including a minimum of 30 dissertation credits
4. Written preliminary examination
5. Written and oral general examinations
6. Dissertation
7. Dissertation defense (final examination)

Financial Aid

Every attempt is made to ensure that students admitted are not prevented from pursuing graduate studies because of inadequate finances. Some fellowships, assistantships, scholarships, and loans are available each year.

Research Facilities

In addition to using University facilities, the program has extensive links with community healthcare delivery systems and agencies for research and training.

Executive MPH

Graduate Program Coordinator
H674 Health Sciences, Box 357660
(206) 685-7580

For current information, see the [Extended MPH program website](#).

The Executive MPH degree program is a part-time, partial distance learning program delivered through a combination of intensive four-week summer sessions on the University campus, directed independent study, and four intensive weekend seminars during the academic year. The program is designed for mid-career public and community health professionals with three or more years of experience related to public health. The program provides knowledge and skills required at mid- and upper-level practice and management positions for health professionals. In addition to the core courses in health services, epidemiology, biostatistics, and environmental health, the prescribed coursework includes a broad exposure to the health-care system plus specific management training in budgets, finance, personnel management, economics, organization theory, and program planning and evaluation. Pathways are available in health education, maternal and child health, public health practice, and oral health.

The Executive MPH degree program provides training in developing skills in the scientific base of public health, analytic methods, management and communication, and policy and advocacy, as well as training in cross-cutting issues. Graduates apply their skills directly to their careers.

Admission Requirements

1. Current employment in a public health-related agency preferred
2. Minimum three years experience in community, public, or environmental health-related field
3. Baccalaureate degree from an accredited college or university
4. Minimum 3.00 GPA in the last graded 90 quarter/60 semester hours
5. Graduate Record Examination (GRE) scores, taken within 6 years. (Applicants with MD, DO, or PhD degrees from an accredited U.S. college or university may waive the GRE requirement.)

Degree Requirements

63 credits minimum, as follows:

1. *Year 1 Required Courses:* BIOST 502, EPI 511, HSERV 501, HSERV 516, HSERV 520, HSMGMT 560
2. *Year 2 Required Courses:* BIOST 503, ENV H 511, HSERV 504, HSERV 522, HSMGMT 514, HSMGMT 563
3. *Year 3 Required Courses:* HSMGMT 566 (3), HSMGMT 572 (3)
4. *Thesis or Project Option:* HSERV 700 (master's thesis) or HSERV 598 (project); EPI 600/ENV H 600
5. *Practicum (required):* focus based on pathway choice
6. *Elective or Pathway Credits (required):* pathway courses may be spread out over two years. Electives may be taken at any time.

Reserve Officer Training Corps Programs

Aerospace Studies

Department Overview

104 Clark Hall

The Air Force Reserve Officer Training Corps program (AFROTC) at the UW produces leaders ready to lead in any environment. AFROTC molds students by exposing them to a rigorous training program that grooms each student from a role of followership into a future leader.

Undergraduate Program

Detachment 910
114 Clark Hall
Box 353830
(206) 543-2360
afrotc@uw.edu

General Program Requirements

All aerospace studies courses are available to cadets exclusively. Additionally any students may join the AFROTC program as cadets and enroll in the 100- and 200-level general military courses so long as they meet the minimum entrance requirements. Aerospace Studies 100- and 200-level courses count as credit toward graduation. The general military courses are prerequisites to entry into the professional officer courses (300- and 400-level courses) and seeking a commission in the Air Force is on a controlled, selective basis. Contact the Recruiting Flight Commander in the Department of Aerospace studies (AFROTC) for more information.

Commissioning Requirements

Students must successfully complete the AFROTC program and receive an academic degree from the University. Upon program and degree completion, cadets are offered commissions as second lieutenants in the Air Force.

General Military Courses

The 100- and 200-level courses for AFROTC cadets consist of one classroom hour, two hours of leadership laboratory, and two hours of physical fitness per week during the freshman and sophomore years. Uniforms and textbooks are provided. Students may enter the freshman class at the start of autumn, winter, or spring quarter. Sophomore students may enter at the start of autumn or winter quarter and take the freshman- and sophomore-level courses concurrently. A four-week field-training course, normally taken during the summer between the sophomore and junior years, is required for entry into the professional officer courses. Students receive pay and travel costs for field training.

Except for sophomore cadets on AFROTC scholarship, students incur no active-duty service commitment by taking general military courses and may drop the courses at any time within the limits of University course-drop policies.

Professional Officer Courses

Cadets selected for enrollment in professional officer courses are enlisted in the Air Force Reserve and receive a tax-free monthly subsistence stipend. They are furnished texts and uniforms. Junior- and senior-level classes consist of three hours of academic classes, two hours of leadership-laboratory and two hours of physical fitness per week.

Financial Assistance

The Air Force offers many types of scholarships to college students. AFROTC scholarships pay tuition, certain fees, and textbook reimbursement. In addition, scholarship winners receive a monthly subsistence allowance. Cadets are eligible for one of these scholarships and should contact the Recruiting Flight Commander in the Department of Aerospace Studies (AFROTC), (206) 543-2360 or at afrotc@uw.edu.

Minor

Minor Requirements:

29 credits, to include the following:

1. 24 credits of air and space studies coursework
2. 5 credits in a foreign language beyond the first-year level
3. Minimum 18 upper-division credits in air and space studies coursework
4. Minimum 24 credits in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor.

Military Science

Department Overview

104 Clark Hall

The ROTC program provides students an opportunity to learn and practice the art of leading people. Recognizing there is a great difference between cognition and volition, the program is structured to give the student practical experience in leading and managing resources.

The Army ROTC (AROTC) program enables the student to learn about the military profession and the role it plays in our democratic system of government. Courses enable such knowledge to be acquired on campus without serving in the military forces.

Army ROTC electives enrich the student's course of study. Such courses also open up an additional career option, enabling the student to earn a commission and to serve in the Army as an officer, or in the Reserves or National Guard while pursuing a civilian career. Officers serve in a wide variety of career paths, including infantry, human resources, aviation, intelligence, automation, and hospital administration.

Army ROTC provides the student membership in a close-knit fraternal organization.

ROTC programs on college campuses ensure that the influences of higher education are transferred into the military services - a mandatory requirement in a democracy.

A minor in military science and leadership is available to any student at the UW. Requirements are shown below.

For information on the programs described below, contact the following:

Enrollment and Scholarship Officer
105 Clark, Box 353820
(206) 543-9010

Traditional Four-Year Program

Open to freshman and sophomore men and women. Academic studies include courses in military history, principles of leadership, techniques of instruction, management and staff procedures, logistics, physical conditioning, and military law. Extracurricular activities include such options as Ranger Company, color guard, training exercises, field trips, and related activities. A non-scholarship student incurs no obligation of any kind during the first two years of the four-year AROTC program.

Placement credit toward completion of AROTC courses may be given for prior ROTC or military training. Veterans routinely receive full credit for the first two years of AROTC and may enter the advanced course when they are academic juniors. All military textbooks and uniform items are furnished without charge. Students in the advanced course receive tax-free monthly subsistence of \$350 per month as an academic junior and \$400 per month as an academic senior. In the advanced course, cadets are required to participate in the leadership-development program, which is a practicum of skills and principles taught during the previous two years. Between their junior and senior years, cadets attend a five-week summer camp during which they receive varied and challenging training and for which they are paid both for the time at camp and for travel expenses to and from the camp location. Upon entering the advanced course,

students agree to complete the program, accept a commission upon graduation, and serve a minimum of four years if scholarship (three years if non-scholarship) and be on active-duty commitment. If the cadet chooses to go into the Reserves or National Guard, then he or she serves a minimum of eight years.

Four-Year Scholarship Program

Application to this program should be made while the student is still in high school. Selection of students is made on a nationwide competitive basis. This program may lead to a commission in the Active Army, the Army Reserve, or the Army National Guard. All tuition, a flat rate for books and laboratory expenses, and uniform items, plus monthly tax-free stipends, are provided by the Army. The program requires four years of academic study on campus, as well as a five-week advanced camp training period between the junior and senior years, for which the cadet is paid for both time and travel expense to and from the camp location. Academic studies are identical to those of the traditional four-year program. The student must sign a contract wherein the student agrees to complete this program, along with a chosen academic program, to accept a commission, and to serve on active duty or in the reserve forces after commissioning.

Three-Year Scholarship Program

Open to qualified students already on campus. The scholarship provides financial assistance during the remaining years of the student's enrollment. Each scholarship pays for tuition and a flat rate for books and laboratory expenses and provides tax-free monthly stipends of \$350 for academic juniors and \$400 for academic seniors. All other advantages and obligations are the same as those of the four-year scholarship program.

Two-Year or Lateral Entry Program

Open to qualified undergraduate and graduate students who have at least two years remaining in school and who have completed at least 81 credits. Students may qualify for entrance into the advanced course under this program in two ways.

1. They may participate as qualified veterans who receive placement credit for the first two years of AROTC. Veterans are also eligible to compete for two- and three-year scholarships while receiving their educational benefits. Members of the Reserves and National Guard may also be eligible to participate in AROTC and receive their commission upon graduation.
2. Requires attendance at the Leader's Trainers course for five weeks at Fort Knox, Kentucky. Completion of this training also qualifies students for direct entry into the advanced course. While at camp, students receive pay plus travel expenses to and from the camp location, and they may compete for two-year scholarships, provided scholarships are available.

Undergraduate Program

Enrollment and Scholarship Officer
105 Clark, Box 353820
(206) 543-9010

The Army ROTC program offers a minor in military science and leadership.

Minor

Minor requirements

27 credits, to include the following:

1. M SCI 401, M SCI 402, M SCI 403 (9 credits)
2. Additional military science coursework (18 credits)
3. Minimum 18 credits of military science completed at the upper-division level
4. Minimum 18 credits of military science completed in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor

Naval Science

Department Overview

202 Clark

Naval Science offers University students an opportunity to engage in study that leads to a commission in the U.S. Navy or Marine Corps while working toward a baccalaureate degree. The Naval Reserve Officer Training Corps (NROTC) unit functions in conjunction with Naval Science. An NROTC student may select an academic major within certain limitations (e.g., some programs that normally lead to immediate graduate education, such as architecture, are not consistent with the mission of the NROTC program).

In addition to their University curricula, NROTC students take naval science courses in history and customs, naval engineering/weapons systems, navigation, naval operations, and leadership/management. In addition, each student must attend one naval science laboratory session and one physical training session per week. During the summer, students may have a four-to-six-week training cruise to put into practice their earlier classroom training.

Two NROTC programs are offered, as outlined below. In addition, any University student may take a naval science course without enrolling in the NROTC program, or may complete a minor in naval science, requirements for which are shown below.

Navy-Marine Scholarship Program

Each year students are accepted for scholarship status in the four-year, three-year alternate, and two-year NROTC scholarship programs. Eligibility for the three- and four-year programs is based upon nationwide competition and selection by a central selection committee. Application must be made by December 1 of the academic year preceding appointment as a midshipman. Those selected are provided educational benefits, including subsidy by the Navy of all tuition, fees, and uniforms. In addition, there is a textbook stipend each quarter and a monthly subsistence pay which ranges between \$250 and \$400.

For the two-year scholarship program, applications from current sophomores, or juniors enrolled in five-year programs of study, must be received by March. Those chosen by a central selection committee attend a six-week course of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer prior to their junior year. Successful completion of NSI instruction qualifies these students for enrollment in the advanced courses in the NROTC program. All scholarship students are appointed as midshipmen, USNR-R, and upon graduation are commissioned as officers in the Navy or Marine Corps Reserve, after which they serve on active duty for a minimum of four years.

Navy-Marine College Program

Each year, men and women are accepted for four- and two-year non-scholarship college programs. Applications for the two-year program are accepted from current sophomores in community colleges or four-year colleges and must be received prior to March of their sophomore year (or third year, if in a five-year program).

Those students selected for the two-year program attend a six-week course of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer prior to their junior year. Successful completion of NSI instruction qualifies students for enrollment in the advanced course in the NROTC program. Students in the NROTC college program pay their own college expenses but receive monthly

subsistence pay during their junior and senior years. The Navy furnishes all uniforms and textbooks used in naval science courses.

All college-program students are eligible for a scholarship after completing one academic term, with scholarship awards based on academic grades and participation within the midshipman battalion. The two-year college-program students also may win a scholarship for superior performance at NSI. Upon graduation, college-program students are commissioned in the Navy Reserve or Marine Corps Reserve and serve on active duty for three years.

Undergraduate Program

Adviser
202 Clark, Box 353840
(206) 543-0170
nrotc@uw.edu

Minor

Minor requirements

25 credits, to include the following:

1. N SCI 201; N SCI 402 (6 credits)
2. Additional naval science coursework (19 credits)
3. Minimum 12 naval science credits completed at the upper-division level
4. Minimum 12 naval science credits completed in residence through the UW
5. Minimum 2.5 grade in each course presented for the minor

School of Social Work

School Overview

Dean

Edwina Uehara

210 Social Work/Speech and Hearing Sciences

The School of Social Work offers two professional programs, one at the undergraduate level and one at the graduate level, as well as a PhD program. The Bachelor of Arts in Social Welfare (BASW) program prepares students for entry-level generalist practice. The graduate professional program prepares students for advanced practice within a field of concentration; students earn a Master of Social Work degree. Both the BASW and MSW programs are accredited by the Council on Social Work Education. The School also offers a Doctor of Philosophy degree in social welfare that prepares students for careers in research and education. Consistent with University policy, no credit is granted on the basis of life experience or previous employment. All three programs are housed in the Social Work/Speech and Hearing Sciences Building, 4101 Fifteenth Avenue Northeast, Seattle, WA 98105-6299.

In addition, the School offers two concurrent degree programs – one with the School of Public Health leading to the MSW and MPH degrees, and a second with the Evans School of Public Affairs, leading to MSW and MPA degrees.

Undergraduate Program

Adviser

23D Social Work, Box 354900

(206) 543-8617

sswadmis@uw.edu

The School of Social Work offers the following program of study

- The Bachelor of Arts degree with a major in social welfare

The program includes upper-division courses in social welfare, with prerequisites in human biology, economics, psychology, statistics, and sociology. Social welfare courses include content on social welfare history, policy and services, human behavior and the social environment, social welfare research, and cultural diversity. These academic courses prepare students for the senior year three-quarter practicum experience, which involves a total of 480 hours of direct social services under the supervision of a practicum instructor approved by the School.

Bachelor of Arts Program

Suggested First- and Second-Year College Courses: SOC WF 200; prerequisites in psychology and sociology; statistics; also, courses in American ethnic studies, disability studies; public health; communication; economics; political science; human biology; human development; American government; diversity studies; law, society, and justice; and gender, women, and sexuality studies.

Department Admission Requirements

Approximately 40 juniors are admitted each year. Admission, for autumn quarter only, is competitive and completion of requirements listed below does not guarantee acceptance. The application deadline is April 15. Applicants must meet the following criteria by the time they begin classes in the program:

1. Minimum 65 credits completed
2. One course in sociology and one course in psychology - both completed before beginning the program. Minimum 2.0 grade in each. See website for approved courses.
3. Recommended: introductory statistics course
4. Minimum 2.00 cumulative GPA
5. Paid or volunteer social service experience
6. Completed application

Application forms and a detailed description of the social welfare major are available at the School's website, socialwork.uw.edu/. A student may discuss the program in person by contacting the Social Work Office of Admissions, (206) 543-5676, sswinfo@uw.edu. Students accepted to the major complete a change-of-college form and transfer their academic file to the School's Student Services Office. Students not accepted may contact the Director of Admissions to discuss alternatives to the social welfare major, or the appeal process.

Major Requirements

67 credits as follows:

1. Core Courses (2.0 minimum grade required in each course): SOC WF 200; SOC WF 310; SOC WF 311; SOC WF 312; SOC WF 315; SOC WF 320; SOC WF 390; SOC WF 402; SOC WF 404; SOC WF 405; SOC WF 410, SOC WF 415; SOC WF 460 or SOC WF 442 or SOC WF 443; SOC WF 465; and SOC WF 435
2. 2.00 cumulative UW GPA
3. 2.50 cumulative GPA in SOC WF required courses

Continuation Policy

All students must make satisfactory academic progress in the major and meet outlined standards of professional behavior. Failure to do so may result in probation or referral to the student review committee, either of which could lead to dismissal from the major. For the complete continuation policy, contact the departmental adviser or refer to the department website.

Student Outcomes and Opportunities

- *Learning Objectives and Expected Outcomes:* The BASW program produces beginning-level social work practitioners and is accredited by the Council on Social Works Education. Students become generalist social work professionals able to work with individuals, families, groups, communities, and organizations in enhancing the health, well being, and empowerment of disadvantaged communities across the lifespan. Graduates may pursue social work practice jobs, or graduate education in social work, or a range of other fields (e.g., law, medicine, public policy, international development). Students receive an interdisciplinary liberal arts education, drawing on a range of social science courses which prepare them to promote human welfare and deal with complex social problems. Students are involved in both academic coursework (gaining

intellectual knowledge and critical thinking skills) and a field placement experience ("lived" or "on the ground" experience).

The following outcomes define the BASW program:

1. Preparation of entry-level baccalaureate social workers for generalist practice in a multicultural context.
 2. Education and training of generalist social workers who are informed, engaged, and responsive practitioners, able to understand and take action in enhancing human welfare and in promoting social and economic justice.
 3. Education of students within the context of an interdisciplinary liberal arts education, to foster a comparative and critical examination of social welfare and social work through the study of its history, policies, research, and practice interventions.
 4. Preparation for graduate education.
- In addition, the School of Social Work houses a number of centers and projects. For more information on these research activities, visit socialwork.uw.edu/research/research-centers.
 - *Honors Options Available:* With College Honors (Completion of Honors Core Curriculum and Departmental Honors). With Honors (Completion of Departmental Honors requirements in the major). See adviser for requirements.
 - *Research, Internships, and Service Learning:* Contact the adviser for information.
 - *Department Scholarships:* A limited number of financial-aid opportunities are available to students. Applicants are urged to apply for assistance through the Office of Student Financial Aid by February 15. Completion of the Free Application for Federal Student Aid (FAFSA) is required for consideration for any departmental funding. Inquiries may be directed to the chair of the scholarship committee, School of Social Work.
 - *Student Organizations/Associations:* Organization of Student Social Workers (OSSW)

Graduate Program

Graduate Program Coordinator
Box 354900
(206) 543-8617
sswadmis@uw.edu

Master of Social Work

The School of Social Work offers a Master of Social Work degree with three options: a two-year full-time program; a one-year advanced-standing program for qualified students with a degree in social work/social welfare from a Council on Social Work Education accredited undergraduate program; and a three-year part-time extended degree program.

All program options prepare students for advanced professional practice with a culturally diverse range of at-risk populations in publicly funded social services. The curriculum encompasses two distinct but interconnected areas: the beginning content or professional foundation, and opportunities for advanced content in areas of policy, services, and methods.

The professional foundation provides instruction in the basic knowledge and skills required for effective, generalist social work practice, as well as socialization to the profession, its value orientation, ethics, and history.

The advanced curriculum provides in-depth knowledge and skills needed for advanced practice in the social work profession. The advanced curriculum is being revised. Check the School's website, socialwork.uw.edu for current information.

Admission Requirements

Formal admission to the Graduate School as well as to the School of Social Work. Bachelor's degree, strong academic background, and social-service experience. Official transcripts from all colleges and universities attended, references, application forms, résumé, and an admission essay to be considered for autumn-quarter entry. January 15 is the closing date for receipt of applications and materials. Admission is competitive and selection is based on a review of the applicant's submitted materials. Current application materials can be obtained from the School's Admissions Office website at socialwork.uw.edu/admissions/.

Degree Requirements

Minimum 46 credits (advanced standing program); 75 credits (day and extended degree programs), as follows:

1. Completion of required professional foundation and advanced curriculum credits and demonstrated competence in both academic and field practicum work.
2. *Human Biology Requirements:* BIOL 100, BIOL 101-, BIOL 118, BIOL 161, NUTR 300, or GENOME 261 (or equivalent), or SSW Continuing Education course "Human Biology" taken within 10 years of admission to the MSW program. Students must complete the requirement prior to beginning the advanced curriculum (including practicum). Credit may not be applied to the MSW degree. Courses in nutrition, psychobiology of women, and biology of aging also fulfill this requirement.
3. *Basic Statistics Requirement:* An introductory course in statistics (any discipline) is a prerequisite for SOC W 505/SOC W 506.
4. *Professional Foundation Courses Required for the Day and Extended Degree Program:* SOC W 500, SOC W 501, SOC W 504), SOC W 505, SOC W 506, SOC W 510, SOC W 511, SOC W 512, SOC W 513, SOC W 523, 3 credits of electives, SOC W 524. All foundation courses must be completed before beginning the advanced curriculum.
5. *Advanced Curriculum for the MSW Day Program:* Specialization in an advanced methods area or field of practice. Current areas of concentration include policy and administrative practice; health and mental health practice; community-centered integrative practice; practice with children, youth, and families; and multigenerational practice. Students enter the second year with an individualized learning plan (developed by winter quarter of their foundation year) that sets out a coherent program of advanced study. Identified in the learning plan is a policy/services course, an advanced methods area, an advanced field practicum, and proposed choices for methods and elective courses that support the student's overall area of concentration.

Programs of study vary slightly by concentration, but a typical program of study includes:

- a. One policy/services course (3 credits), consistent with the student's second year specialization
- b. Two advanced methods (6 credits) in the student's primary method area or across methods with the approval of the faculty adviser and practicum coordinator
- c. Elective course offerings (9 credits) to include courses related to the policy/services areas, and advanced HBSE and theory courses, with the primary focus on development

of knowledge and skills in intervention. One elective course from outside the School. Elective courses range from 1 to 3 credits.

- d. Advanced practicum (SOC W 525, 18 credits) aligns with the student's policy/services course and with the student's primary intervention method area.
6. *Advanced Curriculum for the MSW Extended Degree Program*: Students select one of two specializations within the Interpersonal/Direct Social Work Practice concentration: Integrative Health-Mental Health Advanced Practice, or Multigenerational Practice with Children, Families, and Elders. Advanced curriculum consists of policy/services course, a two-quarter advanced practice methods sequence, SOC W 571, 6 credits of electives, and a 720-hour advanced practicum.
7. *MSW Electives*: Courses may be selected from curriculum offerings related to particular fields of practice, intervention theories, intervention modalities, social problems, populations, and research methods. Students may take advanced methods courses in areas other than the student's primary methods area and relevant courses in other graduate programs and professional schools of the University. Three credits of external coursework may be included.

Financial Aid

A limited number of financial-aid opportunities are available. Applicants to the MSW program are urged to apply for assistance through the Office of Student Financial Aid by February 15. Completion of the Free Application for Federal Student Aid (FAFSA) is required for consideration for any departmental funding. Departmental funding is limited and typically requires a department-specific application be submitted by April 1. Inquiries may be directed to the Admissions Office, School of Social Work. Information on available tuition awards may also be reviewed on the Social Work admissions website, socialwork.uw.edu/admissions.

Master of Social Work/Master of Public Health Concurrent Degrees

Concurrent degrees prepare professionals who function at the interface of both fields in practice, research, planning, administration, and policy development. Students develop (1) competence in social work practice in community health; (2) understanding of the organization and functioning of the health and social service delivery systems; and (3) basic analytical skills necessary to conduct research and to perform competently in a variety of public health social work roles. Students also have an opportunity for in-depth study of particular issues related to their special interests and career goals.

Application

Students who matriculate into the full time program in either Social Work or Public Health are eligible. Students admitted to Social Work with advanced standing should apply for both programs simultaneously. Students in the part-time evening degree program in either Social Work or Public Health are not eligible for the program.

1. Students must apply to and be accepted by both schools.
2. Students are strongly encouraged to complete up to one year of studies in Social Work before entering the Public Health program. Applications for entry are due in both schools by January 15. Typically students apply to Social Work in January and enter the MSW program in September. They then apply to Public Health the following January and begin the MPH program the next September. Staggered entry permits students to complete all requirements of both degrees within three years.

Degree Requirements

115-125 credits (depending on number of electives taken)

1. Two separate sets of at least 36 credits each
2. At least 18 numerically graded credits for each degree in courses numbered 500 through 599. All required courses in the MPH program must be taken for a grade.
3. Up to 12 credits taken in one school may be counted toward the other school's total credit requirements, if approved by both programs. Electives for each department can be fulfilled by taking the required courses of the other department.
4. The MPH requires a thesis.

Doctor of Philosophy

The PhD program in social welfare prepares students to contribute to the advancement of knowledge and practice in the field of social welfare and the profession of social work for the promotion of social justice. Students acquire both the substantive and methodological competence to contribute theoretical formulations and empirical research that inform effective social work practice and advance scholarship in social welfare.

After the first year of required courses, each student's program of study is individually designed and focuses on well-defined substantive and interventive areas of research relevant to the field of social welfare. In the basic core of required courses, which includes teaching and research practice, students have an opportunity to pursue their particular interests with faculty members in the School of Social Work and in other schools and departments.

During the first two years, students define and develop the specialized areas that are the focus of their general examination and, typically, their subsequent dissertation research. Selected areas must have clear significance for the development of practice, programs, or policies in social work and social welfare.

The general examination for advancement to candidacy generally occurs at the end of the second year or during the third year. After advancement to candidacy, students devote themselves full time to completion of their dissertation research. The last step before the degree is the final examination, defense of the dissertation. Students are strongly encouraged to remain in residence at the University until the dissertation is accepted. The PhD program takes approximately four years, although academic excellence in learning and performance is always the first criterion for degree progress.

Admission Requirements

Admission is highly selective and students are admitted for autumn-quarter entry only. Applicants must have a master's degree in social work or a closely related field.

The Council on Social Work Education requires that faculty who teach practice courses in accredited programs have two years of supervised practice experience. Thus, obtaining such experience is highly important for those who seek academic positions following graduation.

Applicants selected for admission are those whose scholastic achievements, previous experience, and aptitude for social welfare research, scholarship, and teaching indicate the greatest promise for achieving the objectives of the program. In addition, an effort is made to maintain a balanced student group reflecting the range of concerns in social welfare and of faculty resources. The deadline for receipt of admission material is December 15. For more information, call (206) 685-1680, or email phdmhpr@uw.edu.

Degree Requirements

90 credits minimum, to include:

- *Required Courses:* Must include content on diverse populations, including the disadvantaged and oppressed. Includes content on people of color, women, gay men and lesbians, and persons with disabilities. Specific type or nature of the content (e.g., readings, exemplars, exercises) and how it is introduced and integrated likely differs across courses. In all cases, content on diversity must be in accord with course objectives and be visibly present in the course syllabus.

All required coursework (with the exception of 800-level tutorials) must be completed before or during the quarter in which the oral section of the general examination takes place.

Courses required must be taken on a graded basis unless offered credit/no-credit only (i.e., they cannot be taken on a satisfactory/not-satisfactory basis).

1. Introduction to Advanced Research Methods and Design. Two quarters during first year.
 2. Fundamentals of Statistics. Two quarters during first year through other departments (primarily Sociology or Biostatistics).
 3. Research Issues and Priorities in Social Welfare. Two quarters during first year.
 4. Social Welfare Policy. Two quarters during first year (contemporary policy and international and global policy).
 5. Research Practicum. Two quarters; to be completed by the end of second year (credit/no-credit only).
 6. Teaching Practicum. One quarter; to be taken after successful completion of first year (credit/no-credit only).
 7. Career Planning Seminar. One-credit seminar offered quarterly (credit/no-credit only). Focus is on professional development issues and skills with emphasis on academic and research careers.
 8. Teaching Preparation. One quarter in the second year.
 9. Minimum two (3+ credit) courses in advanced graduate research methods (typically 500-level courses offered in other departments) relevant to the student's anticipated research in a substantive or interventive area. Coursework beyond the minimum is encouraged.
 10. Minimum two (3+ credit) graduate social science theory courses (500 level or above), designed to provide strong theoretical foundations. Students often use these courses to develop a "minor" in one of the social sciences. Offered in the College of Arts and Sciences or one of the professional schools, they are related to the substantive or interventive content of the student's program. Coursework beyond the minimum is encouraged for greater depth of interdisciplinary theoretical training.
 11. Dissertation Tutorials (SOC WL 800). Taken after the student has successfully completed the oral general examination and has been advanced to candidacy for the PhD. Students must complete a total of 27 credits over at least three quarters to satisfy the Graduate School requirement
- *Elective Courses in the School of Social Work*
 1. Qualitative Methods in Social Work Research. One or two quarters, offered alternate years.
 2. Analytical Perspectives on Social Welfare Policy. One quarter, offered annually.

3. Advanced Topics in Data Analysis. One quarter, offered annually, covering advanced quantitative methods.
 4. Social Movements and Participatory Action Research Methods. One quarter, offered alternate years.
 5. Psychosocial Scale Construction and Measurement. One quarter, offered alternate years.
 6. Interdisciplinary Prevention Science: Children and Adolescents. Overview of developmental perspective examining factors that promote or inhibit health development at different stages and during transitions (focus on birth through age 21), 3-credit course (credit/no-credit only).
 7. Promoting Well-Being among At-Risk Groups. Guidance for Health Promotion/Prevention Research.
- *Additional Course Expectations:* Students may take tutorials (SOC WL 600) with faculty members while completing advanced coursework and writing the integrative paper (prior to the oral general examination). These tutorials should include one or more written products.

Students are also encouraged to take additional courses that bear on their substantive areas of interest. Courses may be taken in any department or school of the University but should ordinarily be at the 500 level or above.

- *Prevention Research Training Program Courses:* (Trainee requirements in addition to all PhD program courses)
 1. Seminar in Prevention Science. One-credit seminars taken autumn, winter, and spring quarters each year of the traineeship. Credit/no-credit only.
 2. Promoting Well-Being among At-Risk Groups: Interdisciplinary Guidance for Health Promotion/Prevention Research. One quarter, 3 credits, introduction to prevention research.
 3. Two additional graduate level (500+) courses, one social science theory and one research methods, related to the prevention research area of study.

Financial Aid

The School of Social Work ensures that all students have some means of financial support during the nine-month school year for the first three years in the program and is frequently able to continue support beyond this point. In each of the first three years, the PhD program director assists students in obtaining funding from the School, other UW sources, or external federal and private granting agencies. Each year, awards of stipends, fellowships, and research and teaching assistantships are made on the basis of resources available and match with areas of student interest. An award of a particular stipend or assistantship in one academic year does not carry a commitment for that same award in another year because both the grant situation and the applicant pool change. Advanced teaching and research positions are available on a competitive basis. Students are encouraged to begin their efforts to secure dissertation research support early and to stay in communication with the PhD program directors and associate deans, who oversee assistantship assignments in consultation with the School administration.

Undergraduate Interdisciplinary Programs

Arctic Studies

Program Overview

The minor in arctic studies is sponsored jointly by the [Jackson School of International Studies](#) within the College of Arts and Sciences and the [School of Oceanography](#) in the College of the Environment. This interdisciplinary academic program links the natural, social sciences, and humanities in an integrated program of study. The purpose of the Arctic Studies minor is for undergraduates to have an opportunity to gain skills relevant to addressing major science and policy issues in the Arctic.

Undergraduate Program

Minor

503 Thomson, Box 353650
(206) 221-6374
nfabbi@uw.edu

Minor Requirements:

Minimum 28 credits

1. Foundation Coursework (9 credits): ARCTIC 200; OCEAN 235; ARCTIC 401
2. Integrative Experience (3 credits): ARCTIC 400
3. Electives (minimum 16 credits): see adviser for approved list
4. Minimum two courses from the approved social sciences list
5. Minimum two courses from the approved sciences list
6. Minimum one course with North-Star designation; may be combined with social science or science elective offering
7. Minimum 2.00 cumulative GPA for courses applied to the minor
8. Minimum 15 credits taken from outside student's major requirements
9. Minimum 15 credits 300- and 400-level coursework
10. Minimum 15 credits completed in residence through the UW

Climate Science

Program Overview

The minor in Climate Science is offered jointly with the Department of [Atmospheric Sciences](#), the Department of [Earth and Space Sciences](#), and the School of [Oceanography](#).

Undergraduate Program

Adviser
339A Ocean Sciences Building,
Box 355351
206-543-6521
uwpcc@uw.edu

Minor

Minor Requirements: 25 credits, to include:

1. One of ESS 201, ATM S 211, or ATM S 321 (3-5 credits)
2. One of OCEAN 452/FISH 452, AMATH 301, Q SCI 381, or CSE 160 (3-5 credits)
3. *Integrated Capstone Experience:* ATM S 475/ESS 475/OCEAN 475 (3 credits)
4. *Science Electives:* At least one course each from ATM S, ESS, and OCEAN (minimum 12 credits). See adviser for list of approved courses.
5. *Application Elective:* One approved social science, policy, or energy course to reach 25 credits. See adviser for list of approved courses.
6. Minimum 2.00 cumulative GPA in courses applied to the minor
7. Minimum 15 credits taken through the UW
8. Minimum 18 credits outside student's major
9. Minimum 15 upper division credits
10. Students are encouraged to take MATH 124, MATH 125, MATH 126, PHYS 121, PHYS 122, and PHYS 123, or see adviser to complete requirements for the minor.

Education, Learning, and Society

Undergraduate Program

Adviser
B507 Padelford
(206) 616-2352
elsminor@uw.edu

Minor

The minor in education, learning, and society, jointly sponsored by the College of Education and the College of Arts and Sciences, provides a strong background in how human beings learn, and how society, environment, and culture shape learning.

Minor Requirements:

31 credits, to include:

1. Learning and Development: one from PSYCH 206 (prerequisite, PSYCH 101), PSYCH 306, NURS 201, EDPSY 302, EDPSY 406 (5 credits)
2. Schooling and Society: one from AES 340, CHID 210, EDUC 305, EDUC 310, SOC 292 (5 credits).
3. Field Experience: any combination of EDUC 260, EDUC 360, EDUC 361, EDUC 369, GEN ST 346, and GEN ST 470 (with ELS adviser approval, student may substitute one of the following: GEN ST 350, ECFS 303, ECFS 304, ECFS 305, ECFS 454, ECFS 455, ECFS 456, EDC&I 499, EDPSY 499, EDSPE 499, CHID 497, or other related courses) (5 credits).
4. EDUC 299 (1 credit).
5. Electives: 15 credits from an approved list. For list, see adviser or College website.
6. Up to 15 credits of the minor may overlap with a student's major and up to 5 credits may overlap with another minor.

Undergraduate students from outside the College of Education may take courses offered to help them explore the field of education and prepare for graduate study. Fieldwork courses in local schools or social service agencies give students opportunities to make informed career and academic choices. Students may also complete prerequisites for graduate programs. Further, requirements to meet endorsement (subject) guidelines for secondary teaching may be completed by undergraduates.

Ethics

Overview

The Ethics program is an interdisciplinary [minor](#) sponsored by the Philosophy department.

Undergraduate Program

Adviser
361 Savery, Box 353350
(206) 543-5855
philadv@uw.edu

Minor

Minor Requirements: 27 credits, to include:

1. Three courses from an approved list in which normative thinking and conceptual analysis of values and frameworks are central; at least one at the 300 level or above. See list at www.phil.washington.edu/POV/List_A_Courses.html
2. Two courses from an approved list in which values-laden issues are central; at least one at the 300 level or above. See list at www.phil.washington.edu/POV/List_B_Courses.html
3. VALUES 495 (2-credit capstone).
4. Minimum 15 credits outside the student's major.
5. Minimum 15 credits completed through the UW.
6. Minimum 2.00 GPA in courses used for the minor.

Honors

Program Overview

211 Mary Gates Hall

uwhonors@uw.edu

The four-year University Honors Program features an interdisciplinary Honors core curriculum with a focus on experiential learning and reflection, Honors academic advising, foreign study programs and exchanges, and opportunities for independent study. It provides an academic community and educational opportunities to those students who are willing to take academic risks, think across disciplinary boundaries, and engage in experiential learning (e.g., research, leadership, community and/or international engagement).

To be considered for admission to the University Honors Program at entrance, students must apply to the Honors Program when they submit their Application for Undergraduate Admission to the University. "Selection is based on a student's demonstrated engagement with interdisciplinary learning, high school record, essay responses, a letter of recommendation, and fit for the program." Students also may seek admission based on academic performance during spring quarter of their freshman year at the University via the late admission process.

Students who are accepted into the University Honors Program in their freshman year and complete the Honors Core Curriculum alone graduate "With Interdisciplinary Honors." When students complete both the Core Curriculum and the Departmental Honors requirements in their chosen major, they graduate "With College Honors in *Name of Major*." Students who do not participate in or complete the Honors Core Curriculum but are admitted into and complete the Honors Program in their chosen major will receive a degree "With Honors in *Name of Major*." By special arrangement it may be possible for students to complete a degree "With College Honors" in departments, schools, or programs that do not offer a formal Departmental Honors option as well as Departmental Honors by itself.

Core Curriculum

47 credits as follows:

1. HONORS 100 (1 credit)
2. One Honors-prefix social science course (HONORS 23x) (I&S; 5 credits). This requirement cannot be completed by courses with multiple Areas of Knowledge designations.
3. One Honors-prefix arts/humanities course (HONORS 21x/HONORS 24x) (VLPA; 5 credits). This requirement cannot be completed by courses with multiple Areas of Knowledge designations.
4. One Honors-prefix science course (HONORS 22x) (NW; 5 credits). This requirement cannot be completed by courses with multiple Areas of Knowledge designations.
5. One Honors-prefix interdisciplinary course (HONORS 205, HONORS 345, HONORS 38x, or HONORS 391, HONORS 392, HONORS 393, HONORS 394) (NW; 5 credits). This requirement cannot be completed by courses with multiple Areas of Knowledge designations.
6. Combination of any five additional 4- or 5- credit HONORS courses. May be HONORS-prefix or non-HONORS-prefix courses. (VLPA, I&S, NW)
7. HONORS 496 (1 credit)

8. Courses applying towards Departmental Honors may not be applied toward the HONORS core curriculum.
9. Students may fulfill no more than 15 credits of HONORS core requirements by completing HONORS 499 (independent study), graduate-level courses, or ad hoc projects in non-HONORS courses or by way of a non-HONORS study abroad program. These credits may fulfill only a student's additional five HONORS courses requirement; they may not count towards HONORS-prefix social science, arts/humanities, science, or interdisciplinary requirements.
10. Minimum cumulative 3.30 GPA in all courses completed through the UW.

Departmental Honors

Students may apply to Departmental Honors in their major(s) after they have been admitted to the major, typically in their junior year. Each department at the UW has a unique set of Departmental Honors requirements. For links to specific information about each department, see the Honors Program website.

Marine Biology

Department Overview

Marine biology involves the study of life processes of organisms inhabiting the ocean's environments, drawing on courses offered by Aquatic and Fishery Sciences, Oceanography, and Friday Harbor Laboratories. The degree program integrates core material on marine aspects of biodiversity, organismal processes, and ecology and ecosystems, examining their relationship with physical processes and ocean changes. Graduates are prepared for careers in management agencies at the local to international levels, environmental consulting, non-profit organizations, and a range of educational settings.

Undergraduate Program

Adviser

116 Fishery Sciences Building, Box 355020

206-543-7426

marbiol@uw.edu

Marine Biology offers the following programs of study:

- Bachelor of Science, with a major in marine biology
- Minor in marine biology

Bachelor of Science

Suggested First- and Second-Year College Courses: Recommended courses for first-year students: FISH 250/OCEAN 250/ BIOL 250; English composition; calculus; CHEM 120 and OCEAN 295; BIOL 180. Recommended courses for second-year students: OCEAN 210, BIOL 200, and FISH 270/OCEAN 270/MARBIO 270; Q SCI 381, MARBIO 305.

Department Admission Requirements

Students in good academic standing may declare this major at any time, including on the application for admission to the UW. After notification of admission and before registration, new students should contact the Student Services Office for help in program planning.

Major Requirements

105-113 credits

1. *Core STEM (43-50 credits)*
 - a. Biology: BIOL 180, BIOL 200 (10 credits)
 - b. Chemistry: CHEM 120, OCEAN 295; or CHEM 120, CHEM 220; or CHEM 142, CHEM 152, OCEAN 295; or CHEM 142, CHEM 152, CHEM 162 (10-15 credits)
 - c. Physics: Either PHYS 114 or PHYS 121 plus OCEAN 285 and OCEAN 286; or PHYS 114 and PHYS 115; or PHYS 121 and PHYS 122 (8-10 credits)
 - d. Calculus: Q SCI 291 or MATH 124; Q SCI 292 or MATH 125 (10 credits)

- e. Statistics: Q SCI 381 or STAT 311 (5 credits)
2. *Introduction to Marine Environment*: FISH 250/OCEAN 250/BIOL 250 or OCEAN 200 and OCEAN 201; OCEAN 210; FISH 270/OCEAN 270/MARBIO 270 (14 credits)
3. *Marine Biology Core*: FISH 370/OCEAN 370/MARBIO 370; OCEAN 330 or OCEAN 430; FISH 323 (14-15 credits)
4. *Communications*: MARBIO 305 or FHL 333 (3 credits)
5. *Electives*: Minimum 25 credits from approved courses (see department website for list), meeting the following requirements
 - a. Minimum one course each in biodiversity, ecology and ecosystems, organismal processes
 - b. Minimum two courses from approved laboratory electives
 - c. Minimum three courses at the 400 level
 - d. Maximum 6 credits total from OCEAN 492, FHL 450, FHL 460, FHL 470, or FHL 492.
6. *Integrative Field Experience*: One from MARBIO 479, MARBIO 488, FHL 450, FHL 460, FHL 470, or OCEAN 492. Students who take OCEAN 492 toward elective requirements in 5.d. above may apply an additional 6 credits in OCEAN 492 to the integrative field experience requirement. (6 credits)
7. Minimum 2.00 cumulative GPA in courses presented for the major.
8. Majors must satisfy the College of the Environment general education requirements.

Minor

Minor Requirements: 35 credits

1. *Introductory Courses (19 credits)*: FISH 250/OCEAN 250/BIOL 250; OCEAN 210; BIOL 180; Q SCI 381.
2. *Integrative Experience (3 credits)*: See adviser for approved list of courses.
3. *Electives (13 credits)*: Selected from an approved list available from a program adviser. Additional courses may be approved by program adviser. (A minimum of one elective course must be taken from each of the following units: Aquatic and Fishery Sciences; Oceanography; and Biology or Friday Harbor Laboratories.)
4. Up to 17 credits may overlap with credits applied to a student's major and up to 5 credits may overlap with credits applied to another minor.
5. Minimum 15 credits in upper-division courses.
6. Minimum 2.00 cumulative GPA in courses presented for the minor.

Paleobiology

Program Overview

The minor in paleobiology, sponsored by the Department of Biology, provides students a solid foundation in the evolution and ecology of life in deep geologic time. In addition to classwork in paleontology, geobiology, astrobiology, and paleoanthropology, the minor provides opportunities for fieldwork and independent research.

Undergraduate Program

Adviser

318 Hitchcock Hall, Box 355320

206-543-9120

bioladv@uw.edu

Minor

Paleobiology

Minor Requirements: Minimum 30 credits

1. BIOL 354
2. *Electives:* Two from the paleobiology core content area and one from each of the three other content areas, selected from approved courses available on the paleobiology website.
3. BIOL 483
4. *Integrative experience in paleobiology:* Minimum 3 credits from one of BIOL 475 or BIOL 499, ESS 499 or BIO A 499, at the discretion of the instructor
5. Remaining credits from any of the above or BIO A 389, BIO A 491, or an approved elective
6. Minimum 2.00 cumulative GPA for courses presented for the minor
7. Minimum 18 credits from outside the student's major.
8. Minimum 15 credits completed through the UW.

COLLEGE OF ARTS AND SCIENCES

AMERICAN ETHNIC STUDIES

AMERICAN ETHNIC STUDIES

AES 150 In-Justice for All: Intersection of Race, Ethnicity, Class, and Gender in the United States (5) I&S, DIV *Gamboa, Salas* Focusing on pre-Columbus era to 1970, students develop an understanding of how race, ethnicity, nationality, class, and gender impact all Americans - especially those viewed as racial ethnic minorities.

AES 151 Identities, Cultures, and Power Across American Ethnic Groups (5) I&S, DIV Provides an introduction to the major theories, debates, and issues concerning the study of identities and cultures of American ethnic groups as they are constituted through relationships of power.

AES 211 Environmental Justice (5) I&S, DIV Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for "eco-justice." Offered: jointly with ANTH 211/ENVIR 211.

AES 212 Comparative American Ethnic Literature (5) VLPA/I&S, DIV *Butler* Reviews selected texts by African American, American Indian, Asian American, Chicano/Latino, and Euro American writers. Includes a comparison of how texts envision and interpret a diverse American culture and social, political relations among peoples of the United States. Explores the power of cultural agency in the creation of America's literature.

AES 250 Race in the American University (5) I&S Racial integration in American institutions of higher education. Entry to, and impact on, American universities by people of color. History of ethnic studies and its relation to other disciplines.

AES 322 Gender, Race, and Class in Social Stratification (5) I&S, DIV The intersection of race, class, and gender in the lives of women of color in

the United States from historical and contemporary perspectives. Topics include racism, classism, sexism, activism, sexuality, and inter-racial dynamics between women of color groups. Prerequisite: GWSS 200. Offered: jointly with GWSS 300.

AES 333 Race and Ethnicity in the U.S. Military (5) I&S *Salas* The experiences of racial minorities in the military. Topics include segregation of units, desegregation of military, career limitations and opportunities, minority women, military families, racism, and role of veterans in civil rights struggles after service.

AES 335 History of African Americans and Sports (5) I&S, DIV *J. WALTER* Development of sport in the US and its importance for US culture and society. Covers increased centrality of athletic competition as part of the new leisure time in the late - 19th century, revival of the Olympic movement, racial segregation/integration, today's American notions of celebrity and social style.

AES 340 Race, Ethnicity, and Education (5) I&S, DIV Focuses on critical social and political dimensions of race and ethnicity as they relate to issues and practices of pedagogy and power in American education. Considers schooling as sites at which contemporary politics of diversity play out amidst increasingly diverse demographics of students, teachers, and parents.

AES 345 Ethnographies of School Inequalities (5) I&S, DIV *Bonus* Explores various issues and practices of school inequalities through the methods of critical ethnography.

AES 361 Ethnicity, Business, Unions, and Society (5) I&S Interrelationships of ethnicity, business, unions, and the larger society. Examines financial and sociological structure of business and manufacturing sector, how this sector performs, and consequences of performance for selected ethnic groups in United States. Offered: jointly with SOC 363.

AES 380 Race, Ethnicity, and United States Public Policy (5) I&S Explores the causes of disproportionate representation for people of color

among the country's impoverished population; drawing on analysis of race/ethnicity, poverty, public policy, (including competing theories), public policy approaches, and ethnographic work addressing the causes and perpetuation of poverty in America.

AES 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender, race, and sexuality. Offered: jointly with COM 389/GWSS 389.

AES 404 Advanced American Ethnic Studies in Humanities (5, max. 15) VLPA, DIV *Linh Thuy Nguyen, Sonnet H. Retman, LAURO H. FLORES, Alina R. Mendez, Vincent J Schleitwiler, Jang Wook Huh* Comparative interdisciplinary study of race and ethnicity. Examines experiences and cultural expressions of racialized communities in the U.S. and its diasporas from a cultural studies' perspective. Explores how expressive cultures engage and transform racial formations and their intersections, animating social relations of everyday life and reshaping structures of power. Prerequisite: either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

AES 440 History and Memory: Race, Archives, and Afterlives (5) I&S/VLPA, DIV *L. Nguyen* What is memorialized and archived and what is forgotten? Who produces knowledge and what counts as knowledge? Through historical and cultural studies approaches, this course examines how official and unofficial discourses deal with memory, violence, silence, haunting, history, and subjectivity. Topics may include U.S. empire and war, slavery, and colonialism. Prerequisite: AES 150 or AES 151 Offered: WSp.

AES 442 Undocumented Immigrant Communities (5) I&S, DIV *Carolyn Pinedo-Turnovsky* Sociological examination of the concepts of undocumented, citizen, and the structuring of (il) legality as they are situated in axes of power, specifically in racialized and gendered contexts. Topics include identity formation and experiences across communities, i.e., UndocuLatino, UndocuBlack, UndocuAsian and Pacific Islander, and UndocuQueer. Institutional outcomes in migration, law, labor, education, carceral spaces, and health. Recommended: AES 150; AES 151; AES 322; AES 461; and AES 462. Fluency with discourses in race, ethnicity, and gender as well as a basic familiarity in studies of

transnational migrations, inequality and globalization. Offered: AWSp.

AES 446 Music in American Cultures (3) VLPA/I&S Compares musical history and experience of selected American cultures that have fed into the American musical mainstream or had significant popularity on its periphery. Case studies may include African Americans, Latino/a Americans, Jewish Americans, Asian Americans, or European Americans. Considerations of social identity as well as musical styles. Offered: jointly with MUSIC 446.

AES 450 American Ethnic Health: Race, Gender, and Status Groups (5) I&S, DIV *Kashima* Introduces newer social science and health science related work on race, ethnicity, culture, socio-cultural, and environmental issues affecting American racial minorities. Considers differential rates of physical and medical problems such as cardiovascular disease rates, diabetes statistics, low birth weight children, etc. Offered: AWSp.

AES 461 Comparative Ethnic Race Relations in the Americas (5) I&S Sketches the ethnoracial systems operating in American society. Studies these systems as systems and examines their institutional and interpersonal dynamics. Compares ethnoracial systems in order to arrive at empirical generalizations about race/ethnorelations in the Americas. Offered: jointly with SOC 461.

AES 462 Comparative Race and Ethnic Relations (5) I&S, DIV Race and ethnicity as factors of social differentiation in a number of Western and non-Western societies in Europe, Africa, Asia, and the Americas. Offered: jointly with SOC 462.

AES 487 Cultures and Politics of Environmental Justice (5) I&S, DIV *D. PENA* Comparative survey of environmental justice movements in the world with focus on critical studies of environmental racism, risk, and sustainable development. Provides theoretical knowledge and research methods incorporating the study of equity and autonomy in environmental impact and risk assessment and other aspects of environmental policy politics. Offered: jointly with ANTH 487.

AES 489 Black Cultural Studies (5) I&S Examines how images of blackness have been (re) constructed through identity formation and entrenched

inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black queer studies, black power, and black hybridities. Offered: jointly with COM 489/GWSS 489.

AES 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV Joeseeph Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with COM 490/GWSS 486.

AES 494 Community Practicum and Internship (3-5, max. 10) Faculty supervised practicum and internship experience in variety of settings and agencies, e.g., ethnic specific agencies, government and civic community-based offices. Students contribute skills and knowledge to respective communities and gain experience by working with professionals and community organizers. Credit/no-credit only.

AES 496 Honors Senior Thesis (5-10, max. 10) Supervised individual and independent/tutorial study for AES Departmental Honors students involving research, writing, project completion, and completion of a major 30-page paper or commensurate project. Offered: AWSpS.

AES 498 Special Topics in American Ethnic Studies (1-5, max. 15) I&S Designed to provide the student an opportunity to concentrate on one specific aspect of American Ethnic Studies through a comparative, interdisciplinary approach.

AES 499 Independent Study or Research (1-5, max. 10) Independent readings and/or research under the supervision of a faculty member.

AFRICAN-AMERICAN STUDIES

AFRAM 101 Introduction to African American Studies (5) I&S, DIV History, culture, religion, institutions, politics, economics, arts, and psychology of peoples of African descent as developed from experience in both the old and new worlds. Multidisciplinary analysis of social life from a black perspective as illustrated in selected historical and contemporary writings.

AFRAM 150 Introduction to African American History (5) I&S Introductory survey of topics and problems in African American history with some attention to Africa as well as to America. Basic introductory course for sequence of lecture courses and seminars in African American history. Offered: jointly with HSTAA 150.

AFRAM 214 Introduction African American Literature (5) VLPA, DIV Introduction to various genres of African American literature from its beginnings to the present. Emphasizes the cultural and historical context of African American literary expression and its aesthetics criteria. Explores key issues and debates, such as race and racism, inequality, literary form, and canonical acceptance. Offered: jointly with ENGL 258.

AFRAM 220 African American Film Studies (5) VLPA/I&S, DIV Examines the history and theory of African American filmmaking, introducing central political and aesthetic debates by way of different cinematic eras, genres, and filmmakers. Focuses primarily on black directors and producers independent and commercial contexts as they confront popular representations of U.S. blackness in their own cinematic practice.

AFRAM 246 African American Politics (5) I&S, DIV C. PARKER Survey of African Americans within the U.S. socio-political processes. Situates African Americans within a post-civil rights context where there is debate about race's centrality to an African American politics. Offered: jointly with POL S 246.

AFRAM 260 African American Family (5) I&S, DIV Explores the structures and functioning of various types of black families. Single-parent families, two-parent families, extended families, and consensual families are explored. Their consequences for male/female relationships are linked and critiqued. Offered: jointly with SOC 260.

AFRAM 261 The African American Experience through Literature (5) VLPA/I&S Instructs students in hermeneutical and sociological methods of analyses. Analyzes selected novels, essays, poems, short stories, and plays with the purpose of understanding the structures and functions of both society and personality. Offered: jointly with SOC 261.

AFRAM 270 The Jazz Age (5) I&S, DIV *Walter* Interdisciplinary study of period after World War I to Great Crash. African American and Anglo American currents and impulses that flowed together in the Roaring Twenties. Covers politics of normalcy, economics of margin, literature of indulgence and confusion, transformation of race relations, and cultural influence of jazz. Offered: jointly with HSTAA 270.

AFRAM 272 History of the South Since the Civil War (5) I&S, DIV *Walter* Reconstruction and its aftermath, the Agrarian (Populist) revolt, disfranchisement and segregation, the effects of urbanization and subsequent depression, desegregation, and the struggle for civil rights. Examines the New South, the conflict of ideology with structural and material change, and the place of the South in contemporary America.

AFRAM 315 Black Identities and Political Power (5) I&S Relates the deployment of political power within institutions to shifting racial identities. Shows how racial identities both reflect and inflect relations of domination and resistance within and between cultures in the black diaspora. Prerequisite: either AES 150, AFRAM 150, AFRAM 201, or POL S 201. Instructors: Rivers Offered: jointly with POL S 315.

AFRAM 318 Black Literary Genres (5) VLPA, DIV Considers how generic forms and conventions have been discussed and distributed in the larger context of African American, or other African diasporic literary studies. Links the relationship between generic forms to questions of power within social, cultural, and historical contexts. Offered: jointly with ENGL 318; AWSp.

AFRAM 320 Black Women in Drama (5) VLPA, DIV Character types of black women as represented in plays by black women. Some black male playwrights are juxtaposed with black female writers for comparative analysis. Playwrights include Georgia Douglas Johnson, Angelina Grimke, Alice Childress, Lorraine Hansberry, Ira Aldridge, LeRoi Jones.

AFRAM 321 History of African American Women and the Feminist Movement (5) I&S, DIV "Feminist Movement" from early nineteenth century to present. Treats relationship between black and white women in their struggle for independence, at times together and at times apart. Discusses the

reasons, process, and results of collaboration as well as opposition. Examines recent and contemporary attempts at cooperation. Offered: jointly with GWSS 321.

AFRAM 330 Music, Folklore, and Performance in Black Society (5) VLPA *Steptoe* Focuses on cultural expressions created by people of African descent in the United States in the twentieth century, with an emphasis on music, folklore, dance, and humor. Offered: WSp.

AFRAM 334 Civil Rights and Black Power in the United States (5) VLPA/I&S, DIV *Steptoe* Examines the politics and culture of the modern African American freedom struggle, which began after WWII and continued into the 1970s. Interrogates political strategies associated with nonviolent direct action, armed self-reliance, and black nationalism, as well as the cultural expression that reflect these political currents. Offered: jointly with HSTAA 334.

AFRAM 337 Popular Music, Race, Identity, and Social Change (5) I&S/VLPA, DIV Focuses on popular music, shifting formations of race and identity and social change in various cultural, historical, and political contexts. Explores popular music as a tool for social change, a vehicle for community-building and a form of political and aesthetic expression.

AFRAM 340 The Harlem Renaissance: A Literary Study (5) VLPA, DIV Highlights Harlem Renaissance - 1912 through mid-1930s - as establishing a role for twentieth-century African American writer, encompassing literature, politics, and decolonization of the image of Africa, and solidifying integrationist and nationalist schools of thought. Examines images, themes, and characterizations in creating a literary aesthetic simultaneously American and African American.

AFRAM 350 Black Aesthetics (5) VLPA/I&S Draws on both multi-media and print sources, including fiction, poetry, prose, films, polemics, historiography and speeches to explore the idea of a black aesthetic in various cultural, historical, and political contexts within the twentieth century.

AFRAM 358 African American Literature (5) VLPA, DIV Selected writings, novels, short stories, plays, and poems by African American and African-descended writers in or from the United States.

Study of the historical, cultural, and intellectual context for the development of literary work by such writers, including attention to identity, power, and inequality. Offered: jointly with ENGL 358.

AFRAM 360 Black Digital Studies (5) I&S, DIV *LaShawnDa L. Pittman* Bridges and intersects two interdisciplinary fields - black studies and digital humanities. Attention to knowledge production. Role of archives, collections, research centers, the black press, and digital technology. Ideas related to power, memory, resistance, perspective and respectability politics in storytelling and control of the vehicles used to do so. Recommended: introduction to sociology; and introductory courses in African American studies and communications. Offered: AWSpS.

AFRAM 370 African American Political Thought (5) I&S Political ideologies and philosophies of pivotal African American historical figures and the conditions under which these ideologies are developed, rejected, and transformed. How ideologies relate to solution of African American political problems.

AFRAM 404 Advanced African American Studies in Humanities (5, max. 15) VLPA, DIV *Sonnet H. Retman* Advanced and interdisciplinary engagement with racial formation, Black cultural production, and resistance among people of African descent throughout the Diaspora. Draws upon cultural studies perspectives with an emphasis on literature, film, music, performance, visual and material culture. Topics include art, labor, migration, politics; racial capitalism and political economy; social movements and cultural history; black intellectual traditions. Prerequisite: either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

AFRAM 405 Advanced African American Studies in Social Science (5, max. 15) I&S, DIV *LaTasha Levy* Advanced study of racial formation, Black cultural production, and resistance among people of African descent throughout the Diaspora. Social science theories and methods used to examine various topics, including social scientific analysis of political history; social movements; intellectual traditions; theory; and intersections with urban, digital and legal studies; race, science, and biopolitics; public health and environmental studies. Prerequisite:

either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

AFRAM 437 Blacks in American Law (5) I&S *Walter* Historical continuity for changing relationship between American jurisprudence and black Americans, 1640-1986. Statutory and case law which determined role of blacks in American society, and use of law by blacks to gain civil and personal rights.

AFRAM 498 Special Topics in African American Studies (3-5, max. 15) I&S Topics in which students and faculty have developed an interest as a result of work done in other classes or as a result of the need to investigate in greater depth Afro-American Studies issues. Topics vary.

AFRAM 499 Independent Study and Research (1-5, max. 10) Identification and investigation of the problems and needs of the black community. Methods and alternatives of approaching these problems and needs. Students designate their areas of interest and subsequently pursue research and problem solving.

ASIAN-AMERICAN STUDIES

AAS 101 Introduction to Asian American Studies (5) I&S, DIV Provides an introduction to the interdisciplinary study of Asian Americans and Pacific Islanders in the United States. Examines issues of race, class, gender, and sexuality, immigration/migration, citizenship, labor, racialization, exclusion, social and political activism and social movements, family, community-building, war, imperialism, sovereignty, (post) colonialisms, transnationalism, culture, and creative expressions.

AAS 206 Contemporary Issues of Asian and Pacific Islander Americans (5) I&S, DIV Critically examines contemporary Asian and Pacific Islander American issues, ranging from the Cold War era to the present-day America. Topics include ethnic enclaves, community-building, civil rights, identity problems, family conflict, social organizations, political movements, and immigration.

AAS 210 Asian American and Pacific Islander American Identity: Race, Ethnicity, and Culture (5) I&S, DIV Examines the interdisciplinary nature of Asian American and Pacific Islander American

identity. Explores influences and manifestations of Asian and Pacific Islander ethnic identity, using literature, history, and social sciences. Topics include gender issues, socio-economic class, and mixed heritage in the United States.

AAS 220 Asian American Stereotypes in the Media (5) I&S Asian stereotypes popularized by American literature, film, radio, and television and their effects on Asian American history, psychology, and community.

AAS 250 Asian American Oral Histories (5) I&S, DIV *Nomura* Explores the intersection of race, class, gender, and sexuality in the lives of diverse Asian Americans through readings of oral histories narrating powerful stories including immigration, war, refugee flight, exclusion and discrimination, activism, community building, labor, race relations, family, generation gap, gender role changes, domestic violence, adoption, mixed race, religion, and culture.

AAS 300 U.S. Pacific Islander Contemporary Culture (5) I&S, DIV Examines United States Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the United States and other diaspora communities. Major themes include post-colonialism, migration, family, religion, politics, gender, education, and transnational identity. Offered: jointly with ANTH 307; Sp.

AAS 310 Asian Americans and Pacific Islanders in the Pacific Northwest (5) I&S, DIV Examines the history and lives of Asian Americans and Pacific Islander communities in the Pacific Northwest from the eighteenth century. Topics include immigration, labor, gender, community building, challenges to racial discrimination and inequities, and activism to achieve social justice. Emphasizes Washington/Seattle with discussion of Oregon, Idaho, and British Columbia.

AAS 314 Ethnography, Transnationalism, and Community in Island Southeast Asia/Asian America (5) I&S, DIV Ethnographic exploration of the transformative processes of transnationalism in relation to identity and community formation in Southeast Asia and among Southeast Asian Americans. Experiential learning format concentrates on mini-ethnographic projects, field

trips, and group presentations. Prerequisite: either one 200-level ANTH course or one AAS/AES course. Offered: jointly with ANTH 314.

AAS 320 Hawaii's Literatures (5) VLPA, DIV *Sumida* Covers views by Native Hawaiian and multicultural writers and composers, studied within historical contexts ranging from the eighteenth century to the present. Examines how the colonization of a sovereign people redefines culture in ethnocentric, racist, Orientalist ways. Analyzes strategies of decolonization as presented and interpreted in works studied.

AAS 330 Asian American Theater (5) VLPA, DIV Covers drama from the 1970's to now, in historical contexts. They study of drama is dialogical, through dialogue. Themes are contested among the characters. Our studies participate, with the plays, in questioning race, ethnicity, gender, sexuality, and class. Includes students' performances of dramatic readings. No prior experience in theater is required.

AAS 350 Critical Overseas Chinese/Chinese American Histories (5) I&S, DIV Explores the differences and similarities of race, class, gender, sexuality, and generation influence on the life experiences of the Chinese (among the most diasporic people in the world) in America

AAS 360 Critical Filipino American Histories (5) I&S, DIV *Revilla* Examines the diverse historical and contemporary experiences of Filipinas and Filipinos in the United States in order to critically understand their immigration patterns, colonial histories, practices of identity constructions, and interactions with other groups.

AAS 370 Japanese Americans: Race, Culture, Discrimination, Gender, and Endurance (5) I&S, DIV Explores the changing nature of Japanese Americans from the first, Issei, to the latest generation. Topics include arrival, inequality and discrimination, Picture Brides, WW II, and minority-majority race relations. Lectures, readings, discussion, and videos offer varied approaches to view culture, values, community, concentration camps, gender, socio-economic, and psychological issue.

AAS 372 American Internment and Incarceration: Race, Discrimination, and Power (5) I&S, DIV Explores the racial animus, failure of political

leadership, and war hysteria in WW II that resulted in Japanese Americans incarcerated into American concentration camps. Conceptually different internment camps held thousands of Japanese, German, and Italian alien nationals. Topics include why, how, past and present concerns.

AAS 380 Asian American Community: Discrimination, Power, and Affirmation (5) I&S, DIV Covers three "sea-change" eras for Asian American communities: 1850 to 1941 (racial prejudice, discrimination, and perseverance) ; World War II to 1965 (inclusion of Asian communities except Japanese Americans) ; and 1965 to present (new Asian immigrant communities) . Topics include theory, comparative history, gender issues, cultural norms and values, and socio-economic endeavors.

AAS 385 Asian Americans and Pacific Islander Americans: Race, Law, and Justice (5) I&S, DIV Explores relationship of race, law, and justice in history of Asian Americans and Pacific Islander Americans. Examines how challenges and resistance to racial discrimination, inequality, and colonialism transformed our political and legal justice system. Issues include citizenship, immigration, sovereignty, gender, civil liberties, national security, work, property, language, education, and marriage.

AAS 392 Asian American and Pacific Islander Women (5) I&S, DIV Explores the intersection of race, ethnicity, gender, class, and sexuality in the lives of Asian American and Pacific Islander women. Examines how forces such as immigration, colonialism, sovereignty, labor, family, gender roles and relations, community, war, homeland politics, transnationalism, and social movements shaped and were shaped by these women. Offered: jointly with GWSS 392.

AAS 395 Critical Studies of Post-Vietnam War Southeast Asian Americans: Not Just Refugees (5) I&S, DIV Focuses on the experiences of Vietnamese, Cambodians/Khmer, Lao, and Indo-Chinese, addressing the various waves of these Southeast Asians to the USA after 1975. Beyond refugee status and the Vietnam War, students explore how ethnicity, age, class, gender and generation influences Southeast Asian groups in America.

AAS 401 Asian American Literature to the 1940s (5) VLP, DIV Asian American literature from

nineteenth-century immigrants to the 1940s. Emphasis on Chinese, Japanese, and Filipino writings detailing the experience and sensibility of first generation immigrants. Early twentieth-century writing focus on the development not only of Asian American community, but also of second generation American-born Asian American writers.

AAS 402 Contemporary Asian American Literature (5) VLP, DIV Examines Asian American literature from the 1950s to the present that require analyses of structures of power and possibilities for empowerment of an American "minority" group. Multi-ethnic focus, including Filipino American, Japanese American, Chinese American, Korean American, Vietnamese American, and South Asian American subjects.

AAS 403 Survey of Asian American Poetry (5) VLP, DIV Asian American poetry, nineteenth century to present. Readings include poetry of the early immigrant to America, cultural imperatives transferred from old world to new world, and establishment of an Asian American identity in poetry from 1870s through 1890s.

AAS 404 Advanced Asian American Studies in Humanities (5, max. 15) VLP, DIV *Linh Thuy Nguyen, Jang Wook Huh, Vince Schleitwiler* Asian American and Pacific Islander identity and cultures from a humanities perspective. Emphasis on literature, film, music, performance, visual, and material culture. Topics include globalization, war, empire, militarism, capitalism, racism. Interdisciplinary research methods utilize primary documents, historical analysis, cultural studies, and theory. Prerequisite: either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

AAS 406 Asian American Activism (5) I&S, DIV Explores the multiple political traditions forged by Asian Americans, from the earliest challenges to racist laws and unequal wages to the latest debates over affirmative action and racial profiling. Examines Asian American communities organized to oppose and to perpetuate social inequalities. Offered: jointly with HSTAA 406.

AAS 498 Special Topics (5, max. 10) I&S

AAS 499 Undergraduate Independent Study (1-5, max. 10)

CHICANO STUDIES

CHSTU 101 The Chicano/Mexican Ethnic Experience in the United States (5) I&S, DIV Examines the Chicano/Mexican American experience, with a focus on past and contemporary issues of race, ethnicity, and socio-economic status.

CHSTU 200 Latinos in the United States: Patterns of Racial, Ethnic, and Socio-Economic and Political Inequality (5) I&S, DIV Studies broad patterns of inequality formed by historical forces, race, ethnicity, nationality, gender, immigration, and social capital. Analyzes rapid growth and adjustment of old and newly established Latino communities, resulting from transnational migration from Latin America.

CHSTU 224 Life and Labor in the US-Mexico Borderlands (5) I&S, DIV *Alina R. Mendez* Focuses on inhabitants of the U.S.-Mexico borderlands since the nineteenth century. Emphasizes the fungible U.S.-Mexico border, industrialization of the Southwest and northern Mexico, cultures of migration, and the creation of "Greater Mexico." Influence of labor and migration in gender constructions.

CHSTU 254 Northwest Latino Ethnic Communities: Culture, Race, Class, Immigration, and Socio-Economic and Political Marginalization (5) I&S, DIV *Alina R. Mendez* Traces the history and development of the Latino community in the Pacific Northwest. The study engages racial and ethnic identities, rural to urban, inter-regional, and trans-border migration, and labor and economy to approach issues of marginalization. The Latino community is also contrasted across rural and urban spaces.

CHSTU 255 Mexican Women: Past and Present (5) I&S, DIV *Salas* Survey of women in Mexican society from Meso-American times to the 1940s.

CHSTU 256 Chicanas: Gender and Race Issues (5) I&S *Salas* Contemporary issues in the Chicana movement since the 1940s. Issues range from feminism and Chicana political, educational, and social organizations, to work, family, health, and the arts.

CHSTU 260 Introduction to Chicano Politics (5) I&S, DIV Surveys the political position and activities of Mexican American peoples in the United States from two perspectives: (1) Chicanos as objects of the political process of U.S. life, (2) contributions of the Chicano people to U.S. politics.

CHSTU 320 Food Sovereignty Movements in Mexico and the United States (5) I&S *Pena* Interdisciplinary study of agrifood systems and food sovereignty movements in Mexico and Mexican-origin communities in the United States. Uses the methods and materials of ethnography, agroecology, and political ecology in concert with environmental history, rural sociology, deconstructive discourse analysis, eco-criticism, and predictive ecology. Offered: A.

CHSTU 322 Indigenous Knowledge and Public Health in Mexican and Latinx Origin Communities (5) I&S, DIV *Devon G Pena* Critical medical anthropologies of public health through environmental justice/decolonial methods and groundings in ethnoscientific knowledge. Forces impinging on 'racialized' health regimes in Mexican/Latinx communities through study of structural violence, historical trauma and related disparities and inequities. Emphasis on healthcare and caring labor via decolonial critiques of settler colonialism, commodification, and indigenous survivance. Recommended: CHSTU 101 or ANTH 215. Offered: jointly with ANTH 325; W.

CHSTU 330 Chicano/Chicana Autobiography (5) I&S *LAURO H. FLORES* Explores the issue of Chicano, or Mexican American, identity. Examines statements of selfhood by Chicanos, studied in order to understand the relationship between individual and society in creating identity.

CHSTU 332 Chicano Film and Narrative (5) VLPA/I&S, DIV *Flores* Provides a historical overview of the evolution of Chicano culture through film. Critically examines the portrayal and self-portrayal of Chicanos in film and selected works of narrative. Taught in English.

CHSTU 340 Latina/Latino Theater (5) VLPA *Habell-Pallan* Explores the contextual, theoretical, thematic, and formal dimensions of U. S. Latina and Latino theater and performance art in the contemporary period. Examines performances and play scripts as a

way of analyzing innovations in form, language, and content produced by Chicano/Latino teatro and performance art.

CHSTU 342 Working Latinas and Latinos: Changing Sites of Identity in Daily Life (5) I&S, DIV Carolyn Pinedo-Turnovsky Sociological examination of Latina/o working lives. Focuses on inequalities and power relations that shape diverse socio-economic working experiences and social change across distinct Latino communities. Covers race and gender consciousness, informal/formal work, labor recruitment, changing contexts of home and family, youth and children's work, entrepreneurship, organizing, and immigration and labor legislation.

CHSTU 352 Latina/o Migrations: A Comparative Analysis (5) I&S, DIV Carolyn Pinedo-Turnovsky Comparative studies of migrations to the U.S. from Mexico, the Caribbean, Central and South America. Key theories and conceptual frameworks for understanding Latina/o migration and other key migrations to the U.S. Analyses of structural powers, the state, and identify formation in areas such as work, family, political participation, and community.

CHSTU 354 Unions, Labor, and Civil Rights in California and Pacific Northwest Agriculture (5) I&S Alina R. Mendez Comparative study of Southwest and Pacific Northwest farm workers against the social movement of the 1960s, its significance in the socio-political development of the Chicano civil rights movement, and its legacy. Uses historical and social science research methods along with analytical criticism to examine the period of social history.

CHSTU 356 The Chicano Family (5) I&S Salas The historical, psycho-social, and sociocultural role of the Chicano family from Meso-American times to the present.

CHSTU 359 U.S. Latino Politics (5) I&S, DIV Sophia J Wallace Examines historical and current political incorporation of Latinos in the United States. Topics include Latino voting and voter mobilization, office seeking and representation, Latino public opinion, and public policy formation on "Latino issues." Offered: jointly with POL S 359.

CHSTU 404 Advanced Chicano Studies in Humanities (5, max. 15) VLPA, DIV Alina R. Mendez,

LAURO H. FLORES Comparative interdisciplinary study of changing cultures and social movements of Chicano and Latino communities in the U.S. across the Americas, and the diaspora. Literature, film, music, performance, visual, and material culture. Topics include ethnicity, gender, labor, family, migration, diasporic and transborder communities, indigeneity, social movements, law, politics, and the environment. Prerequisite: either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

CHSTU 405 Advanced Chicano Studies in Social Science (5, max. 15) I&S, DIV Carolyn Pinedo-Turnovsky Advanced study of historical, cultural, social, political, and economic experiences of Chicanas/os and Latinas/os in the US across the Americas and diaspora through social science theories and methods. Topics include ethnicity, gender, labor, the military, family, migration, diasporic and transborder communities, indigeneity, social movements, global health, the law, politics, and the environment. Prerequisite: either AES 150, AES 151, AAS 101, AFRAM 101, or CHSTU 101. Offered: AWSpS.

CHSTU 416 Comparative Social Movements: Mexico and the United States (5) I&S, DIV D. PENA Historical, ethnographic, and theoretical perspectives in the study of Mexican-origin communities in social movements in Mexico and the United States with a focus on workers, immigrants, peasants, women, indigenous peoples, and students as forces of collective mobilization and social, cultural, and political change. Offered: jointly with ANTH 416.

CHSTU 435 Latinas and Labor in the Neoliberal Age (5) I&S, DIV Alina R. Mendez Social, political, and economic forces shaping the lives of Latina workers under neoliberalism. Recommended: CHSTU 101 or AES 150.

CHSTU 465 Contemporary Chicano Literature (5) VLPA Flores Examines one or more problems, themes, and/or figures in the developing body of Chicano literature. Taught in English.

CHSTU 466 Chicano Literature: Fiction (5) VLPA Flores Examines nineteenth- and early twentieth-century fiction, as well as contemporary works in attempts to trace the development of

Chicano fiction in the proper historical trajectory.
Taught in English.

CHSTU 498 Special Topics in Chicano Studies (3-5, max. 10) I&S Interdisciplinary course concentrating on one or more aspects of the Chicano experience.

CHSTU 499 Independent Study and Research (1-6, max. 10) Students work individually or in teams.

SWAHILI

SWA 101 Basic Swahili (5) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. First in a sequence of three.

SWA 102 Basic Swahili (5) Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Second in a sequence of three. Prerequisite: SWA 101. Instructors: Maulana

SWA 103 Basic Swahili (5) Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Third in a sequence of three. Prerequisite: SWA 102. Instructors: Maulana

SWA 134 Intensive Basic Swahili (15) Maulana Introduces the Swahili language and the diverse cultures and customs of the people of East Africa. Provides a basic foundation in speaking, reading, and writing. Offered: S.

SWA 201 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. First in a sequence of three. Prerequisite: either SWA 103 or SWA 134.

SWA 202 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. Second in a sequence of three. Prerequisite: SWA 201.

SWA 203 Intermediate Swahili (5) VLPA Builds proficiency in the language by speaking, reading, and writing. Includes children's stories, newspaper articles, poetry, and folklore. Third in a sequence of three. Prerequisite: SWA 202.

TAGALOG

TAGLG 101 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. First in a sequence of three Offered: A.

TAGLG 102 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. Second in a sequence of three. Prerequisite: TAGLG 101. Offered: W.

TAGLG 103 Basic Tagalog (5) Introduces the Filipino language and culture. Students use the language through speaking, listening, reading, and writing at the novice level. Examines basic language structures, appropriate forms of address, and vocabulary for communication. Third in a sequence of three. Prerequisite: TAGLG 102. Offered: Sp.

TAGLG 134 Intensive Basic Tagalog (15) Intensive introduction to the Filipino language and culture. Uses language through speaking, listening, reading, and writing at the novice level. Explores language structures, appropriate forms of address, and vocabulary for communication.

TAGLG 201 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by teaching the social rules along with the linguistic rules. First in a sequence of three. Prerequisite: either TAGLG 103 or TAGLG 134. Offered: A.

TAGLG 202 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by

teaching the social rules along with the linguistic rules. Second in a sequence of three. Prerequisite: TAGLG 201. Offered: W.

TAGLG 203 Intermediate Tagalog (5) VLPA Provides further reinforcement and practice of the lessons learned in basic Tagalog. Improves the communicative competence of the student by teaching the social rules along with the linguistic rules. Third in a sequence of three Prerequisite: TAGLG 202. Offered: Sp.

TAGLG 301 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. First in a sequence of three. Prerequisite: TAGLG 203. Offered: A.

TAGLG 302 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. Second in a sequence of three. Prerequisite: TAGLG 301. Offered: A.

TAGLG 303 Advanced Tagalog (5) VLPA Reading of contemporary Filipino (Tagalog) prose, poetry, and drama. Advanced conversation and composition. Third in a sequence of three. Prerequisite: TAGLG 302. Offered: A.

AMERICAN INDIAN STUDIES

AIS 102 Introduction to American Indian Studies (5) I&S, DIV Introduction to American Indian and Indigenous Studies, a field of research grounded in the study of American Indian and indigenous peoples with the goal of fostering individual and community wellness, political self-determination, cultural revitalization, and cross-cultural understanding. Presents foundational terms, concepts, and ideas for study in AIS major and minor.

AIS 103 The Indigenous Pacific Northwest (5) I&S, DIV *Dian Million, Charlotte Cote* Introduction to the cultures and governing structures of indigenous peoples of American Indian and First Nations tribal communities in the North, coastal British Columbia, and Pacific Northwest region as self-determining political actors in a contemporary multicultural and global region. Offered: jointly with JSIS 100; W.

AIS 110 Musical Traditions of Native North America (5) VLPA Utilizes historical and contemporary sources to survey the music and music-related traditions of Native North America. Examines traditional music and context from the Northwest Coast, Arctic, Southwest, Great Basin, Plains, Plateau, California, and Eastern Woodlands music-style areas, as well as contemporary neo-traditional and popular genres of American Indian music.

AIS 170 American Indian Art and Aesthetics (5) VLPA Introduces the aesthetic universe of Indigenous peoples of North America, peoples who are currently known as American Indian, Alaskan Native and Canadian First Nations. Explores multiple examples of North American Indigenous thought, expression, stories, dance, art, film, and music.

AIS 201 Introduction to American Indian Histories (5) I&S, DIV Survey of histories of Indians in the United States from Native perspectives. Presents traditional creation accounts and oral histories, archaeological, and historical evidence. Focus is cultural dynamics, considering change and continuity through prehistoric, protohistoric, colonial, and American periods.

AIS 202 Introduction to American Indian Contemporary and Social Issues (5) I&S, DIV Introduction to American Indian/Alaska Natives contemporary and social issues. Topics will include identification, demographics, government relations, treaty and water rights, Indian gaming, and treaty law.

AIS 203 Introduction to Indigenous Knowledges (5) I&S, DIV Introduction to Indigenous peoples' diverse and complementary ways of knowing in tribally and culturally specific contexts. Topics may include ecological knowledges, artistic knowledges, linguistic knowledges, medicinal knowledges, and Indigenous value systems as expressed in individual and communal contexts. Discussions of Indigenous epistemologies and ontologies. Instruction in contemporary Indigenous research practices.

AIS 209 The Unsettling of the Red Continent: American Indian History to 1815 (5) I&S, DIV *J. REID* Course examines the histories of indigenous peoples of North America through the War of 1812. Topics include the peopling of the Americas; early encounters and exchanges; and strategies American

Indians used to confront expanding European, American, and indigenous powers. Offered: jointly with HSTAA 209.

AIS 210 Inconvenient Indians and the "American Problem": American Indian History since 1815 (5) I&S, DIV As part of a two-quarter survey of American Indian history, this course examines the histories of indigenous peoples of North America from the nineteenth century to today. Students will explore a range of topics, including settler colonialism, indigenous power, American Indian - US relations, and Native governance and activism. Offered: jointly with HSTAA 210.

AIS 212 Indigenous Leaders and Activists (5) I&S, DIV J. REID By focusing on historic indigenous leaders and activists globally, students will examine issues of power, sovereignty, identity, and the role of the individual in shaping history. Additionally, students will examine contemporary, global issues that indigenous communities face and collaboratively contribute to a wiki of indigenous leaders and activist movements. Offered: jointly with HSTCMP 212.

AIS 230 Contemporary Indian Gaming and Casinos (5) I&S Overview of the contemporary \$18.5 billion Indian tribal gaming industry (with a focus on the Pacific Northwest), which is heavily regulated, is an economic engine for non-Indian communities, and funds economic, social, and cultural revitalization of Indian reservations, yet often generates intense political discussions.

AIS 240 Native North American Women (5) I&S, DIV Indian women in the social structure; historical and contemporary roles; changes in male-female relationships; problems and opportunities of contemporary women; the feminist movement and Indian rights.

AIS 253 Wood Design (5, max. 15) VLPA M. OLIVER Studio course in wood sculpture utilizing Pacific Northwest Indian hand tools. Properties of woods and their uses.

AIS 270 Native Peoples of the Northwest Coast (5) I&S, DIV *Dian Million, Charlotte Cote* Examines indigenous societies on the Pacific Northwest's western slope, from southeast Alaska to California, including social structures and relations, subsistence

strategies, belief systems, and changes over time, both before and after non-Natives' arrival. Offered: jointly with JSIS A 270.

AIS 271 Native Peoples of the Intermountain West (5) I&S Examines societies of the Columbia and Fraser River Plateau and Great Basin, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival.

AIS 272 Native Peoples of the Southeast (5) I&S Examines indigenous societies of North America's southeastern sector, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival.

AIS 275 Introductory Topics in American Indian and Indigenous Studies (1-5, max. 15) I&S Covers introductory topics on current research and readings in American Indian and indigenous studies.

AIS 308 American Indians and the Environment (5) I&S, DIV J. Reid Examines the historical relationships American Indians have possessed with local environments, with special attention to the ways these peoples have adapted to altered environments and new conditions, including migrations, involvement with markets of exchange, overhunting, dispossession, conservation, and mainstream environmentalism. Offered: jointly with ENVIR 308/HSTAA 308.

AIS 309 Methods in Amerindian Linguistics (5) VLPA/I&S Survey of native North American languages; introduction to systems of transcription; focus on reading of texts and analysis of grammatical structure in two languages; introduction to the use of microcomputers in the description and analysis of Native American texts.

AIS 310 A Linguistic Approach to Culture (3) VLPA/I&S Analytical study of a language, with special focus on Native Indian languages of North America. Emphasizes analysis of sound systems of languages, as well as a universal system of classifying and writing speech sounds. Emphasis on practical application, with time devoted to sound transcription practice.

AIS 311 The Indigenous History and Environment of the Salish Sea (5) I&S, DIV *Joshua L Reid* Uncovers the indigenous history and environment of the Salish Sea. Examines the "Salish Sea" concept and uncovers the history of the Salish Sea, from an indigenous perspective. Topics include pre-encounter indigenous settlement; early encounters; and contestations over resources, waters, and lands; contemporary issues. Taught at the Friday Harbor Labs. Offered: jointly with HSTAA 311; Sp.

AIS 313 American Indian Language-Salish (5)

AIS 314 American Indian Language-Salish (5)

AIS 315 American Indian Language-Salish (5)

AIS 317 North American Indians: The Southwest (5) I&S Overview of history and ethnography of the Southwest with emphasis on Apacheans, Pueblos, and Pimans/Yumans. Social organization, religion, worldview, and expressive culture of such specific groups as Navajo, Hopi, Zuni, Tewa, and Tohono O'odham.

AIS 330 United States-Indian Relations (5) I&S, DIV History of relations between American Indians and non-Indians in the United States with emphasis on national laws and policies. Examines origins and impacts of Indians' and non-Indians' strategies for dealing with each other, historical reasons for Indians' contemporary conditions and status.

AIS 331 American Indian History I to 1840 (5) I&S, DIV A. *HARMON* History of indigenous peoples and their descendants in the area that now constitutes the United States, from the eve of European discovery of the Americas to 1840. Emphasis on relations between indigenous peoples and immigrants. Offered: jointly with HSTAA 331.

AIS 332 American Indian History II Since 1840 (5) I&S, DIV A. *HARMON* History of American Indians in the United States from 1840 to the present. Emphasis on relations between Indians and non-Indians, government policies, and Indian strategies of survival. Offered: jointly with HSTAA 332.

AIS 335 American Indians and the Law (5) I&S, DIV *Charlotte Cote* History of laws governing American Indians: aboriginal law systems, U. S. laws,

and contemporary tribal laws. Effects of laws and legal institutions on contemporary Indian identity and tribal status, self-government, land ownership and use, natural resources, religion, family life, cultural and spiritual practices, crimes and punishment, and federal responsibilities for Indians.

AIS 340 Indian Children and Families (5) I&S, DIV D. *MILLION* Cross-cultural survey of Indian child rearing, family structure, and related social issues. Includes historical changes in family structure, value orientation and adaptation to a bicultural environment, education, child welfare, health problems, and aging.

AIS 341 Native Women in the Americas (5) I&S Historiography, sociology, biography, autobiography, and fiction about native women in the United States and Canada. Offered: jointly with GWSS 341.

AIS 350 Two-Dimensional Art of the Northwest Coast Indians (5, max. 15) VLPA *Oliver* Studio course emphasizes principles of structure and style of two-dimensional art which can be found on many old, traditional Northwest Coast pieces, such as painted storage boxes and chests, house panels, and ceremonial screens. Students apply these principles in creating a variety of graphic projects.

AIS 360 American Indians in Cinema (5) VLPA/I&S, DIV Studies representations of American Indians in American films from 1900 to present. Examines the foundations of American Indian stereotypes and how Hollywood helped create and perpetuate those stereotypes. Activities include reading critical materials, and viewing, discussing, and writing critically about films by non-Native directors.

AIS 365 Native Nation Governance (5) I&S, DIV *Jean M Dennison* Current issues important to Native nations today, using films and interactive case studies. Students research topics including: stereotypes, sovereignty, economy, citizenship, art, and politics. Provides an understanding of settler colonialism, seeks to understand challenges facing Native nations and look for creative solutions to those challenges.

AIS 370 Researching Indians' History (5) I&S A. *HARMON* Finding and interpreting sources of information about American Indians' history. Offered: jointly with HSTAA 315.

AIS 375 Special Topics in American Indian and Indigenous Studies (1-5, max. 15) I&S Covers special topics in American Indian and indigenous studies.

AIS 376 First Nations Literature (5) VLPA Literature written by First Nations Canadian authors as a form of cultural resistance and a re-seizing of identity.

AIS 377 Contemporary American Indian Literature (5) VLPA, DIV Creative writings (novels, short stories, poems) of contemporary Indian authors; the traditions out of which these works evolved. Differences between Indian writers and writers of the dominant European/American mainstream. Offered: jointly with ENGL 359.

AIS 378 Contemporary American Indian Literature: A Northwest Focus (5) VLPA, DIV *Dian Million* Literature and poetry of the Pacific Northwest (Coast and Plateau) Native peoples. Contemporary literature and discussion of social and cultural issues raised by American Indian writers and writing.

AIS 379 Powwow: Tradition and Innovation (5) VLPA/I&S, DIV Explores the historical and cultural roots of powwow. Discusses the ways this indigenous Native art form has adapted since prehistoric times.

AIS 380 Indigenous Food Sovereignty (5) I&S, DIV *Charlotte Cote* Food sovereignty within an Indigenous framework of decolonization and cultural revitalization. Demonstrates its potential to strengthen tribal autonomy, health, and wellness in Indigenous communities. How colonialism undermined Indigenous relationships to homelands, plants, and animals that sustained and nourished communities, leading to health disparities and inability to access traditional, nutritious foods. Offered: Sp.

AIS 385 Indigenous Ecologies and Climate Change (5) I&S, DIV Diverse ways in which Indigenous peoples around the world understand, experience, and are responding to contemporary global climate change. Topics include: the politics of traditional ecological knowledge, Indigenous environmental justice movements, community-scale climate "adaptation" practice, as each is related to Indigenous health and wellbeing, cultural continuance, and political sovereignty.

AIS 425 Indians in Western Washington History (5) I&S, DIV A. *HARMON* Relations of Indians and non-Indians in the Puget Sound region, from the 1790s to the present, with emphasis on evolving ideas about Indian identity. Offered: jointly with HSTAA 417.

AIS 431 History of American Indian Education (5) I&S, DIV Traditional and European-introduced methods of schooling, the federal role in Indian education, and contemporary Indian education issues. Special attention to Indian concepts of learning; boarding school education; the role of the Bureau of Indian Affairs; current trends in bilingual and bicultural education for Indians.

AIS 435 Spiritual Encounters: Native Spirituality in the Contact Era (5) I&S Explores North American indigenous interaction with, resistance to, and syncretization with Christianity, the European colonizers' religious system. Focuses on Native revitalization movements and new forms of religious expression such as the Indian Shaker Church and the Peyote Road, as well as the legal, social, and cultural issues of Native freedom of religion.

AIS 440 Reading Native American Women's Lives (5, max. 10) I&S, DIV Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or about indigenous women of the United States and Canada. Offered: jointly with GWSS 440.

AIS 441 Gender in Native American Societies (5) I&S, DIV D. *MILLION* Examines gender roles, identity, and relations in Native American pre- and post-contact societies. Analyzes how contact with European gender customs influenced and altered traditional gender practices, especially in regard to women's social position and the roles of the third/fourth genders in Native American communities.

AIS 442 Images of Natives in the Cinema and Popular Cultures (5) VLPA/I&S, DIV D. *HART, L. ROSS* Cultural examination of images of Native people in cinema and popular culture based on social science writings and films by or about Natives in the United States and Canada. Offered: jointly with GWSS 442.

AIS 443 Indigenous Films, Sovereign Visions (5) VLPA/I&S, DIV D. *HART, L. ROSS* Explores fiction, documentary, experimental film, and digital media

by indigenous artists from around the world. Focuses on personal, political, and cultural expression. Issues include media and sovereignty movements, political economy, language revitalization, the politics of decolonization, and indigenous aesthetics. Offered: jointly with COM 443.

AIS 444 Criminality and "Deviance" in Native Communities (5) *L. ROSS* Seminar based on social science writings and biographies written by and about incarcerated Natives and "deviance" in Native communities in the United States and Canada. Offered: jointly with GWSS 444.

AIS 446 American Indian Economic History (5) **I&S** *Harmon* Surveys and analyzes the history of American Indians' economic challenges and strategies. Topics include the economic cultures of indigenous North American societies, the impacts of European colonization and U.S. government policies, and tribal strategies aimed at improving Indians' economic circumstances. Offered: jointly with HSTAA 446.

AIS 451 Critical Conversations in American Indian Studies (5, max. 10) *D. MILLION* Critical issues in American Indian studies. Topics vary.

AIS 461 First Nations Government and Politics in Canada (5) **I&S, DIV** *Cote* Focuses on First Nations government and politics in Canada. Examines development of First Nations political governing structures with an introduction to the values, perspectives, concepts, and principles in Native political cultures. Explores federal Indian policy in context of First Nations strategies to become self-governing. Offered: jointly with JSIS A 426.

AIS 465 First Nations Filmmaking in Canada (5) **VLPA** *Cote* Examines First Nations video production in Canada; how film is utilized as a medium for addressing issues significant to First Nations. First Nations filmmakers "decolonize" the screen by providing real and positive images of First Nations people that correspond to their cultural and social experiences. Offered: jointly with JSIS A 422.

AIS 466 Producing the Documentary Short (5) **VLPA** *D. HART, L. ROSS* Explores documentary theory, methods, and aesthetics. From humanities, social science, and indigenous studies perspectives, students critique a self-produced documentary,

looking at methodology, perspective, and ethics. Students also explore pre-production, production, and post-production documentary techniques.

AIS 475 Research Topics in American Indian and Indigenous Studies (1-5, max. 15) **I&S** Covers current research in American Indian and indigenous studies content areas.

AIS 480 Indigenous Resistance and Resurgence Movements in the United States, Canada, and Mexico (5) **I&S, DIV** Examines Indigenous resistance and resurgence movements in the United States, Canada, and Mexico. Explores political and social contexts, political mobilization, cultural resurgence, and decolonizing struggles.

AIS 492 Indigenous Sovereignties (5) **I&S, DIV** *Jean M Dennison* Indigenous challenges of ongoing European settlement across the globe, focusing on both the global legacies of colonialism and the continued socio-political movements of Indigenous populations. What colonialism looks like today and how Indigenous peoples are challenging its authority. Recommended: either coursework or research in Indigenous Studies. Offered: Sp.

AIS 497 Internship (1-5, max. 10) Internship and academic project. Faculty sponsor and internship supervisor are required. Offered: AWSpS.

AIS 499 Independent Study (1-5, max. 15) **VLPA/I&S** Readings and/or research under faculty supervision.

AIS 501 Documentary Film/Video Research Methods in Native Communities (5) *D. HART, L. ROSS* Seminar exploring theoretical, methodological, and aesthetic issues when researching documentary film and video projects in Native American communities. Utilizes readings, screening, discussions, and a major research project to explore issues of documentary representation, ethics, and historiography. First part of a two-quarter documentary production sequence. Offered: jointly with GWSS 510.

AIS 503 Documentary Theory, Form, and Practice (5) *D. HART, L. ROSS* Explores documentary theory and practice, utilizing readings and documentary filmmaking exercises. Students create short documentary sequences while investigating traditional and more experimental ideas about the

non-fiction form; theories of representation, subject ethics, documentary authenticity, the intersection of fiction and non-fiction forms, documentary and performance, documentary and historiography.

AIS 576 Indigenous Methodology (5) *Jean M Dennison* Creating a collaborative and collective space for students to explore the potential of various Indigenous approaches to research. Oriented around critical feedback from the instructor and fellow classmates. Students are expected to actively engage in class readings, discussions, and commitments.

AIS 590 Special Topics (1-5, max. 15) Offered by visitors or resident faculty as a one-time, in-depth study of special interest.

AIS 592 Indigenous Sovereignties (5) *Jean M Dennison* Indigenous challenges of ongoing European settlement across the globe, focusing on both the global legacies of colonialism and the continued socio-political movements of Indigenous populations. What colonialism looks like today and how Indigenous peoples are challenging its authority. Recommended: either coursework or research in Indigenous Studies. Offered: Sp.

ANTHROPOLOGY

ANTHROPOLOGY

ANTH 100 Introduction to Anthropology (5) I&S Introduction to the subfields of archaeology, biocultural anthropology, and sociocultural anthropology through the examination of selected problems in human physical, cultural, and social evolution. Not recommended for students who have had other courses in anthropology, archaeology, or biocultural anthropology.

ANTH 101 Exploring Sociocultural Anthropology (5) I&S, DIV Introduces perspectives from sociocultural anthropology on the diversity and the dynamics of collective human life. Examines how individual lives are shaped by broader social and cultural contexts, how people make meaning, and how power relations work. Introduces ethnography as a method for documenting and understanding social and cultural life.

ANTH 150 Culture and Rights: Exploring the Meaning and Practice of Human Rights (5) I&S, DIV

Examines social justice issues with the aim of obtaining deeper understanding of human rights. Analyzes historical and theoretical foundations and introduces international and regional institutions designed to implement and enforce human rights. Case studies in sovereignty, war crimes, ethnic cleansing, genocide, torture, truth commissions, and forgiveness.

ANTH 202 Principles of Sociocultural Anthropology (5) I&S Comparison of life ways of various non-Western and Western peoples. Introduction to basic theories and methods used in the field.

ANTH 203 Introduction to Anthropological Linguistics (5) I&S/VLPA Linguistic methods and theories used within anthropology. Basic structural features of language; human language and animal communication compared; evidence for the innate nature of language. Language and culture: linguistic relativism, ethnography of communication, sociolinguistics. Language and nationalism, language politics in the United States and elsewhere. Offered: jointly with LING 203.

ANTH 204 Reading Ethnography (5) I&S Introduction to the descriptive and analytic literature of cultural anthropology. Extended examination of representative accounts of the lifeway of peoples from selected areas of the world with an emphasis on methods of observation and analysis.

ANTH 206 The Cultural Animal (5) I&S/NW Examination of the interaction between biology and culture in shaping human social behavior. Basic principles of natural selection, gene-environment interaction, cultural transmission, learning, and cultural evolution; application of these to various topics, including gender, violence, politics, kinship, and religion.

ANTH 207 Class and Culture in America (5) I&S, DIV Anthropological view of the contemporary United States with emphasis on social class. Through ethnographic readings examines education, work, political economy, working class experience and the ideology of the middle class, and relations between class and race, gender, ethnicity, language, place, sexuality, and culture.

ANTH 208 The Culture Concept (5) I&S History of the culture concept and its use in the field of cultural

anthropology. History of its emergence in European colonial expansion and contemporary debates about its place as the central concept defining the field of anthropology.

ANTH 209 Anthropology through Visual Media (5) VLPA/I&S Theories of culture and cultural variation, as seen and understood through visual media such as films, video, and photography.

ANTH 210 Introduction to Environmental Anthropology (5) NW/I&S Introduction to human/environment interactions from various anthropological perspectives. Intellectual history of anthropological approaches to environment, emphasizing the mutual interconnectedness of people and nature. Survey of evolutionary models; cultural ecology; systems approaches; indigenous knowledge; ethnoecology; nature and the state; political ecology; ecofeminism; and environmentalism.

ANTH 211 Environmental Justice (5) I&S, DIV Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for "eco-justice." Offered: jointly with AES 211/ENVIR 211.

ANTH 213 Anthropology and Sport (5) I&S, DIV Introduces theories, methods, and findings of sociocultural anthropology through a focus on sport. Considers sport as linked to identities, nationalism, gender, race, class, religion, and other issues. Explores cultural rituals of sport, potentials and obstacles to sport transcending social differences, and sport's role in education, youth development, and community building.

ANTH 215 Introduction to Medical Anthropology and Global Health (5) I&S, DIV Explores influences of global processes on health of U.S. and other societies from a social-justice perspective. Emphasizes inter-relationships between cultural, environmental, social-economic, political, and medical systems that contribute to health status, outcomes, policies, and healthcare delivery. Focuses on health disparities within and between societies and communities around the world.

ANTH 228 Identities: Race, Class, Gender, and Sexuality in Anthropology (5) I&S, DIV An introduction to the study of race, class, gender, and sexuality in anthropology. Through ethnographic and theoretical readings, students are introduced to the concept of identity as intersectional construction and social performance.

ANTH 233 Introduction to Language and Society (5) VLPA, DIV *Evans, Wassink* Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with COM 233/LING 233; A.

ANTH 235 Global Feminist Art (5) VLPA/I&S Introduces feminism as a way of thinking about visual art practice in terms of social hierarchy, aesthetic form, and ideology. Explores how feminist artists working in diverse locations and cultural traditions challenge, at the local and global level, artistic conventions and representations of gender, sexuality, race, class, and nationality. Offered: jointly with GWSS 235.

ANTH 236 The Mystery behind the Material World (5) I&S Things are everywhere. We make them and they also make us. Things are evocative, aesthetic, and unnerving. They define us. We need them to communicate, to remember, to govern. But things need us too. This course is an introduction to the study of things, architecture, and so on from an interdisciplinary perspective. Topics such as identity, memory, commodities/gifts, cognition, and agency are explored through the analysis of the material world. Offered: jointly with ARCHY 236.

ANTH 269 Special Topics in Anthropology (3-5, max. 10) I&S Delineation and analysis of a specific problem or related problems in anthropology.

ANTH 280 Cultures of Global Capital (5) I&S Designed to introduce students to the study of cross-border phenomenon including global capital, migration, international philanthropy, and terrorism from an anthropological perspective. Introduces theories of globalization and the approaches anthropologists have taken in studying patterns of movement and circulation.

ANTH 289 Identities: Service Learning (3) I&S**ANTH 301 Human Nature and Culture (3) I&S**

Comparison of various anthropological perspectives on the sources of variation in customs, values, and beliefs of human groups, including non-Western peoples and contemporary Americans.

ANTH 302 Body and Soul: Introduction to Medical Anthropology and Global Health as Social Justice Praxis (5) I&S, DIV

Examines health/sickness patterns as intersecting cultural norms, ideology, social structure, life course, political economy, and environmental conditions unfolding on terrains of inequality mediated by power and representations. Critical analysis of med-anthropology ethnography as practice and theory. Surveys the field across ranging global contexts. Students build frameworks for solving urgent human problems.

ANTH 303 Technologies of Health (5) I&S/VLPA

Ethnographic, historical, and philosophical approaches to the study of technologies in biomedical sciences and care. Topics include infrastructures, colonialism development, reproduction, race, gender, disability, subjectivities, visualization, and diagnosis. Prerequisite: ANTH 208, ANTH 215, or ANTH 302. Offered: AWSp.

ANTH 304 Anthropology of Beauty (5) I&S, DIV

What is beautiful? Who creates the standard(s)? How have the standards changed? How does race/ethnicity, gender, class, age, sexuality and (dis)ability intersect with this notion of beauty? Explores the augmentation/modification/transformation of the 'abnormal' body. Includes a critical look at structures and institutions that create and perpetuate beauty ideals.

ANTH 305 Anthropology of the Body (5) I&S

Surveys classic anthropological literature examining the relationship between culture and the body. Examines Euroamerican body culture historically. Explores how the body is represented in mass media and the effects this has on everyday body ideologies.

ANTH 306 The Power of Representation: Pacific Islander Voices (5) VLPA/I&S, DIV Focuses on how Pacific Islands and Islanders are being represented by Pacific Islander artists, writers, performers, poets, filmmakers, and scholars. By creatively challenging older dominant misrepresentations in ways these

individuals are fashioning new identities that transform images and identities, as well as extend the boundaries of "the Pacific."

ANTH 307 U.S. Pacific Islander Contemporary Culture (5) I&S, DIV Examines United States Pacific Islander culture as informed by Pacific history, social and cultural organization. Emphasis on understanding contemporary experience in the United States and other diaspora communities. Major themes include post-colonialism, migration, family, religion, politics, gender, education, and transnational identify. Offered: jointly with AAS 300; Sp.

ANTH 308 The Anthropology of Gender, Women's Health, and Reproduction (5) I&S, DIV Examines anthropological approaches to improving women's health by surveying women's health history, status, and participation in healthcare. Analyzes a range of health issues, including reproductive healthcare problems, women's body images and sexuality, current health policies, as related to daily structures and relationships of gender, race/ethnicity, class.

ANTH 309 Indigenous Epistemologies and Oceanic Canoes (5) VLPA/I&S, DIV Like a western textbook, outrigger canoes carry scientific knowledge and ingenuity holistic in scope, and intertwined with community and environmental relationships. Centers on Oceanic writers, artists, weavers, and canoe builders. Students engage in group research to help celebrate and build awareness for the intellectual contributions of Pacific Islanders.

ANTH 310 Native North American Societies (5) I&S, DIV *Smith* Traditional cultures of America north of Mexico, emphasizing diversity of North American Indian and Eskimo societies. Origins of Native-American culture areas and language groupings; subsistence systems; levels of social organization; European conquest and colonialism; and description of representative cultures from the ten culture areas.

ANTH 311 The Cultural Politics of Diet and Nutrition (5) I&S Examines current debates within the United States about what dietary guidelines are optimal for human health; how changing conceptions of individual responsibility and political life are framing these debates; how social movements for food sovereignty are changing food practices: and how

eaters define their ethics through food. Offered: AWSpS.

ANTH 312 Pacific Islands Literature and Film (5) VLPA/I&S, DIV Examines the Pacific through a detailed consideration of creative works by contemporary Pacific writers and filmmakers. Topics include cultural identity; colonialism and its effects on Indigenous peoples, land, wellness, family, and community; and the importance of knowing where you come from.

ANTH 313 Peoples of Africa (5) I&S Survey of the many cultures of pre- and post-colonial sub-Saharan Africa. Appreciation of the adaptability, strength, and creativity of African peoples.

ANTH 314 Ethnography, Transnationalism, and Community in Island Southeast Asia/Asian America (5) I&S, DIV Ethnographic exploration of the transformative processes of transnationalism in relation to identity and community formation in Southeast Asia and among Southeast Asian Americans. Experiential learning format concentrates on mini-ethnographic projects, field trips, and group presentations. Prerequisite: either one 200-level ANTH course or one AAS/AES course. Offered: jointly with AAS 314.

ANTH 315 Southeast Asian Civilization: Buddhist and Vietnamese (5) I&S, DIV Civilizations of Theravada Buddhist societies in Burma, Thailand, Cambodia, and Laos and in Vietnamese societies of Southeast Asia. Culture of tribal peoples who live on peripheries of these societies. Cultural transformations consequent upon the war in Indochina and resettlement of Indochinese refugees in United States. Offered: jointly with JSIS A 315.

ANTH 316 Modern South Asia (5) I&S Twentieth-century history and society of Indian subcontinent. Topics include nationalism, rural and urban life, popular culture, gender, and environmental politics. Offered: jointly with JSIS A 316.

ANTH 317 Anthropology of Tibetan Civilization (5) I&S Introduces the basic features of Tibetan society and culture, exploring how the global debate over Tibet's past, present, and future relates to contemporary concerns in anthropology, through the examination of Tibetan history, social and political organization, religion, and other cultural

themes in both traditional and contemporary contexts.

ANTH 318 Anthropology of Islam and Muslim Societies (3/5) I&S Examines diverse expression and experiences of Islam from anthropological perspective. Considers Islam as a lived experience by emphasizing everyday lives of Muslims in context through ethnographic accounts. Covers range of issues including identity, rituals, gender, and political Islam. Prerequisite: one 200-level anthropology course.

ANTH 321 Comparative Religion (3/5) I&S Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identity, ecstatic experience, and revitalization movements in the context of globalization. Also addresses the diversity of religious expression in American culture and how that compares with other societies. Offered: jointly with RELIG 321.

ANTH 322 Comparative Study of Death (5) I&S Death analyzed from a cross-cultural perspective. Topics include funerary practices, concepts of the soul and afterlife, cultural variations in grief, cemeteries as folk art, and medical and ethical issues in comparative context. American death practices compared to those of other cultures. Offered: jointly with RELIG 320.

ANTH 323 Human Rights Law in Culture and Practice (5) I&S, DIV *Arzoo Osanloo* Introduces the complexities of issues surrounding human rights. Examines human rights concerns through critical analyses, taking into account legal, social, economic, and historical variables. Offered: jointly with LSJ 321.

ANTH 324 Current Issues in Medical Anthropology and Global Health (2) I&S Guest speakers showcase local expertise in the field. Speakers share information about the path that led them to research in MAGH, and raise current research questions in their field of expertise. Credit/no-credit only.

ANTH 325 Indigenous Knowledge and Public Health in Mexican and Latinx Origin Communities (5) I&S, DIV *Devon G Pena* Critical medical anthropologies of public health through environmental justice/decolonial methods and groundings in

ethnoscience knowledge. Forces impinging on 'racialized' health regimes in Mexican/Latinx communities through study of structural violence, historical trauma and related disparities and inequities. Emphasis on healthcare and caring labor via decolonial critiques of settler colonialism, commodification, and indigenous survivance. Recommended: CHSTU 101 or ANTH 215. Offered: jointly with CHSTU 322; W.

ANTH 328 Gender and Sexuality in China (5) I&S, DIV Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform. Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with GWSS 328/JSIS A 328.

ANTH 330 Religion, Identity, and Cultural Pluralism (5) I&S, DIV The role of religion in shaping personal and communal identity in a pluralistic society. Themes include current dimensions of American pluralism, effects of ethnicity, immigration, and electronic communication on building religious communities, and issues of conflict, violence, and reconciliation. Offered: jointly with RELIG 329.

ANTH 331 Topics in Critical Sport Studies and Research (5) I&S Sport-related research. Students apply theory to critique the practices and global impacts of sport with emphasis on making sport more democratic, inclusive, accessible, and humane. Prerequisite: ANTH 213.

ANTH 339 Social Movements in Contemporary India (5) I&S, DIV P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with GWSS 339/JSIS A 339.

ANTH 341 Political Violence and the Post-Colonial State in South Asia (5) I&S, DIV Examines theoretical approaches to the analysis of collective, state, and anti-state violence in post-colonial South Asia through the study of specific cases of political

violence in modern India, Pakistan, Sri Lanka, and Nepal. Offered: jointly with JSIS A 341.

ANTH 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with GWSS 345/JSIS B 345.

ANTH 349 Dance/Performance Ethnography (3) VLPA/I&S J. MCMAINS Explores theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses primarily on dance. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance arts. Offered: jointly with DANCE 350.

ANTH 352 Buddhism and Society: The Theravada Buddhist Tradition in South and Southeast Asia (5) I&S Religious tradition of Theravada Buddhism (as practiced in Sri Lanka, Burma, Thailand, Laos, and Cambodia). Variations in ethical orientations developed through Theravada Buddhist ideas. Offered: jointly with RELIG 356.

ANTH 353 Feminist Anthropology (5) I&S, DIV Explores the history and contemporary practice of feminist ethnography at the interdisciplinary intersection of anthropology and gender studies. Examines how the inclusion of women, as subjects and researchers, has influenced anthropological knowledge production, and how the cross-cultural imperative of anthropology has influenced understandings of gender, sexuality, and race. Offered: jointly with GWSS 353; W.

ANTH 356 Visual Anthropology (3/5) I&S/VLPA Introduction to the history of Visual Anthropology as a sub-discipline. Students will learn to critically analyze ethnographic film and still photographs, and will become familiar with a range of approaches anthropologists use in producing visual ethnography.

ANTH 357 Peoples and Cultures of Central and Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with JSIS A 357/NEAR E 357.

ANTH 358 Culture and Cognition (5) I&S/NW Surveys anthropological theories and research on the relationship between language, thought, and behavior. Examines the influence of cultural inheritance on perception, classification, inference, and choice. Describes relevant cross-cultural research methods and evaluates theoretical models used by cognitive anthropologists. Prerequisite: either ANTH 203, LING 203, or PSYCH 355.

ANTH 359 Linguistic Ethnography (5) I&S Language use in cultural contexts. How language reflects world view. Language use in culturally significant settings. Analyzes sets of culturally specific terms in semantic domains. Includes projects demonstrating application of theory and method to data addressing specific problems. Workshop format.

ANTH 360 Anthropology of Popular Culture (5) I&S Analysis of the forces that shape popular culture. Examination of the local meanings of global trends in music, clothing, and leisure activities through case studies around the world. Students learn ethnographic methods and conduct an original research project.

ANTH 361 Anthropology of Food (5) I&S Explores how foods reproduce social relations, the meanings food acquires within culture, how food systems are intertwined with structures of power and economic inequality, national cuisines and restaurant cultures, the global marketing of foods, controversies surrounding GMO foods, and alternative food communities. Prerequisite: one 200-level ANTH course.

ANTH 362 Anthropology of Tourism (5) I&S, DIV Anthropological approaches to tourism. Debates about cultural encounters and cultural change, authenticity, economic development, social inequalities, identity, gender, ethnicity, nationality,

and cultural representation. Prerequisite: one 200-level ANTH course.

ANTH 363 Applied Visual Anthropological Practices (5) VLPA/I&S Using applied visual anthropological practices in hands-on training students will learn and gain field experience in using photographic techniques before going out to do research.

ANTH 368 Mythical Figures and Cultural Formations (3) I&S Anthropological perspective on the social and cultural formation of a variety of mythical figures. Examines their emergence and historical specificity, cultural meaning, and social implications. Emphasizes narrative in considering how contemporary institutions and public perceptions of danger are shaped by notions of "character" and the "monstrous."

ANTH 369 Special Problems in Anthropology (3-5, max. 10) I&S Delineation and analysis of a specific problem or related problems in sociocultural anthropology.

ANTH 370 Han Chinese Society and Culture (5) I&S Themes in the society and culture of the Han Chinese people. Concepts of self; personal interaction; family, gender, and marriage; communities and the state; religion and ritual; class, social categories, and social mobility; culturalism, nationalism, and patriotism. Offered: jointly with JSIS A 370.

ANTH 371 Anthropology of Development (5) I&S Development refers to social, economic, cultural, political transformations viewed as progress. Studied from anthropological perspectives. Historical, social context for emergence of ideas of development. Role of development in promoting national cultures. Impact of development on individual citizenship, families, rural-urban relations, workers, business, environment. Prerequisite: one 200-level ANTH course. Offered: jointly with ENVIR 371.

ANTH 373 Labor, Identity, and Knowledge in Healthcare (5) I&S Presents anthropological perspectives on provision of healthcare as a complex social phenomena. Examines division of labor, and how social groups come to occupy particular positions. Considers how knowledge and skills are gained, how they are recognized and valued, and

may become sources of identity. Prerequisite: one 200-level ANTH course.

ANTH 374 Narrative, Literature, and Medical Anthropology (5) I&S Introduces anthropological perspectives on the workings of narrative in illness, healing, and medicine. Considers writings in medical anthropology alongside other genres of writing about similar topics. Readings include memoirs and fiction as well as scholarly articles.

ANTH 375 Comparative Systems of Healing (5) I&S Introduction to the anthropological study of healing. Examines local approaches to healing, considering their similarities and differences, and addresses their place within global systems. Includes anthropological theories of healing.

ANTH 376 Anthropology of Disability (5) I&S, DIV Introduces anthropological perspectives on disability. Considers disability as produced through the interaction of bodily impairments with social structures, political economies, cultural norms and values, individual and group identities, institutional orders, medical practices, assistive technologies, and other factors. Considers ethnographic studies of disability in international as well as U.S. settings.

ANTH 377 Anthropology and International Health (5) I&S Explores international health from medical anthropological perspective, focusing on serious health problems facing resource-poor societies around the globe and in the United States. Develops awareness on political, socio-economic, ecological, and cultural complexity of most health problems and anthropology's consequent role in the field of international health.

ANTH 378 Sustainability, Resilience, and Society (5) Introduction to concepts of sustainability and resilience and their relevance to environment and society in the current Anthropocene era. Understanding sustainability and resilience through ecological footprints, lessons from small-scale societies, case studies of resource management, theory of common property regimes, philosophies of environmental stewardship, and implications of climate change.

ANTH 380 Subject, Person, Place: Introduction to Social Theory (3) I&S Introduces contemporary critical thinkers in anthropology. Includes works on

governmentality and discipline; politics and bare life; race and recognition; gender and embodiment; and capitalism and subjectivity. Develops an understanding of how contemporary theory frames anthropology and skills in critical spoken and written analysis.

ANTH 399 Junior Honors Seminar (5) I&S Teaches skills required to write senior Honors thesis, including evaluation of academic and scientific writing, formulation of problem, collection of bibliographic and other resources, evaluation of research proposals, and research proposal preparation. Final product is a formal thesis prospectus.

ANTH 401 Museum Decolonization and Cultural Collections (5) I&S, DIV Focuses on the need for museums to acknowledge and dismantle ongoing colonial violence. Opportunities for active student research with cultural collections at the Burke Museum. Readings, guest speakers, and assignments center on Indigenous research methods and ethics.

ANTH 402 Introduction to Experiential Ethnography: Towards a Critical Re-Enchantment of Every Day Life (5) I&S Develop or continue ethnographic research, gain skills and theoretical frameworks from auto-ethnographic, phenomenological, experimental, post-experimental and experiential approaches, and contribute to what an 8th, or future moment in ethnography/anthropology might look/feel like as it bends towards the sacred and moral in social science research for a free democratic society.

ANTH 403 Qualitative Research Methods in Sociocultural Anthropology (5) I&S Introduces qualitative research methods of anthropology, and data generated. Methods covered include interviewing, focus groups, participant-observation, discourse analysis, and use of visual materials. Addresses ethics as relevant to every phase of research. Explores methods through focus on a specific thematic topic, which varies from year to year. Offered: W.

ANTH 404 South America (5) I&S Survey of anthropological research among the traditional peoples of South America. Historical background and contemporary life of cultural groups of the Amazonian Basin. Transformation of traditional

lifestyles through the process of European conquest and the aftermath of colonialism. Detailed study of selected societies. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 405 Urban Health Methodologies: Ethnography of the Invisible in search of New Urban Commons (5) I&S Conduct urban anthropology field-research and examine paths for human liberation while exploring connections between contemporary urban anthropology theoretical perspectives, critical medical anthropology, and new and emerging social possibilities for new urban commons. Emphasis placed on ethnographic methods, introduced through field exercises that require the application of one or more techniques.

ANTH 406 China's Environment (5) I&S Analysis of contemporary environmental problems in China, including population, food, water supply, pollution, biodiversity, and environmental activism. Combines natural science and social science perspectives. Prerequisite: either ANTH 210, ENVIR 201, JSIS 200, JSIS 201, or JSIS 202. Offered: jointly with JSIS A 406.

ANTH 407 Global Futures in East Asia (5) I&S Explores interlinked modernity projects in China, Japan, Korea, and Taiwan and how the education of youth figures in projects of national development and international economic competition. Offered: jointly with JSIS A 407; AWSpS.

ANTH 408 Experiments in Southeast Asia (5) I&S J. Grant Exploration of science, health, development, and politics in Southeast Asia through ethnographic and historical case studies.

ANTH 409 Queer Health (5) I&S, DIV Examines the relationship between Western biomedicine and Queer theory. Critically analyzes the modes of thinking, caring, being, and expressing that emerge as a result of the "merger" of these two fields with contradicting views of gender, sex, health, wellbeing, and sexuality. Offered: jointly with GWSS 409.

ANTH 411 The Culture and Politics of Food: Study Abroad in Italy (8-12) I&S Study Abroad program at the UW Rome Center focusing on the organization, politics, economy, and culture of the local food system at increasing scales of analysis: the city of

Rome, the region of Lazio, the nation of Italy, the European Union, and the world.

ANTH 412 South Asian Social Structure (5) I&S, DIV Examines caste, class, and community in modern India. Transitions from colonial typology to analysis of social change, diversity, stability, and caste hierarchy in rural society. Current debates on class and community in Indian society, rural and urban, explored through themes of identity, structure, and mobility. Prerequisite: one 200-level ANTH course. Offered: jointly with JSIS A 412.

ANTH 413 Anthropology of the Modern Middle East and North Africa (5) I&S Presents an anthropological perspective on social/cultural aspects of contemporary Middle East and North Africa. Explores how anthropologists examine key issues in region including identity, politics, economics, religion, and conflict. Considers how ethnographic representations challenge assumptions about people's politics of region and elucidate contemporary manifestations of local, national, regional, and global power.

ANTH 414 Applied and Public Anthropology (5) I&S Considers the practical application of anthropology's methods and theories to the challenges and research needs of communities and organizations. Concentrates on a specific topic each quarter. Includes a required service-learning component that helps students connect classroom learning beyond the University.

ANTH 415 Visual Anthropology Methods: Video (5) VLPA Visual forms of communication as tools for understanding and communicating anthropological concepts. Requires weekly readings and film viewings. Central component is the production of a video for public engagement and consumption. Offered: A.

ANTH 416 Comparative Social Movements: Mexico and the United States (5) I&S, DIV D. PENA Historical, ethnographic, and theoretical perspectives in the study of Mexican-origin communities in social movements in Mexico and the United States with a focus on workers, immigrants, peasants, women, indigenous peoples, and students as forces of collective mobilization and social, cultural, and political change. Offered: jointly with CHSTU 416.

ANTH 417 Surfacing the Stories of Hanford: Local and Global Health Disparities (5) I&S, DIV Stories and experiences of people whose lives and land are shaped by the Hanford plutonium processing facility in central Washington. Students conduct research, including interviews and critical discourse analysis, and contribute to public education regarding health disparities and the intergenerational impacts of radiation exposure. Prerequisite: ANTH 215.

ANTH 418 Indian Heritage of Mexico and Central America (5) I&S, DIV Indian civilizations of Mexico and Guatemala, their origins and ecological foundations. Contemporary communities of Mexico and Guatemala, focusing on creative adaptation of pre-Columbian traditions to modern national realities. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 419 Collective Memory and Violence (5) I&S Present perspectives on cultural aspects of collective memory and relationship to violence. Explores how memories shape meaning of identity and community and influence contemporary conflict. Considers representations of the past in relation to collective violence, suffering, and trauma, including genocide. Considers relationship between memory and potential for justice and peace.

ANTH 420 The Social Life of Psychiatry (5) I&S Anthropological perspective on social and cultural aspects of contemporary psychiatry. Explores psychiatry as a social practice, an arena for competing cultural assumptions about mental illness and treatment, and a source of diagnostic categories and interpretive methods that influence larger society. Considers how psychiatry influences and is influenced by the cultural history of Europe and the United States.

ANTH 421 Belief, Ritual, and the Structure of Religion (5) I&S Systematic survey of concepts, models, and theories that characterize the anthropological study of religion. Consideration of the human universal basis of religion and of diverse ways in which religions are constructed and related to social experience. Prerequisite: either ANTH 321 or JSIS C 201; JSIS C 202.

ANTH 423 Traffic Across Cultural Boundaries (5) I&S Focuses on the movement of cultural patterns and processes across boundaries, examining the "contact

zones" in colonial encounters, moving to borrowing and blendings along ethnic and national borders. Examines border crossing of immigration and diasporas. Ethnographic examples from the Americas and Africa. Prerequisite: one 200-level ANTH course.

ANTH 424 Hunter-Gatherer Societies (4) I&S Comparative examination of human foraging societies, emphasizing ethnographic cases and socioecological analysis. Foraging and human evolution; rationality of foraging societies; population and reproductive strategies; variability in social organization and land use; power relations between the sexes; ritual and belief; contemporary status of hunter-gatherer populations. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 425 Anthropology of the Post-Soviet States (5) I&S L. BILANIUK Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nation building and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus varies. Offered: jointly with JSIS A 427.

ANTH 427 Anthropology in Urban Settings (3) I&S Cross-cultural examination of theoretical issues in anthropology as studied in urban places. Focuses on ethnic identity and the formation of urban ethnic groups; migration and its rural and urban consequences; family and kinship organization as an adaptation to urban complexity; the nature of urban voluntary associations; law and politics; and the developments in anthropological method. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 428 Anthropological Perspectives on Ethnicity (5) I&S, DIV Anthropological approaches to ethnicity and ethnic group relations with reference to other models including race, caste, class, regional groupings, nations, religion, and stratification. Data drawn from precolonial, colonial, and postcolonial periods. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 429 Expressive Culture (5) VLPA Anthropological view of one expressive aspect of

culture: plastic and graphic arts, myth and folktale, music, dance, humor and tragedy, or play and games. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 430 The Anthropology of Music (3) VLPA/I&S

Analysis of aspects of anthropological thought influential in ethnomusicology. Critical evaluation of dominant theoretical schools and modes of explanation, e.g., evolutionist, diffusionist, historical particularist, structuralist, functionalist, symbolist, and semiotic, through detailed examination of seminal texts. Offered: jointly with MUSIC 480.

ANTH 432 Sociolinguistics I (5) VLPA/I&S, DIV

Interrelationships between social and linguistic factors influencing variation in speech production and perception, morphology, syntax, lexicon. Considers contribution of ethnic, regional and socioeconomic group memberships to dialect differentiation and progression of language change. Nonstandard language, diglossia, pidgins, creoles, gender differences, bi- and multilingualism, ethnography of speaking, pragmatics, and language attitudes. Prerequisite: either LING 200 or LING 400. Instructors: Evans, Wassink Offered: jointly with LING 432.

ANTH 433 Sociolinguistics II (5) VLPA/I&S Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Instructors: Wassink Offered: jointly with LING 433.

ANTH 435 Economic Anthropology (5) I&S Chief features of nonmonetary and simple monetary economics. Impact of central or metropolitan market economy and industrial technology as peripheral systems, especially of small-scale and limited monetary circulation. Development and application in anthropology of economic concepts, including Marxian. Prerequisite: either one 200-level ANTH course or LING 203.

ANTH 437 Political Anthropology and Social Change (5) I&S Study of politics from different anthropological perspectives, especially processual approaches to political change. Focused examination of cultural aspects of modern state formation in local

and regional contexts. Themes: colonialism and nationalism, regime and transitions, local politics and global processes, social construction of bureaucracy. Prerequisite: one 200-level ANTH course.

ANTH 439 Pidgin and Creole Languages (5)

VLPA/I&S Explores aspects of the linguistic structure, history, and social context of pidgin and creole languages. Creolization as one possible outcome of language contact. Examines theories of creole genesis, similarities and differences between creole and non-creole languages. Prerequisite: either ANTH 203, LING 200, LING 201, LING 203, or LING 400. Instructors: Wassink Offered: jointly with LING 430.

ANTH 442 Global Asia (5) I&S, DIV Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with GWSS 446/JSIS A 452; W.

ANTH 443 Anthropology of Modern Japan (5) I&S

Examines the problem of modernity in Japan since the late nineteenth century, with emphasis on contemporary Japan. Critically addresses previous anthropological work concerning patterns of Japanese "culture." Particular focus on the influence of modern forms of power, media, and exchange in the construction of present-day Japan. Offered: jointly with JSIS A 449.

ANTH 444 Politics of Representation in Modern China (5) I&S, DIV A. ANAGNOST Focuses on issues of representation and power in twentieth century China. Combines substantive information on modern Chinese society and culture with recent debates in social theory and the politics of representation. Major themes include Chinese nationalism, body politics, popular culture, and everyday practice. Offered: jointly with JSIS A 403.

ANTH 445 Literature and Society in Southeast Asia (5, max. 10) VLPA/I&S Focus on either Vietnam or Thailand. Provides students with opportunity to explore how those living in Southeast Asia have reflected on the radical social changes their societies

have undergone through novels, short stories, and poetry. Prerequisite: either one 200-level ANTH course or LING 203. Offered: jointly with JSIS A 447.

ANTH 446 Class and Culture in East Asia (5) I&S, DIV
Examines the nexus between culture and systems of social stratification/class in East Asia, with an emphasis on Taiwan, Korea, Japan, and China. Topics include class formation, mechanisms of social mobility and reproduction, markers of status and hierarchy, resistance, and the formation of class identity. Offered: jointly with JSIS D 443.

ANTH 448 Modern Korean Society (5) I&S Sorensen
Social organization and values of twentieth-century Korea. Changes in family and kinship, gender relations, rural society, urban life, education, and industrial organization since 1900. Differences between North and South Korea since 1945. Offered: jointly with JSIS A 448.

ANTH 449 Social Transformation of Modern East Asia (5) I&S Sorensen
Comparative study of social change in China, Japan, Korea, and Vietnam since 1945. Concentration on small-scale social units in rural and urban areas under both communist and capitalist political systems. Offered: jointly with JSIS A 405.

ANTH 450 Language and Gender (5) VLPA/I&S, DIV
Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with GWSS 450/LING 458.

ANTH 452 Explorations in Biopower (5) I&S
Explores Foucault's concept of biopower - power organized around life - from the perspectives of its theoretical mediations and its anthropological interventions. Looks at specific descriptions of what biopower is and ethnographic extensions of the concept to particular settings and experiences taking place within the modern state.

ANTH 453 Culture, Controversy, and Change: The Case of Female Circumcision (3) I&S
With female circumcision and its surrounding debates as "a tool to think with," develops a number of skills: identifying stakeholders and rhetoric in loaded

debates, assessing opposing arguments, critically evaluating scientific evidence, and situating controversial issues in their proper political, historical, social, and cultural contexts.

ANTH 454 Women, Words, Music, and Change (5) VLPA/I&S, DIV
Comparative analysis of use of myths, tales, music, and other forms of expressive culture to account for, reinforce, and change women's status and roles. Offered: jointly with GWSS 454.

ANTH 455 Areal Linguistics (3, max. 6) VLPA/I&S
Issues involved in classification of languages. Systems of classification based on structure, word order, areal features. Ways in which languages may be classified for different purposes. Processes such as borrowing, vocabulary specialization, lexical change, and language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with LING 455.

ANTH 456 Contemporary Ethnography (5) I&S
Discusses several contemporary ethnographies. Focuses on what constitutes ethnography and how ethnography is done, as well as the relationship between ethnographic description, methodology, and theory. Covers a range of geographical areas, theoretical perspectives, and literary styles.. Prerequisite: either a 100- 200-level ANTH course or LING 203.

ANTH 457 Ecological Anthropology (5) I&S
Survey of anthropological research on interaction between human societies and their environments. Logic of different subsistence systems; intensification and transformation of subsistence strategies; population regulation; ecological aspects of human nutrition, disease, spatial organization, ethnicity, social stratification, conflict, and cooperation; historical roots of current ecological crisis.

ANTH 458 Ethnobiology: Plants, Animals, and People (5) I&S
Culturally mediated relationships between human and natural environment studied in a comparative and evolutionary framework. How do peoples in diverse cultures recognize and name plants and animals and understand their relationship with nature? How is this traditional ecological knowledge applied in people's daily lives? Prerequisite: either BIO A 201, ARCHY 205, or one 200-level ANTH course.

ANTH 459 Culture, Ecology, and Politics (5) I&S, DIV

Critical studies of class, gender and race differences in environmental politics. The political-economic dimensions of ecological change. Contemporary environmental movements including the varieties of bioregionalism, deep ecology, ecofeminism, ecosocialism, environmental justice, and social ecology. Offered: jointly with ENVIR 459.

ANTH 460 History of Anthropology (5) I&S

Sources and development of leading concepts, issues, and approaches in anthropology. Findings of anthropology in relation to scientific and humanistic implications and to practical application. Main contributors to field; their work and influence. Past, present, and future perspectives, including anthropology of modern life.

ANTH 461 Historical Ecology (5) I&S/NW

Explores a global range of case studies in the historical dimension of the environment, human adaptation, and cultural change. Investigates the co-evolution of environment and culture in archaeological and historical contexts. Develops a better understanding of modern human-environmental dynamics as historically situated. In

ANTH 463 Critiques of Contemporary Capitalism (5)

I&S Karl Marx inaugurated radical reworkings of both social theory and political action. Begins with some of his seminal writings, then considers the Frankfurt School, British labor theory, and postcolonial theory. Uses these readings to understand economy and subjectivity produced through the aporias of late capitalism. .

ANTH 464 Language Politics and Cultural Identity

(3) VLPA/I&S Theories and case studies of the power of language and how it is manipulated. Multilingualism, diglossia. Role of language and linguistics in nationalism. Standardization, educational policy, language and ethnicity. World languages, language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with LING 464.

ANTH 465 Critical Anthropology of Mass Culture (5)

I&S Critical overview of theories of mass culture and their relationship to current anthropological practice. Analyses of the historical interconnections among capitalism and commodity fetishism,

modernity and representation, and media and consumption.

ANTH 466 Anthropology Honors Thesis ([1-9]-, max.

18) I&S Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

ANTH 467 Anthropology of Education (5) I&S, DIV

Uses a wide range of social theory and philosophy to investigate mechanisms which reproduce inequality and asymmetry in American education.

ANTH 468 Anthropology of Care (5) I&S

Introduces the anthropology of care, with an emphasis on ethnographic studies of care practices. Considers how care practices generate patterns of relationality and visions of the human. Explores where caring happens, who is involved in care, what counts (or does not count) as deserving of care, and how politics shapes care.

ANTH 469 Special Studies in Anthropology (3-5,

max. 15) I&S Delineation and analysis of a specific problem or related problems in anthropology. Offered occasionally by visitors or resident faculty.

ANTH 470 Minority Peoples of China (5) I&S

Interaction between China and the peoples of its periphery, including inner Asia, Tibet, northern mainland Southeast Asia, and aboriginal peoples of Taiwan. Emphasis on ethnicity, ethnic group consciousness, and role of the Chinese state. Prerequisite: one 200-level ANTH course; LING 203; either ANTH 370/JSIS A 370 or HSTAS 454. Offered: jointly with JSIS A 470.

ANTH 471 Colonialism and Culture (5) I&S, DIV

Explores the cultural, political, and historical implications of the power to colonize. Readings include ethnographic, historical, and literary works on colonialism, nationalist responses, and postcolonial positions.

ANTH 472 Case Studies in Medical Anthropology and Global Health (5) I&S

Uses multidisciplinary case studies to analyze quantitative parameters of diseases; contrast the description and analytic approaches of health sciences, anthropology, and other social sciences; integrate diverse disciplinary perspectives into cohesive information; organize

class presentations; and apply critical thinking in approaches to complex health issues. Offered: Sp.

ANTH 473 Anthropology of Science and Technology

(5) I&S/NW Introduces the study of science and technology as social and cultural phenomena. Considers both theoretical and methodological questions. Readings include key texts from interdisciplinary field of science studies as well as selected ethnographic texts. Examples taken from U.S. society and other local contexts. Prerequisite: one 200-level ANTH course.

ANTH 474 Social Difference and Medical Knowledge

(5) I&S, DIV Explores relations between medical and social categories: how social differences become medicalized; how medical conditions become associated with stigmatized social groups; and how categories become sources of identity and bases for political action. Considers classifications (race, gender, sexuality, disability) and how each has shaped and/or been shaped by medical science/practice.

ANTH 475 Perspectives in Medical Anthropology (5)

I&S Introduction to medical anthropology. Explores the relationships among culture, society, and medicine. Examples from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with HSERV 475.

ANTH 476 Culture, Medicine, and the Body (5) I&S

Explores the relationship between the body and society, with emphasis on the role of medicine as a mediator between them. Case study material, primarily from contemporary bio-medicine, as well as critical, postmodern, and feminist approaches to the body introduced within a general comparative and anthropological framework.

ANTH 477 Medicine in America: Conflicts and

Contradictions (3) I&S Introduction to the pragmatic and theoretical dilemmas of current biomedical practice with emphasis on social and cultural context. Case studies in technological intervention, risk management, and other health-related issues used to explore connections among patients' experiences, medical practices, and the contemporary social context.

ANTH 478 Introduction to the Anthropology of

Institutions (5) I&S Historical, theoretical, and ethnographic perspectives on the study of total institutions, with an emphasis on prisons and psychiatric facilities. Includes issues of subjection and subjectivity, institutional social dynamics, and social justice concerns.

ANTH 479 Advanced Topics in Medical

Anthropology (3-5, max. 15) Explores theoretical and ethnographic advanced topics in medical anthropology.

ANTH 483 Africa Living with HIV/AIDS (5) I&S

Examines the epidemiological, historical, political-economic, and social-cultural dimensions of Africa living with HIV/AIDS and the current challenges and debates in international HIV/AIDS policy and programming. Various approaches and analytical models help students grasp the complicated and multiple effects, responses, conditions, and debates surrounding the African HIV/AIDS pandemic.

ANTH 484 Ideologies and Technologies of

Motherhood (5) I&S, DIV Examines how motherhood is culturally constituted, regulated, and managed within various ideological and technological milieus. Uses ethnographies from anthropology and case studies from feminist legal theory. Topics include slave mothers, surrogate mothers, lesbian mothers, transracial mothers, co-mothers, teen mothers. Prerequisite: GWSS 200. Offered: jointly with GWSS 458.

ANTH 487 Cultures and Politics of Environmental Justice (5) I&S, DIV D. PENA

Comparative survey of environmental justice movements in the world with focus on critical studies of environmental racism, risk, and sustainable development. Provides theoretical knowledge and research methods incorporating the study of equity and autonomy in environmental impact and risk assessment and other aspects of environmental policy politics. Offered: jointly with AES 487.

ANTH 488 Agroecology (5) NW/I&S

Cross-cultural survey of agroecological research methods, theoretical problems, policy issues, and ethical debates. Local knowledge and ethnoscientific bases of alternative agriculture. Comparative political ecology of agroecosystems with a focus on indicators of social equity and ecological sustainability.

ANTH 489 Anthropology Practicum (2-9, max. 15)

Faculty-supervised internships, either on or off campus, in organizations utilizing anthropological skills in nonacademic settings. Settings may include museums, academic journals, social service or other governmental agencies, and private nonprofit service agencies.

ANTH 490 Healthcare and Aging (5) I&S Explores healthcare and aging in anthropological perspective. Introduces population aging as global phenomenon, and its social and health consequences. Considers local variations in meaning and social organization of aging and the life course. Focuses on health challenges of aging and how they are understood and addressed. Readings emphasize ethnographic studies.

ANTH 491 Honors Colloquium (2, max. 12) I&S

Introduction to anthropological research. Students read original articles and papers and discuss them with authors. Research presenters include department faculty, visiting faculty, and advanced graduate students. Credit/no-credit only.

ANTH 492 Settler Colonialism (3) Explores the varied impact of late 20th and early 21st century European settlement across the globe. Focuses on both the global legacies of colonialism and the continued socio-political movements of indigenous populations. Encourages a broad perspective on what settler colonialism is like today.

ANTH 494 Feminist Performance Ethnography: Performing Art As and At the Site of Feminist (5) VLPA/I&S

Explores the relationship between ideas and practices of feminism, performance, and ethnography through readings, writing, movement, and artistic expression. Students conduct fieldwork and use personal narrative and everyday life performance techniques to create performances that explore the potential of performance ethnography to contribute to equity, liberation, and justice.

ANTH 495 Advanced Problems in Ethnology (3-5, max. 10) I&S Current problems in ethnology. Seminar format.

ANTH 496 Alter/Native Power: Exploring Alternative Strategies from Inside Anthropology Out (5) I&S, DIV Explore, question and challenge

externally-assigned identities and approaches to ethnography and social inquiry as a means to unpack and challenge the political and economic consequences of them, such as enslavement, poverty, or genocide, in service of re-creating and re-tooling a new anthropology for liberation.

ANTH 497 Domesticating International Human Rights: Perspectives on U.S. Asylum and Refugee Law (5) I&S, DIV A. OSANLOO Examines the creation, production, and proliferation of law and legal categories relating to the status of refugees and asylum-seekers in the United States. Integrates anthropological perspectives of law's ability to create meaning in the examination of deeper implications of asylum and refugee law in American society. Offered: jointly with LSJ 425.

ANTH 498 Women's Rights and Politics in Islamic Society (5) I&S, DIV A. OSANLOO Human rights theory with women's legal rights and practice within context of the Islamic state. Introduction to debates regarding universality of human rights through examination of women's rights in Muslim context. Considers journalistic notions of homogeneity among Muslims, political nature of the Islamic state, and its mobilization of human rights. Offered: jointly with LSJ 421.

ANTH 499 Undergraduate Research (*, max. 12)

ANTH 500 Preceptorial Reading (6) For beginning graduate students who have not had adequate training in the problems, principles, and methods involved in the analysis and comparison of social and cultural systems. Not open to graduate students in the sociocultural anthropology program.

ANTH 503 Preceptorial Reading in Linguistic Anthropology (6)

For beginning graduate students who have not had prior training in the problems, principles, and methods involved in linguistic anthropology. See also course description for ANTH 203. Not open to graduate students in the linguistics program.

ANTH 507 Current Issues in Sociocultural Anthropology (2)

Biweekly presentations by participants and guest lecturers of current literature and ongoing research in topics pertaining to social, cultural, and linguistic anthropology. Prerequisite: first-year sociocultural graduate students in good

standing or permission of sociocultural faculty.
Credit/no-credit only.

ANTH 508 Current Issues in Sociocultural Anthropology (2) Biweekly presentations by participants and guest lecturers of current literature and ongoing research in topics pertaining to social, cultural, and linguistic anthropology. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty. Credit/no-credit only.

ANTH 509 Sociocultural Anthropology Problem Paper (4) All first-year graduate students in sociocultural anthropology select a topic for independent research, conduct that research, and prepare a paper of about 25-50 pages on the topic chosen. Prerequisite: first-year sociocultural graduate students in good standing or permission of sociocultural faculty.

ANTH 510 Seminar on North American Indians (3) Advanced comparative treatment of selected aspects of the Indian cultures and societies of North America.

ANTH 514 Regional Seminar (3-5, max. 15) Comparative treatment of selected aspects of cultures and societies of a particular region or area.

ANTH 515 Visual Anthropology Methods: Video (5) Visual forms of communication as tools for understanding and communicating anthropological concepts. Requires weekly readings and film viewings. Central component is the production of a video for public engagement and consumption. Offered: A.

ANTH 516 Rethinking Area Studies (5) "Area study" is critiqued for its sources of funding, relationship to governmentality, and for ignoring other forms of global linkage in its particular framing of cultural, social, and political connectivity. Designed for graduate students conducting research on, in, or across such an "area." Attempts to rethink regions.

ANTH 517 Seminar on South Asia (3) Advanced analysis of selected problems in South Asian ethnology and social structure. Prerequisite: ANTH 412.

ANTH 518 Advanced Qualitative Methods in Anthropology and Public Health (5)

ANTH 519 Advanced Qualitative Methods in Anthropology and Public Health (5) Provides students with both a theoretical foundation in qualitative approaches to research in anthropology and public health and in-depth training in qualitative data management, analysis, interpretation, and presentation. Focuses on how to frame research questions, design, appropriate research strategies that incorporate qualitative methods, and analyze data. Offered: jointly with G H 538; even years.

ANTH 521 Seminar on the Anthropological Study of Religion (3, max. 9) Advanced seminar in the anthropological study of religion designed for students who have a background in the theory and applications of theory developed in the anthropological study of religion. Seminar topics vary each quarter. Prerequisite: ANTH 422 and graduate standing; permission of instructor for graduate students in Comparative Religion.

ANTH 522 Peoples and Cultures of Central and Inner Asia (5) Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with JSIS D 572/NEAR E 558.

ANTH 523 Seminar on Religious and Political Violence (5) *Robinson* Employs ethnographic studies and anthropological theory to examine the relationships between culture and power in the analysis of religious and political violence. Topics include modernity; secularisms and fundamentalisms; ritual, sacrifice, and martyrdom; law, rights, and subject-making. Offered: jointly with JSIS B 523.

ANTH 524 Current Issues in Medical Anthropology and Global Health (2) Guest speakers showcase local expertise in the field. Speakers share information about the path that led them to research in MAGH, and raise current research questions in their field of expertise. Credit/no-credit only.

ANTH 525 Seminar in Culture Processes (3, max. 6)

The concept of process and its application to the study of culture.

ANTH 526 Political Islam and Islamic

Fundamentalism (3/5) *Robinson* Examines political Islam as a modern phenomenon produced at the intersections between localized and globalized political cultures and between political, religious, and social authority. Focuses on anthropological studies to examine how Islamic publics produce moral judgments about political practices. Offered: jointly with JSIS B 526.

ANTH 527 Ethnicities, Nations, and Cultural Identities (3) Exploration of how cultural differences have been represented in ethnic and national narratives and how these narratives have shaped identities and social relations.

ANTH 528 Gender and Sexuality in China (5)

Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform. Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with GWSS 528/JSIS A 528.

ANTH 530 Dialectology (3) The principles of dialect deviation as related to linguistic structure and usage. Prerequisite: LING 452, LING 462, LING 508, or permission of instructor. Offered: jointly with LING 530.

ANTH 532 Sociolinguistics I (5) Examines social variation in the phonology, morphology, syntax, and lexicon of languages and dialects. Includes nonstandard language, diglossia, pidgins and creoles, gender differences, bi- and multilingualism, ethnography of speaking, and language attitudes. Prerequisite: either LING 200 or LING 400. Instructors: Evans, Wassink Offered: jointly with LING 532; S.

ANTH 533 Law, Liberalism, and Modernity (5)

Examines relationships between law, culture, and power through post-structuralist theories that consider subjectivity, agency, and identity. Explores connections between modern liberal law and the body, possessive individualisms, and discourses of

rights. Topics include rights-talk, globalization, biopolitics, subject-making, modern nation-states, the rule of law, neo-liberalism, and legal cultures.

ANTH 535 Research Issues in Demography and Population Studies (1-2, max. 7) Interdisciplinary seminar on current research issues in demography and population studies. Critical analysis and discussion of readings drawn from anthropological, economic, geographic, and sociological approaches. Credit/no-credit only. Offered: AWSp.

ANTH 536 Seminar in Visual Anthropology (3-5)

Significance of anthropological cinema and photography placed in historical perspective. Screening of films to determine the role of the anthropologist as filmmaker, as well as the role of the filmmaker as anthropologist.

ANTH 537 Political Anthropology and Law (3, max. 6) Seminar on special topics in politics and law and their interrelationships.

ANTH 539 Social Movements in Contemporary India (5) *P. RAMAMURTHY* Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with GWSS 539/JSIS A 531.

ANTH 540 Anthropology of Place (5) Explores a variety of ways that "place" has been studied and theorized. Attention paid to places as they are sensed, inscribed, practiced, narrated, scripted, created, and reclaimed. "Place" also discussed in relation to issues of the environment, travel, diaspora, race, class, and gender.

ANTH 541 Cultural Aspects of International Development (3) Emergence of development as an aspect of late colonialism and the decolonization process. Ways in which development came to visualize social change in sectoral terms like rural land use, cities, and education, while objectifying people in target groups. Relationships between development and modernity, and development and globalization.

ANTH 543 Seminar in Anthropology and Political Theory (5) Examines the role of political theory in contemporary anthropology. Designed to work through particular thinkers or constellations of thought that inform anthropological thinking today. Content dependent upon instructor, but may include such topics as Marx, Weber, and Durkheim; Foucault, the Anthropology of Reason; and Frankfurt School.

ANTH 549 Dance Performance Ethnography (3)
McMains Theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses on dance methods and theories. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance art. Offered: jointly with DANCE 550; W.

ANTH 550 Field Techniques in Ethnography (5)
Techniques of collecting, ordering, and utilizing ethnographic data in the field. Problems of rapport, elicitation, observation, interpretation, and ethics. Credit/no-credit only.

ANTH 551 Research Design (5) Focuses on the basic components, format, and writing style of grant proposals. Works through various stages of proposal writing, including titles, abstracts, introduction, theoretical orientations, significance, methodology, data analysis, etc. Discusses funding sources, human subjects reviews, and preparing budgets. Prerequisite: permission of instructor.

ANTH 552 Practicum in Ethnographic Research (3)
Techniques of data recording, analysis, and writing for the field ethnographer. Not recommended for non-anthropology graduate students. Prerequisite: ANTH 550; ANTH 551.

ANTH 556 The Evolution of the Family (3) Biological evolution of species-specific behaviors and forms of sociality linked to human mating, reproduction, and parenting. Cultural evolution of human systems of kinship and marriage as fitness-maximizing adaptations to a wide range of habitats. Prerequisite: upper-division course in evolutionary theory, population genetics, behavioral ecology, primatology, or animal behavior.

ANTH 559 Seminar in Language and Culture (3, max. 9) Theoretical and methodological problems in language and culture.

ANTH 560 Discourse and Culture (5) Exploration of discourse and narrative as culturally constitutive activities. Critical examination of the social implications of cultural variation in discourse. Techniques of discourse analysis in anthropological research.

ANTH 561 Seminar in Methods and Theories (3, max. 9)

ANTH 562 Clinically Applied Anthropology (3)
Anthropology as it relates to interdisciplinary delivery of culturally relevant healthcare. Cultural variation in illness beliefs and behavior, types of healing practices, illness prevention, social support networks. Prerequisite: graduate standing, permission of instructor. Offered: jointly with NURS 562.

ANTH 565 History of Sociocultural Anthropological Theory (5) First year core class that examines concepts at the heart of contemporary anthropological theory - race, culture, indigeneity, gender and sexuality, experience, ethnography, meaning, rationality, and representation, among others - emerged as foundational categories of analysis from the late nineteenth century onwards as anthropology came to be gradually defined as a distinct discipline of study. Prerequisite: graduate standing in anthropology or permission of instructor. Offered: A.

ANTH 566 Theory of Sociocultural Anthropology (5)
Second core-course sequence for the beginning graduate student in sociocultural anthropology in which the development of theory is analyzed and emphasis is placed on the relation between theory and a growing body of ethnographic data. Prerequisite: ANTH 565.

ANTH 567 Theory of Sociocultural Anthropology (5)
Third core-course sequence for the beginning graduate student in sociocultural anthropology in which the development of theory is analyzed and emphasis is placed on the relation between theory and a growing body of ethnographic data. Prerequisite: ANTH 566.

ANTH 569 Special Topics in Sociocultural Anthropology (3-5, max. 15) Delineation and analysis of a specific topic or set of related topics in sociocultural anthropology.

ANTH 570 Environmental Anthropology (5) Current issues in the study of human environment interaction from a cross-cultural perspective: ecological adaptation and maladaptation; ethnoecology and indigenous knowledge; anthropogenic environmental change; political ecology of "development;" interrelations of cultural and biological diversity; conflicts over indigenous land use and property rights, environmental justice, resource conservation, and sustainability.

ANTH 572 Environmental Anthropology Research Methodology Colloquium (2, max. 10) Environmental anthropology research methodology and practice. Presentations by faculty and advanced students, hands-on exercises, and extensive discussion. Students at various stages in the program learn practical details of current methods. Limited to environmental anthropology PhD students. Credit/no-credit only.

ANTH 573 Current Issues in Environmental Anthropology (2, max. 10) Presentation and discussion of current research and scholarly literature in environmental anthropology and related fields. Prerequisite: graduate standing in any field of anthropology or permission of instructor. Credit/no-credit only.

ANTH 574 Culture, Society, and Genomics (3) B. MCGRATH Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with NURS 582/PHG 521; Sp.

ANTH 575 Cultural Construction of Illness: Seminar in Medical Anthropology (5) Historical and comparative examination of depression, neurasthenia, somatization, hypochondriasis, and hysteria. Anthropology of psychosomatics and psychiatry, including cultural analysis of selected biomedical, indigenous folk medical, and popular common-sense conceptualizations of illness.

ANTH 578 Special Topics in the Anthropology of Institutions (5) Explores theoretical issues.

ANTH 580 Presenting Research Effectively (2) Designed to help advanced graduate students develop the ability to present research projects effectively in a variety of formats relevant to the academic job-search process (c.v., job letter, interview, etc) . Faculty and alumni speakers share information, advice, and guidance regarding the job-search and the various paths toward meaningful employment. Credit/no-credit only.

ANTH 581 Dissertation Writing (3) Students experiment with different styles of anthropological writing. They apply writing techniques and styles to their own material. Students peer review for one another. Credit/no-credit only.

ANTH 583 Africa Living with HIV/AIDS (5) Examines the epidemiological, historical, political-economic, and social-cultural dimensions of Africa living with HIV/AIDS and the current challenges and debates in international HIV/AIDS policy and programming. Various approaches and analytical models help students grasp the complicated and multiple effects, responses, conditions, and debates surrounding the African HIV/AIDS pandemic.

ANTH 584 Ways of Speaking (5) Theory and literature of the ethnography of communication, with special emphasis on the descriptive-comparative approach to culturally patterned styles of communicative conduct. Offered: jointly with COM 584.

ANTH 592 Settler Colonialism (3) Explores the varied impact of late 20th and early 21st century European settlement across the globe. Focuses on both the global legacies of colonialism and the continued socio-political movements of indigenous populations. Encourages a broad perspective on what settler colonialism is like today.

ANTH 599 Effective Teaching of Anthropology (1) Class required of all graduate students who accept teaching assistantships: instruction in teaching methods and issues, e.g., professional ethics, preparing and delivering lectures, leading discussion groups, test writing and grading, diversity in the classroom. Credit/no-credit only.

ANTH 600 Independent Study or Research (*-)

ANTH 700 Master's Thesis (*-) Credit/no-credit only.

ANTH 800 Doctoral Dissertation (*-) Credit/no-credit only.

ARCHAEOLOGY

ARCHY 101 Exploring Archaeology (5) I&S

Introduces perspectives from archaeology on the long term history of the diversity and the dynamics of human life. Examines how archaeologists gather and use data and how that information is relevant to contemporary society. Concepts and methods introduced through readings focus around a theme that varies such as environmental issues, warfare, and migration.

ARCHY 105 The Human Past (5) I&S Explores human cultural and biological evolution: how ancestors 2,500,000 years ago were like us but still different, Neanderthals and their extinction, social/economic revolutions from foraging to farming to states and empires, setbacks, failures, relationships with social and natural environments, and the role of technology. Examines the astonishing variety of adaptations humans have made.

ARCHY 109 Archaeology in Film (5) I&S Deals with depictions of archaeology by and for non-archaeologists and implication of those depictions at the intersection of archaeology, the human past, and popular culture.

ARCHY 205 Principles of Archaeology (5) I&S

Techniques, methods, and goals of archaeological research. Excavation and dating of archaeological materials. General problems encountered in explaining archaeological phenomena.

ARCHY 208 Introduction to Archaeological Data Science (5) NW Pyramids, Stonehenge, Nazi Death Camps: Pseudo-archaeology makes radical claims about such sites, but what do the data reveal? Tackles false claims about the human past using archaeological data. Hands-on experience of data analysis and visualization using the software program R in computing laboratories.

ARCHY 212 Introduction To Ancient Egyptian Archaeology (5) VLP/IA&S *Stephanie Selover* Survey of the archaeology, art, and architecture of ancient Egypt from the prehistoric cultures of the Nile Valley (c. 10,000 BCE) until the end of the New Kingdom (c.1000 BCE) , exploring Egyptian gods, divine kings, pyramids, temples, mummification, society, government, religion, medicine, magic, sex, childbirth, and death. Offered: jointly with NEAR E 209.

ARCHY 234 Trash and Dirt (5) I&S How do we develop a sense of disgust? What is the life cycle of cultural objects? How do people "clean up"? Where does your trash go? What can sh*t tell us about human history? What is considered "dirty" in different cultural contexts and different historical moments? Archaeologically centered exploration of diversity of human practices in defining and handling dirty stuff.

ARCHY 235 Exploring Graffiti: Combining Landscape Archaeology and Data Science (5) I&S Hidden stories behind Seattle's graffiti, combining techniques from archaeology and data science. What does graffiti say about the city? About anti-establishment struggle? About social vindications? Is it gendered? What types of graffiti populate the city? Where? Is graffiti opportunistic? Territorial? Are there graffiti hotspots? What does Seattle's graffiti ecology look like?

ARCHY 236 The Mystery behind the Material World (5) I&S Things are everywhere. We make them and they also make us. Things are evocative, aesthetic, and unnerving. They define us. We need them to communicate, to remember, to govern. But things need us too. This course is an introduction to the study of things, architecture, and so on from an interdisciplinary perspective. Topics such as identity, memory, commodities/gifts, cognition, and agency are explored through the analysis of the material world. Offered: jointly with ANTH 236.

ARCHY 269 Special Topics in Archaeology (3-6, max. 12) I&S Investigation of special topics in archaeology focusing on developing basic analytical, practical, and numerical skills.

ARCHY 270 Field Course in Archaeology (12) I&S Introduction to field acquisition of archaeological

data through survey and excavation. On-going field projects; recovery and recording techniques.

ARCHY 272 Short Field Course in Archaeology (5)

I&S/NW Learn how archaeologists detect human occupation on the landscape by surveying, excavating, and crating evidence of the past. Students learn from start to finish the process of archaeological field investigation. Location may change from year to year.

ARCHY 299 Archaeological Laboratory Techniques

(1-3, max. 12) I&S Laboratory procedures geared to one specific archaeological research project. Archaeological collection, its processing and curation, how archaeological materials are processed, and how significance is determined. No more than 5 credits may be used toward an anthropology major. Prerequisite: either ARCHY 105 or ARCHY 205.

ARCHY 303 Archaeology of Africa and Eurasia (5)

I&S Explores African and Eurasian prehistory from beginnings of human culture to rise of states and empires. Examines first tools made by humans, spread of humans out of Africa, origins of agriculture, and rise of state society. Covers Africa, Near East, Egypt, China, India, Europe. Prerequisite: ARCHY 205.

ARCHY 304 Archaeology of the Americas (5) I&S

Explores the history of earliest Americans, beginning with crossing of land bridge between Asia and North America and eventual spread over the Americas. Highlights prehistory and best examples of western hemisphere's states and empires. Covers Mexico, Yucatan, Peru, southwestern and eastern United States, Washington. Prerequisite: ARCHY 205.

ARCHY 309 Archaeology of Mainland Southeast

Asia (5) I&S Covers the archaeology of mainland Southeast Asia from the first colonization by hominins to the appearance of written texts, especially in Thailand, Cambodia, Laos, Vietnam, and Myanmar. Emphasizes methods of acquiring archaeological data and addressing current controversies about mainland Southeast Asia prehistory. Prerequisite: ARCHY 205.

ARCHY 313 Ancient Technologies of the Near East

(5) I&S Introduction to ancient pyrotechnic technologies. Covers the laboratory methods used

by modern archaeologists to study ancient ceramics, glass and metals, the methodologies behind the creation of these materials, and the invention of these technologies in the Near East, with brief comparisons with China and the New World. Offered: jointly with NEAR E 313.

ARCHY 319 Archaeology of Australia (5) I&S

Archaeology of Australia with an emphasis on understanding of the evidence and interpretation of both singular events and long-term processes in prehistory. Prerequisite: ARCHY 205.

ARCHY 320 Archaeology of the Northwest Coast (5)

I&S Origins, development, and variation of Pacific Northwest cultures, focusing particularly on Washington. Adaptations to maritime and interior environments. Artifacts from a variety of archaeological sites. Technological, functional, and historical significance of Northwest artifacts.

ARCHY 325 Archaeology of Island Southeast Asia

and the Pacific (5) I&S History of the human occupation of the South Pacific Islands, especially Indonesia, Philippines, Micronesia, Melanesia, and Polynesia. Focus on current debates about human migrations, long distance maritime trade, political structures, culture contact, and colonialism. Emphasis on the analysis of the primary archaeological and documentary data. Prerequisite: ARCHY 205.

ARCHY 345 Global Ethnoarchaeology (5) I&S

Examines ethnoarchaeological techniques, practices and hands-on applications to understanding how humans create and occupy archaeological sites and make artifacts from across the world.

ARCHY 369 Special Problems in Archaeology (3-6,

max. 12) I&S Delineation and analysis of a specific problem or related problems in archaeology focusing on developing research and scholarly communication skills.

ARCHY 372 Archaeological Field Recording

Techniques (5) I&S Teaches hands-on archaeological field techniques. Prerequisite: any 200 level ARCHY course

ARCHY 373 Principles of Archaeological Field

Recording (3) I&S Provides students the theoretical, technical, and mathematical basis for using different

recording and mapping devices (e.g. Total stations, DGPS, GIS) used in archaeology. Prerequisite: any 200 level ARCHY course

ARCHY 377 Archaeology of the Arctic (5) I&S

Archaeological history of the circumpolar arctic and subarctic from Pleistocene to the nineteenth century. Variability in human adaptation and social change in extreme cold environments such as Eurasian tundra, North Pacific rim, Beringia, and North American high arctic. Prerequisite: ARCHY 205.

ARCHY 378 Prehistory of the Arid West (5) I&S

Archaeology of arid western North America, with particular emphasis on the earliest peoples of this region (and on the peopling of the New World in general) , and on the prehistoric hunter-gathers of the Great Basin and Southwest.

ARCHY 403 The Archaeology of Landscapes (5)

I&S/NW Study of landscapes in archaeology. Methods for landscape research: historic maps, diaries, aerial photographs, geophysical and satellite imagery, etc. Archaeological landscape surveys: principles and limitations. Review of various theoretical approaches. Examination of key case studies, issues on landscape heritage, and indigenous landscapes. Prerequisite: any 200 level ARCHY course

ARCHY 410 Introduction to Archaeological Theory (5) I&S

Explores core theories guiding archaeological research for the past half century. Read and discuss exemplary expositions of different theoretical paradigms and their applications. Short essays and mock debates will challenge students to understand the goals and assumptions of different approaches, and the role they play in effective research. A final paper will go deeper on a topic of choice. Prerequisite: ARCHY 205 or permission of instructor

ARCHY 459 Special Topics in Archaeological Science (3-5, max. 10) I&S

Prerequisite: ARCHY 205

ARCHY 465 Public Archaeology (5) I&S Examines archaeology as practiced, regulated, represented, and paid for in the world outside of academia. Reviews the development of cultural resource management laws in the context of other social changes, investigates archaeology job opportunities outside of academia, and discusses how the public

learns about and funds archaeology. Prerequisite: ARCHY 205.

ARCHY 466 Archaeology Honors Thesis ([1-9]-, max. 18) I&S Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

ARCHY 467 Research Ethics in Archaeology: Conservation, Accountability, and Stewardship (5) I&S

Advanced survey of ethics issues that arise in archaeology including: accountability to descendent communities; professional codes of conduct; response to looting and commercial exploitation of the record; and the implications of a conservation ethic and principles of stewardship for archaeological practice.

ARCHY 469 Special Studies in Archaeology (3-6, max. 18) I&S

Consideration in detail of specific archaeological topics, either methodological or substantive in content, of current interest. Offered occasionally by resident, new, or visiting faculty. For advanced undergraduates and graduate students. Prerequisite: ARCHY 205.

ARCHY 470 The Archaeology of Extinction (5) I&S/NW

Uses archaeological and paleoecological data to examine the argument that prehistoric peoples caused vertebrate extinction, from the late Ice Age extinction of ground sloths and saber-toothed cats in North America to the extinction of moas in New Zealand some 500 years ago.

ARCHY 472 Historical Archaeology (5) I&S Theory and method in historical archaeology of the Americas. Prerequisite: ARCHY 205; ARCH 473 which must be taken concurrently.

ARCHY 473 Historical Archaeology Laboratory (3) I&S

Provides students training in historical material culture analysis. Prerequisite: ARCHY 205; ARCHY 472 which must be taken concurrently.

ARCHY 480 Advanced Archaeological Analysis: Ceramics (6) I&S

Surveys history of ceramic studies in archaeology and introduces analytical methods involving ceramic function, style, unit construction and sampling, use wear, and trade and exchange. Laboratory provides hands-on experience with prehistoric ceramics, and applies various techniques

for studying composition, form, manufacturing methods, and firing strategies. Prerequisite: ARCHY 205.

ARCHY 481 Zooarchaeology (6) NW/I&S Seminar on techniques and methods employed in analysis of faunal remains from a wide range of Pleistocene and Holocene settings, including archaeological sites, coupled with a laboratory focusing on identification of faunal remains from these settings.

ARCHY 482 Geoarchaeology (3) I&S Seminar on the identification, analysis, and interpretation of sediments and soils associated with archaeological remains. Covers geomorphology, geochemistry and geophysics in archaeology. Prerequisite: ARCHY 205.

ARCHY 483 Lithic Technology (5) NW, QSR Current approaches to analysis of lithic technology, including types of information obtainable (technological, functional, social, ideological) and constraints affecting the formation and analysis of lithic assemblages. Lectures and seminars surveying recent research and debates.

ARCHY 484 Archaeological GIS (5) I&S Teaches students the basics of GIS through a series of hands-on tutorials using archaeological datasets, and provides them with a critical view of the application of this tool within the field of archaeology. Prerequisite: any 200 level ARCHY course

ARCHY 486 Geoarchaeology Laboratory (3) I&S Laboratory course covering a variety of geoarchaeological techniques, with experiments designed to illustrate major concepts. Prerequisite: ARCHY 205; ARCHY 482, which may be taken concurrently.

ARCHY 487 Dating Methods in Archaeology (6) NW Introduces students to the theory and method of dating in archaeology. The class will be divided into two parts. The first part will (a) give a general overview of dating theory, (b) survey several of the main dating methods, and (c) provide discussion of particular applications presented by the students. The second part will focus on the methodology and technique of one particular dating method, luminescence dating.

ARCHY 488 Lithic Technology Laboratory (3) Application of methods to archaeological problems

relating to stone artefacts. Basic lab skills to prepare for advanced research. Prerequisite: ARCHY 205.

ARCHY 489 Archaeology Practicum (2-9, max. 15) I&S Faculty-supervised internships either on or off campus in organizations utilizing archaeological skills in academic or non-academic settings. Includes cultural resource management companies, government agencies, private non-profit organizations, tribal governments, and museums.

ARCHY 490 Museum Curation Practicum: Archaeology (1-5, max. 15) Application of museological training in curation of archaeological collections including ethnographic, geological, or zoological collection materials in the Burke Museum. Supervised work ranges from fundamental collection documentation and research to preventive conservation, storage, and other special curation projects:

ARCHY 494 Archaeological Data Visualization (5) NW Data visualization, an essential component for discovering, understanding and communicating information provides a solid background in the theory and practice of data visualization as it applies to archaeological datasets and paleo-environmental datasets. Uses graphical packages found in the Python ecosystem to explore elementary concepts in archaeological narratives, visually.

ARCHY 495 Quantitative Archaeological Analytic Techniques (5) NW, QSR Introduction to quantitative approaches to archaeological problems; data screening, numeric methods of classification and identification, graphical and computer-based seriation techniques, and the analysis of spatial patterning in artifact distributions.

ARCHY 496 Computational Quantitative Methods in Archaeology (3) NW Introduction to basic programming skills, computational solutions and visualization techniques needed to explore and investigate archaeological datasets.

ARCHY 499 Undergraduate Research (*, max. 12)

ARCHY 508 Histories of Archaeological Theory and Practice (5) Advanced history of archaeological theories and traditions of research practice. Topics include the formation of scientific and humanistic research traditions in anthropological archaeology;

comparative global histories of archaeology; object biographies and histories of craft practice in emerging research traditions; and critical histories of inequality and marginality in archaeology.

ARCHY 509 Archaeology and Explanation (5)

Analytical and historical examination in archaeology and philosophy of science. Prerequisite: permission of instructor.

ARCHY 510 Introduction to Archaeological Theory

(5) Explores core theories guiding archaeological research for the past half century. Read and discuss exemplary expositions of different theoretical paradigms and their applications. Short essays and mock debates will challenge students to understand the goals and assumptions of different approaches, and the role they play in effective research. A final paper will go deeper on a topic of choice.

Prerequisite: ARCHY 205 or permission of instructor

ARCHY 512 Looting and Loss (5) Explores the history and context of the recent politicization, looting, and destruction of archaeological and cultural sites in the Middle East and beyond, set against the background of museums, antiquities laws, and the ethical considerations of modern archaeologists.

ARCHY 513 Ancient Technologies of the Near East

(5) Introduction to ancient pyrotechnic technologies. Covers the laboratory methods used by modern archaeologists to study ancient ceramics, glass and metals, the methodologies behind the creation of these materials, and the invention of these technologies in the Near East, with brief comparisons with China and the New World. Offered: jointly with NEAR E 513.

ARCHY 519 Archaeology of Australia (5) *B. Marwick*

Archaeology of Australia with an emphasis on understanding of the evidence and interpretation of both singular events and long-term processes in prehistory. Recommended: A background at least equivalent to a bachelor's degree in the field or a related interdisciplinary field Offered: AWSpS.

ARCHY 520 Principles of Archaeological Theory (5)

Review of principles of archaeological theory. Student presentation of research on archaeological theory and seminar discussion or presentations. Open only to first-year graduate students in anthropology.

ARCHY 525 Archaeology of Island Southeast Asia and the Pacific (5)

History of the human occupation of the South Pacific Islands, especially Indonesia, Philippines, Micronesia, Melanesia, and Polynesia. Focus on current debates about human migrations, long distance maritime trade, political structure, culture contact, and colonialism. Emphasis on the analysis of the primary archaeological and documentary data.

ARCHY 530 Prehistory of the Northwest Coast (5)

ARCHY 535 Exploring Graffiti: Combining Landscape Archaeology and Data Science (5)

Hidden stories behind Seattle's graffiti, combining techniques from archaeology and data science. What does graffiti say about the city? About anti-establishment struggle? About social vindications? Is it gendered? What types of graffiti populate the city? Is graffiti opportunistic? Territorial? Are there graffiti hotspots? What does Seattle's graffiti ecology look like?

ARCHY 545 Ethnoarchaeology (5)

Examines ethnoarchaeological research, theory, techniques, practices, and hands-on applications to understand how humans create and occupy contemporary sites in order to better understand archaeological sites. Part of the requirement will be to explore processes of creating an artifact from a culture.

ARCHY 560 Seminar in Archaeological Methods (5, max. 20)

Basis, limitations, and applications of a particular archaeological analytical method, or closely related set of methods. Prerequisite: permission of instructor.

ARCHY 561 Dating Methods in Archaeology (6)

Theory and method of dating in archaeology. How archaeologists determine time, in both relative and absolute senses. Methodology of stratigraphy, seriation, radiocarbon dating, dendrochronology, obsidian hydration dating and other methods. Special emphasis on, and laboratory experience in, luminescence dating.

ARCHY 570 Seminar in Archaeological Theory (3-6, max. 18)

Detailed consideration of a particular archaeological theory or closely related set of theories, including their methodological and epistemological bases.

ARCHY 573 Indigenous Archaeology (5) Examines theory, method, and ethical issues raised by indigenous approaches to archaeological practice. Prerequisite: permission of instructor.

ARCHY 574 Meta-archaeology: Philosophy and Archaeology (1-5, max. 5) Examines philosophical issues raised in and by archaeology, including theories of explanation and model building, analyses of evidential reasoning and hermeneutic interpretation, debates about ideals of objectivity and about science and values. Offered: jointly with PHIL 574.

ARCHY 575 Archaeological Field Research Design (6) Nature of the archaeological record, and methods and techniques of field research, to illustrate range of data sources and modern techniques of general applicability. Practical experience in mapping, map interpretation, sampling design, remote sensing, photogrammetry, and research proposal writing. Prerequisite: permission of instructor.

ARCHY 576 Designing Grant Proposals (5) Design and writing of grant proposals for archaeological research at both dissertation and senior investigator levels, with particular emphasis on National Science Foundation structure and requirements. Prerequisite: upper-level graduate standing and permission of instructor.

ARCHY 579 Approaches to the Material World (5) Exploration of major theoretical approaches used to understand the relationship between people, the material world, and objects (material culture).

ARCHY 599 Teaching Archaeology (2-6, max. 12) Provides instruction in archaeological pedagogy. Includes syllabus development, text selection, lesson planning and delivery, lab section planning, assessment and grading strategies, technological support, staff management, and troubleshooting.

ARCHY 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

ARCHY 601 Internship (3-10, max. 10) Credit/no-credit only.

BIOLOGICAL ANTHROPOLOGY

BIO A 100 Evolution and Human Behavior (5) I&S/NW Introduction to evolution by natural selection, examining the light it can throw on human biology and behavior in such areas as the nature of sex differences, sexual conflict, and conflict between parents and children. Offered: jointly with BIOL 108.

BIO A 101 Human Biological Diversity (5) NW Exploration of human biological variation, including skin color, body form, blood groups, genetics, and reproductive strategies. Introduction to the theory of evolution through natural selection. Offered: A.

BIO A 136 Our Inner Primate (5) NW/I&S Nonhuman primates (NHPs) are humans' closest living relatives, though the relationship is complex and ethically fraught. Explores how NHPs have influenced the way humans think about culture, art, music, religion, language, biomedical research, conservation, and the way humans perceive themselves.

BIO A 201 Principles of Biological Anthropology (5) NW Evolution and adaptation of the human species. Evidence from fossil record and living populations of monkeys, apes, and humans. Interrelationships between human physical and cultural variation and environment; role of natural selection in shaping our evolutionary past, present, and future. Offered: AWSpS.

BIO A 206 Plagues and Peoples (5) I&S/NW Infectious diseases have shaped human culture, biology, and history, in a remarkable array of ways for different pathogens and different societies. Uncovers why, by considering in turn the biology, demography, and cultural history of epidemics. Students develop a broader understanding of biocultural approaches to human disease. Offered: Sp.

BIO A 208 Sex and Evolution (5) I&S/NW Addresses the evolution of sexual reproduction and mating behavior, particularly as exhibited by humans. Focuses on concepts such as natural selection, sexual selection, and kin selection. Demonstrates how evolution can inform our understanding of sexual strategies, conflict, and orientation, as well as marriage, parenthood, and mate preferences.

BIO A 269 Special Problems in Biological Anthropology (3-6, max. 12) I&S/NW Explores a specific problem or set of problems in biological anthropology with a focus on understanding how the problem is framed and communicated using different theoretical and methodological frameworks.

BIO A 270 Human and Comparative Anatomy (5) NW Introduction to the primate anatomy. The anatomy is described in detail.

BIO A 300 Evolutionary Biology of Women (5) NW Explores evolutionary influences on human female biological development and physiological expression from puberty through menopause. Applies a biocultural perspective, encompassing ecological and cultural influences, in examining variation in these biological processes and expressions across and within populations. Prerequisite: BIO A 101 or BIO A 201

BIO A 344 Applied Biomechanics of Human Movement (5) NW, QSR Explores human motion using the principles of Newtonian mechanics, including kinematics and kinetics of movement. Recommended: high school trigonometry.

BIO A 348 Evolutionary Biology and Human Diversity (5) NW Examines human biological diversity in the context of our primate history with modern evolutionary theory as the framework. Prerequisite: BIO A 201.

BIO A 350 Men's Health across the Lifespan (5) I&S Explores demographic, biological, epidemiological, psychological, sexual, sociological, cultural, and economic perspectives on the health of males.

BIO A 351 Principles of Evolutionary Medicine and Public Health (5) NW Introduces evolutionary theory and explores evolutionary causes of health and disease. Considers how natural selection and the legacies of our human, primate, and deeper ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups.

BIO A 355 Evolutionary Medicine and Public Health (3) NW Explores evolutionary causes of health and disease. Considers how natural selection and the

legacies of our human, primate, mammalian and bacterial ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups. Prerequisite: either BIO A 201 or BIOL 180. Offered: jointly with BIOL 385.

BIO A 369 Special Issues in Biological Anthropology (2-6, max. 12) NW Exploration and analysis of a specific issue in biological anthropology with a focus on critical analysis on methodological approaches and theoretical frameworks.

BIO A 370 The Nonhuman Primates (5) NW Origins, major evolutionary trends, and modern taxonomic relationships of the nonhuman primates. Their distribution and habitat in relation to behavioral and morphological adaptations and their status as endangered species.

BIO A 372 Uses and Abuses of Evolutionary Views of Human Behavior (5) I&S/NW Interaction of human behavior and biology as it has been interpreted within an evolutionary framework. Discusses various challenges to Darwinian theory, particularly Lamarckism and creationism. Topics include biological determinism as exemplified by racism, myths of human origins, the clash between biological and cultural determinism, and modern genetics and behavior. Prerequisite: BIO A 201

BIO A 382 Human Population Biology (3) NW Explores human fertility and mortality, and their relationships to the size and structure of populations through time. Emphasizes the biological and cultural determinants of these life course events in evolutionary perspective. Introduces the quantitative tools needed to understand these phenomena, including formal demography, epidemiology, and population genetics. Prerequisite: BIO A 201.

BIO A 387 Ecological Perspectives on Environmental Stress, Adaptation, and Health (5) NW How human populations respond to environmental stressors in biological-behavioral terms and the relationship of this adaptational process to health. Nutritional, climatic, and sociocultural stress and associated patterns of birth, disease, and death throughout human history in hunting, gathering, farming, pre-

industrial, and industrial societies. Prerequisite: BIO A 201.

BIO A 388 Human Fossils and Evolution (5-) NW

First of a two-part series. Evolution of human anatomy and behavior as adaptations to changing environments. Human fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Prerequisite: either BIO A 201 or BIOL 180.

BIO A 389 Human Fossils and Evolution (-5) NW

Second of two-part series. Evolution of human anatomy and behavior as adaptations to changing environments. Human fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Prerequisite: BIO A 388. Offered: S.

BIO A 409 Human Sexual Selection (5) NW

Application of sexual selection theory to humans. Explores current literature, including research methods, ongoing debates, and relationship between data and theory. Examines topics such as sexual dimorphism, mate choice, intra-sexual contests, sperm competition, sexual conflict, and reproductive outcomes. Prerequisite: BIO A 208.

BIO A 413 Human-Primate Interface: Implications for Disease, Risk, and Conservation (5) NW A

multidisciplinary approach to exploring the transmission of pathogens at the human-primate interface. Delves into the challenges of mitigating the impact of primate-borne infectious diseases on public health as well as conserving free-ranging primate populations in the twenty-first century. Offered: Sp.

BIO A 420 Anthropological Research on Health Disparities (5) I&S

Students conduct original research on the social determinates of health disparities in populations residing in King County, Washington. Students gain experience in qualitative research methods, and integrate primary data analysis with information in the published literature on determinants of health. Prerequisite: ANTH 215.

BIO A 423 Social Networks and Health: Biocultural Perspectives (5) I&S Examines the many ways that social interactions positively and negatively influence

our health, and vice versa.. Considers why such influences are important to understand, how one measures them, what recent research has shown, and explores how they relate to other health determinants, both biological and cultural.

BIO A 450 Biodemography Seminar (5) I&S/NW

Introduction to theory, methods, and literature of biodemography. Examines biological mechanisms underlying patterns of aging, mortality, fertility, and population growth and decline. Includes readings from anthropology, sociology, demography, evolutionary biology, molecular biology, and epidemiology. Covers prehistoric, historic, and modern human populations, and non-human model systems. Offered: W.

BIO A 454 Hormones & Behavior (5) NW

Bidirectional interactions between human behavior and hormonal responses, with emphasis on stress, biological rhythms, challenge, and arousal. Examination of logistical and ethical issues related to biomarker data collection in anthropological, biodemographic, and epidemiological research. Co-requisite: BIO A 455.

BIO A 455 Laboratory Methods in Hormones & Behavior (3) NW

Introduction to the theory and methods of laboratory-based research on human behavior and hormonal responses, with emphasis on stress, reproductive functioning, and prosociality. Covers lab methods for enzyme-linked immunosorbent assays (ELISAs) and their application in anthropological, biodemographic, and epidemiological research. Co-requisite: BIO A 454.

BIO A 459 Laboratory Methods in Anthropological Genetics (5) NW

Introduction to the theory and methods of laboratory-based research in anthropological genetics. Covers laboratory methods for sample collection, DNA extraction, genotyping, analysis, emerging molecular genetics technologies, and their application in anthropological, biodemographic, and epidemiological research. Student design and carry out a laboratory-based project. Prerequisite: BIO A 201.

BIO A 465 Nutritional Anthropology (3) I&S/NW

Examines the interrelationships between biomedical, sociocultural, and ecological factors and their influence on the ability of humans to respond to variability in nutritional resources. Topics covered

include diet and human evolution, and nutrition-related biobehavioral influences on human growth, development, and disease resistance. Prerequisite: BIO A 201. Offered: jointly with NUTR 465.

BIO A 466 Biological Anthropology Honors Thesis ([1-9]-, max. 18) NW Individual research under the direction of a thesis adviser, culminating in a senior honors thesis. Open only to upper-class students in departmental honors program.

BIO A 468 Human Reproductive Ecology (5) NW/I&S Examines fertility variation within and across human societies. Biocultural and ecological perspectives on male and female reproductive maturation and senescence, female fecundity, birth intervals, parental investment and cooperative breeding. Prerequisite: BIO A 208.

BIO A 469 Special Topics in Biological Anthropology (3-5, max. 15) NW Delineation and analysis of a specific problem or a more general area in biological anthropology. Offered occasionally by visiting or resident faculty.

BIO A 470 Evolution of Human Behavior (5) I&S/NW Key concepts, research strategies, and debates concerning the processes and outcomes of human behavioral evolution. Emphasizes the complementarity of various methods and theories for understanding human biocultural evolution, including behavioral ecology, dual transmission theory, phylogenetic analysis, and evolutionary psychology. Prerequisite: BIO A 201.

BIO A 471 Evolutionary Perspectives on Parenting and Childcare (5) NW Examines the use of evolutionary principles to understand variation in parenting and childcare practices in modern, historic, and prehistory human populations. Contextualizes human parenting and childcare adaptations in a broadly comparative and theoretical perspective.

BIO A 473 Biological Adaptability of Human Populations (5) NW Mechanisms enabling humans to maintain homeostasis in extreme environments: high altitude, heat, cold, nutritional deficiency, radiation. Adaptive process operating at levels of physiology, metabolism, and population, including the strategies of fertility and birth spacing. Prerequisite: BIO A 201.

BIO A 476 Sociocultural Ecology and Health (3) NW Sociocultural ecology of health/disease, focusing on humans as bioculturally integrated beings and on populations as biocultural units of adaptation. Examples of research on disease, both infectious and chronic, and patterns of morbidity and mortality, infant, maternal, old age, with particular attention to situations of sociocultural changes. Prerequisite: BIO A 201.

BIO A 477 Evolutionary Perspectives on Sex and Gender Roles (3) I&S/NW Critical examination of theories explaining the evolution of sex differences and associated gender roles. Consideration of gender differences in mate preferences, parental investment, subsistence, aggressiveness, and risk-taking. Stresses interactions between biology and culture. Prerequisite: BIO A 201.

BIO A 482 Human Population Genetics (5) NW, QSR Micro-evolutionary changes in human populations. Effects of mutation, selection, inbreeding, gene flow, and genetic drift as causes of evolutionary change. Prerequisite: BIO A 201.

BIO A 483 Human Genetics, Disease, and Culture (5) NW Considers relationships among genetic aspects of human disease, cultural behavior, and natural habitat for a wide variety of conditions. Also considers issues of biological versus environmental determinism, adaptive aspects of genetic disease, and the role of cultural selection. Prerequisite: BIO A 201.

BIO A 484 Applied Human Growth and Development (5) NW Examination of cultural, ecological, and evolutionary factors influencing variation in human growth and development from fetal life to adolescence. Quantification of variation in growth and nutritional status using basic computational software and statistical assessment.

BIO A 485 Research in Growth and Development (2, max. 8) NW Focus on topics relating to primate growth and development. Prerequisite: either BIO A 484, BIO A 495, or BIO A 496, any of which may be taken concurrently.

BIO A 486 Primate Socioecology (3) NW Variety of social systems exhibited by nonhuman primates and adaptive significance of these societies; social systems in terms of the present ecology and

evolutionary past of the species; the function of communicatory gestures and vocalizations, tradition, kinship, and social roles in maintaining and structuring groups over generations; the relationship among mating systems, foraging strategies, ranging patterns, and ecological separation. Prerequisite: either BIO A 370 or PSYCH 418.

BIO A 487 Human and Comparative Osteology (5)

NW Introduction to the vertebrate skeleton. The skeleton is described in detail and various methods of determining age and sex, as well as osteometry and modern statistical methods for handling such data, are presented.

BIO A 488 Primate Evolution (5) NW Major trends in nonhominid primate evolution through the Cenozoic. Discussion of the specimens, geological context, and age of the fossil taxa and their relationship to modern taxa. Practical experience in analyzing fossil material. Prerequisite: BIO A 201.

BIO A 491 Issues in Human Paleontology (5) NW

Addresses the relevance of the hominin fossil record in understanding the evolution of our species. Prerequisite: either BIO A 388.

BIO A 495 Growth and Development: Infancy (5)

NW Genetic and environmental influences on growth and development from prenatal life through infancy. Includes exploration of methods for assessing development and comparisons of development in non-human primates with human development. Prerequisite: BIO A 370.

BIO A 496 Growth and Development: Adolescence and Reproductive Maturity (5) NW

Genetic and environmental influences on growth and development during adolescence. Emphasis on the interaction of biological and social factors in attainment of reproductive maturity. Compares conditions of non-human primates with human conditions. Prerequisite: BIO A 370.

BIO A 499 Undergraduate Research (*, max. 12)

BIO A 502 Preceptorial Reading (6) For beginning graduate students who have not had adequate training in the study of primate principles and methods involved in the study of evolution, human genetics, and the evolution of modern populations.

Not open to graduate students in the biological anthropology program. Offered: AWS.

BIO A 520 Human Behavioral Ecology (3-5)

Principles and methods of evolutionary behavioral ecology, and critical examination of their application to human behavior in such areas as resource utilization, mating, parenting, life history, cooperation, and competition.

BIO A 521 Hominin Evolution (5-) Evolution of hominin anatomy and behavior as adaptations to changing environments. Hominin fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Offered: W, odd years.

BIO A 522 Hominin Evolution (-5) P. KRAMER

Evolution of hominin anatomy and behavior as adaptations to changing environments. Hominin fossils: their geological context, age, ecological setting used to reconstruct the evolution of our species during the last six million years of earth history. Offered: Sp, odd years.

BIO A 523 Social Networks and Health: Biocultural Perspectives (5)

Examines the many ways that social interactions positively and negatively influence our health, and vice versa. Considers why such influences are important to understand, how one measures them, what recent research has shown, and explores how they relate to other health determinants, both biological and cultural Offered: jointly with CS&SS 523.

BIO A 525 Biocultural Research Methods and Study Design (5)

Survey of basic conceptual issues in the design of empirical research, with special attention to problems that arise during anthropological fieldwork. Topics include defining data needs, sampling strategies, problems with co-funding, proposal writing, human subjects approval, and basic ethical issues in human biocultural research.

BIO A 526 Quantitative Methods and Modeling for Biocultural Anthropology (5)

Surveys the concepts, tools, and methods for developing quantitative models based on underlying biocultural processes. Introduces methods of testing models from observations collected in anthropological field studies. Oriented toward longitudinal research of

fertility, mortality, disease dynamics, population genetics, and other biocultural processes.

BIO A 544 Applied Biomechanics of Human Movement (5) Explores human motion using the principles of Newtonian mechanics, including kinematics and kinetics of movement. Recommended: high school trigonometry.

BIO A 550 Skeletal Biology and Prehistoric Demography (5) Composition and structure of calcified tissue. Analytical techniques and their contribution to interpretation of the archaeological record.

BIO A 559 Laboratory Methods in Anthropological Genetics (5) Introduction to the theory and methods of laboratory-based research in anthropological genetics. Covers laboratory methods for sample collection, DNA extraction, genotyping, analysis, emerging molecular genetics technologies, and their application in anthropological, biodemographic, and epidemiological research. Student design and carry out a laboratory-based project. Prerequisite: BIO A 201.

BIO A 568 Human Reproductive Ecology (5) A consideration of the determinants of fertility variation within and among traditional human societies. Biocultural and ecological perspectives on pubertal timing, nuptiality, duration of birth intervals, and reproductive senescence.

BIO A 569 Behavioral Ecology and Demography (5) Demographic analysis relevant to anthropological research on small populations. Use of data collected through local surveys, genealogical methods, and from other sources. Focuses on use of demography to analyze social and biological processes with adaptive and/or cultural-historical significance. Emphasizes theoretical approaches.

BIO A 584 Topics in Ecology and Adaptation (3, max. 9) Seminar dealing with various aspects of ecology and adaptation. Topics vary each quarter.

BIO A 588 Topics in Primate Evolution (3) Emphasis on fossil taxa and their importance in understanding the morphologies and distributions of members of modern taxa. Prerequisite: BIO A 488 and permission of instructor.

BIO A 590 Biological Anthropology Seminar (2, max. 18) Includes presentations by participants and guest lecturers of current literature and ongoing research in topics pertaining to human and nonhuman primate evolution, biology, anatomy, genetics variation, and behavior. Credit/no-credit only.

BIO A 591 Issues in Hominin Paleontology (5) Addresses the relevance of the hominin fossil record in understanding the evolution of our species.

BIO A 600 Independent Study or Research (*-)

APPLIED MATHEMATICS

APPLIED MATHEMATICS

AMATH 301 Beginning Scientific Computing (4) NW Introduction to the use of computers to solve problems arising in the physical, biological, and engineering sciences. Application of mathematical judgment, programming architecture, and flow control in solving scientific problems. Introduction to MATLAB and Python routines for numerical programming, computation, and visualization. Prerequisite: either MATH 125, Q SCI 292, or MATH 135. Offered: AWSpS.

AMATH 342 Introduction to Neural Coding and Computation (3) Introduces computational neuroscience, grounded in neuronal and synaptic biophysics. Works through mathematical description of how neurons encode information, and how neural activity is produced dynamically. Uses and teaches Matlab as a programming language to implement models of neuronal dynamics and to perform coding analysis. Prerequisite: MATH 125 or MATH 135. Offered: W.

AMATH 351 Introduction to Differential Equations and Applications (3) NW Introductory survey of ordinary differential equations; linear and nonlinear equations; Taylor series; and Laplace transforms. Emphasizes on formulation, solution, and interpretation of results. Examples drawn from physical and biological sciences and engineering. Prerequisite: MATH 125 or MATH 135. Offered: AWSpS.

AMATH 352 Applied Linear Algebra and Numerical Analysis (3) NW Analysis and application of numerical methods and algorithms to problems in

the applied sciences and engineering. Applied linear algebra, including eigenvalue problems. Emphasis on use of conceptual methods in engineering, mathematics, and science. Extensive use of MATLAB package for programming and solution techniques. Prerequisite: MATH 126 or MATH 136. Offered: AWSpS.

AMATH 353 Partial Differential Equations and Waves (3) NW Covers traveling waves of linear equations, dispersion relation, stability, superposition and Fourier analysis, d'Alembert solution, standing waves, vibrations and separation of variables, traveling waves of nonlinear equations, conservation laws, characteristics, breaking, shocks, and rarefaction. Prerequisite: either AMATH 351, MATH 136, or MATH 307. Offered: Sp.

AMATH 383 Introduction to Continuous Mathematical Modeling (3) NW Introductory survey of applied mathematics with emphasis on modeling of physical and biological problems in terms of differential equations. Formulation, solution, and interpretation of the results. Prerequisite: either AMATH 351, MATH 136, or MATH 307. Offered: AWS.

AMATH 401 Vector Calculus and Complex Variables (4) NW Emphasizes acquisition of solution techniques; illustrates ideas with specific example problems arising in science and engineering. Includes applications of vector differential calculus, complex variables; line-surface integrals; integral theorems; and Taylor and Laurent series, and contour integration. Prerequisite: either MATH 126 or MATH 136. Offered: A.

AMATH 402 Introduction to Dynamical Systems and Chaos (4) NW Overview methods describing qualitative behavior of solutions on nonlinear differential equations. Phase space analysis of fixed pointed and periodic orbits. Bifurcation methods. Description of strange attractors and chaos. Introductions to maps. Applications: engineering, physics, chemistry, and biology. Prerequisite: either AMATH 351, MATH 136, or MATH 307. Offered: W.

AMATH 403 Methods for Partial Differential Equations (4) NW Covers separation of variables, Fourier series and Fourier transforms, Sturm-Liouville theory and special functions, eigenfunction expansions, and Greens functions. Prerequisite:

AMATH 401; either AMATH 351, MATH 136, or MATH 307. Offered: Sp.

AMATH 422 Computational Modeling of Biological Systems (3) NW Examines fundamental models that arise in biology and their analysis through modern scientific computing. Covers discrete and continuous-time dynamics, in deterministic and stochastic settings, with application from molecular biology to neuroscience to population dynamics; statistical analysis of experimental data; and MATLAB programming from scratch. Prerequisite: either MATH 135, MATH 307, or AMATH 351 Offered: A.

AMATH 423 Mathematical Analysis in Biology and Medicine (3) NW Focuses on developing and analyzing mechanistic, dynamic models of biological systems and processes, to better understand their behavior and function. Applications drawn from many branches of biology and medicine. Provides experiences in applying differential equations, difference equations, and dynamical systems theory to biological problems. Prerequisite: either AMATH 351, MATH 307, or MATH 135; and STAT 390. Offered: W.

AMATH 481 Scientific Computing (5) Project-oriented computational approach to solving problems arising in the physical/engineering sciences, finance/economics, medical, social, and biological sciences. Problems requiring use of advanced MATLAB routines and toolboxes. Covers graphical techniques for data presentation and communication of scientific results. Prerequisite: AMATH 301; either AMATH 351, MATH 135, or MATH 307; and either AMATH 352, MATH 136, or MATH 308 . Offered: A.

AMATH 482 Computational Methods for Data Analysis (5) Exploratory and objective data analysis methods applied to the physical, engineering, and biological sciences. Brief review of statistical methods and their computational implementation for studying time series analysis, spectral analysis, filtering methods, principal component analysis, orthogonal mode decomposition, and image processing and compression. Prerequisite: AMATH 301; either AMATH 352, MATH 136, or MATH 308. Offered: W.

AMATH 483 High-Performance Scientific Computing

(5) Introduction to hardware, software, and programming for large-scale scientific computing. Overview of multicore, cluster, and supercomputer architectures; procedure and object oriented languages; parallel computing paradigms and languages; graphics and visualization of large data sets; validation and verification; and scientific software development. Prerequisite: AMATH 481; and either AMATH 352, MATH 136 or MATH 308. Offered: Sp.

AMATH 490 Special Topics (1-5, max. 15) Topics of current interest in applied mathematics not covered by other undergraduate courses.

AMATH 498 Senior Project or Thesis (1-6, max. 6)

Intended for Honors students and other advanced undergraduates completing a special project or senior thesis in applied mathematics. Offered: AWSpS.

AMATH 499 Undergraduate Reading and Research (1-6, max. 6) Credit/no-credit only. Offered: AWSpS.

AMATH 500 Special Studies in Applied Mathematics

(* , max. 25) Lectures and discussions of topics of current interest in applied mathematics. May not be offered every quarter; content may vary from one offering to another. Prerequisite: permission of instructor.

AMATH 501 Vector Calculus and Complex Variables

(5) Emphasizes acquisition of solution techniques; illustrates ideas with specific example problems arising in science and engineering. Includes applications of vector differential calculus, complex variables; line-surface integrals; integral theorems; and Taylor and Laurent series, and contour integration. Prerequisite: either a course in vector calculus or permission of instructor.

AMATH 502 Introduction to Dynamical Systems and Chaos

(5) Overview methods describing qualitative behavior of solutions on nonlinear differential equations. Phase space analysis of fixed pointed and periodic orbits. Bifurcation methods. Description of strange attractors and chaos. Introductions to maps. Applications: engineering, physics, chemistry, and biology. Prerequisite: either a course in differential equations or permission of instructor.

AMATH 503 Methods for Partial Differential Equations

(5) Covers separation of variables, Fourier series and Fourier transforms, Sturm-Liouville theory and special functions, eigenfunction expansions, and Greens functions. Prerequisite: either AMATH 501 and a course in differential equations or permission of instructor. Offered: Sp.

AMATH 505 Introduction to Fluid Dynamics

(4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with ATM S 505/OCEAN 511; A, odd years.

AMATH 507 Calculus of Variations

(5) Necessary and sufficient conditions for a weak and strong extremum. Legendre transformation, Hamiltonian systems. Constraints and Lagrange multipliers. Space-time problems with examples from elasticity, electromagnetics, and fluid mechanics. Sturm-Liouville problems. Approximate methods. Prerequisite: either AMATH 351 or MATH 307; MATH 324; MATH 327. Offered: W, odd years.

AMATH 514 Networks and Combinatorial

Optimization (3) Mathematical foundations of combinatorial and network optimization with an emphasis on structure and algorithms with proofs. Topics include combinatorial and geometric methods for optimization of network flows, matching, traveling salesmen problem, cuts, and stable sets on graphs. Special emphasis on connections to linear and integer programming, duality theory, total unimodularity, and matroids. Prerequisite: either MATH 308 or AMATH 352 any additional 400-level mathematics course. Offered: jointly with MATH 514.

AMATH 515 Optimization: Fundamentals and Applications

(5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches.

Prerequisite: Proficiency in linear algebra and advanced calculus/analysis; recommended: Strongly recommended: probability and statistics. Desirable: optimization, e.g. Math 408, and scientific programming experience in Matlab, Julia or Python. Offered: jointly with IND E 515/MATH 515.

AMATH 516 Numerical Optimization (3) Methods of solving optimization problems in finitely many variables, with or without constraints. Steepest descent, quasi-Newton methods. Quadratic programming and complementarity. Exact penalty methods, multiplier methods. Sequential quadratic programming. Cutting planes and nonsmooth optimization. Offered: jointly with MATH 516.

AMATH 518 Theory of Optimal Control (3) Trajectories from ordinary differential equations with control variables. Controllability, optimality, maximum principle. Relaxation and existence of solutions. Techniques of nonsmooth analysis. Prerequisite: real analysis on the level of MATH 426; background in optimization corresponding to MATH 515. Offered: jointly with MATH 518.

AMATH 521 Special Topics in Mathematical Biology (5, max. 15) Special topics in mathematical biology. Prerequisite: permission of instructor. Offered: Sp.

AMATH 522 Computational Modeling of Biological Systems (5) Examines fundamental models that arise in biology and their analysis through modern scientific computing. Covers discrete and continuous-time dynamics, in deterministic and stochastic settings, with application from molecular biology to neuroscience to population dynamics; statistical analysis of experimental data; and MATLAB programming from scratch. Prerequisite: either a course in differential equations or permission of instructor. Offered: A.

AMATH 523 Mathematical Analysis in Biology and Medicine (5) Focuses on developing and analyzing mechanistic, dynamic models of biological systems and processes, to better understand their behavior and function. Applications drawn from many branches of biology and medicine. Provides experiences in applying differential equations, difference equations, and dynamical systems theory to biological problems. Prerequisite: either courses in differential equations and statistics and probability, or permission of instructor. Offered: W.

AMATH 524 Mathematical Biology: Spatiotemporal Models (5) Examines partial differential equations for biological dynamics in space and time. Draws examples from molecular and cell biology, ecology, epidemiology, and neurobiology. Topics include reaction-diffusion equations for biochemical reactions, calcium wave propagation in excitable medium, and models for invading biological populations. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: Sp.

AMATH 531 Mathematical Theory Of Cellular Dynamics (3) Develops a coherent mathematical theory for processes inside living cells. Focuses on analyzing dynamics leading to functions of cellular components (gene regulation, signaling biochemistry, metabolic networks, cytoskeletal biomechanics, and epigenetic inheritance) using deterministic and stochastic models. Prerequisite: either courses in dynamical systems, partial differential equations, and probability, or permission of instructor.

AMATH 532 Mathematics of Genome Analysis and Molecular Modeling (5) Covers genome analysis, including bioinformatics and molecular modeling in terms of molecular dynamics. Prerequisite: either AMATH 506 or permission of instructor. Offered: A.

AMATH 533 Neural Control of Movement: A Computational Perspective (3) Systematic overview of sensorimotor function on multiple levels of analysis, with emphasis on the phenomenology amenable to computational modeling. Topics include musculoskeletal mechanics, neural networks, optimal control and Bayesian inference, learning and adaptation, internal models, and neural coding and decoding. Prerequisite: vector calculus, linear algebra, MATLAB, or permission of instructor. Offered: jointly with CSE 529.

AMATH 534 Dynamics of Neurons and Networks (5) Covers mathematical analysis and simulation of neural systems - singles cells, networks, and populations - via tools of dynamical systems, stochastic processes, and signal processing. Topics include single-neuron excitability and oscillations; network structure and synchrony; and stochastic and statistical dynamics of large cell populations. Prerequisite: either familiarity with dynamical systems and probability, or permission of instructor.

AMATH 535 Mathematical Ecology (5) Considers models, methods, and issues in population ecology. Topics include the effects of density dependence, delays, demographic stochasticity, and age structure on population growth; population interactions (predation, competition, and mutualism) ; and application of optimal control theory to the management of renewable resources. Prerequisite: either a course in differential equations or permission of instructor. Offered: Sp.

AMATH 536 Mathematical Modeling of Cancer (5) Introduces stochastic and deterministic methods for mathematical modeling of cancer evolution. Particular emphasis on branching process models of cancer initiation, progression and response to therapy, and their relationship to clinical, epidemiological and sequencing data. The course introduces both analytic and computational approaches for modeling cancer, and gets students acquainted with the current research in the field. Prerequisite: Previous experience with calculus, probability, ODEs and programming or permission of instructor. Offered: Sp.

AMATH 561 Introduction to Probability and Random Processes (5) This course, aimed at scientists and engineers without background in measure theory, introduces concepts in probability and stochastic dynamics needed for mathematical modeling. It includes, in addition to the basics of probability, Markov chain, Q-process, Chapman-Kolmogorov equations, and discrete-time martingales. Emphasis is on presenting theories with examples and variety of computational methods. Exposure to graduate level PDEs expected. Prerequisite: either undergraduate course in probability and statistics, or permission of instructor. Offered: A.

AMATH 562 Advanced Stochastic Processes (5) Second course in stochastic dynamical systems aimed at students in science, engineering, and applied math. Introduces basic concepts in continuous stochastic processes including Brownian motion, stochastic differential equations, Levy processes, Kolmogorov forward and backward equations, and Hamilton-Jacobi-Bellman PDEs. Course presents theories with applications from physics, biology, and finance. Exposure to graduate level linear PDEs expected. Prerequisite: AMATH 561 or instructor permission; recommended:

undergraduate course in probability and stat
Offered: W.

AMATH 563 Inferring Structure of Complex Systems (5) Introduces fundamental concepts of network science and graph theory for complex dynamical systems. Merges concepts from model selection, information theory, statistical inference, neural networks, deep learning, and machine learning for building reduced order models of dynamical systems using sparse sampling of high-dimensional data. Prerequisite: AMATH 561 and AMATH 562, or instructor permission Offered: Sp.

AMATH 567 Applied Complex Analysis (5) Complex variable and associated topics. Branch cuts, series and product expansions. Contour integration, numerical implications. Harmonic functions. Complex potential (and singularities) in physical problems. Conformal mapping; applications and examples. Fourier and Laplace transforms and applications. Prerequisite: either AMATH 401 or equivalent, or permission of instructor . Offered: A.

AMATH 568 Advanced Methods for Ordinary Differential Equations (5) Regular and singular points of differential equations. Asymptotic expansions for solutions of linear ordinary equations. Regular and singular perturbations. Asymptotic evaluation of integrals. Boundary layers and the WKB method. The method of multiple scales. Prerequisite: either a course in differential equations or permission of instructor. Offered: W.

AMATH 569 Advanced Methods for Partial Differential Equations (5) Analytical solution techniques for linear partial differential equations. Discussion of how these arise in science and engineering. Transform and Green's function methods. Classification of second-order equations, characteristics. Conservation laws, shocks. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: Sp.

AMATH 570 Approximation Theory and Spectral Methods (5) Introduction to interpolation and approximation of data and functions by polynomials, piecewise polynomials, and trigonometric series. Covers aspects of implementation including FFTs and the chebfun software. Spectral methods for solving differential equations serve as main motivating application, along with other approximation

problems. Prerequisite: AMATH 584; MATH 585; AMATH 586; programming experience in either Matlab or Python; or permission of instructor. Offered: A.

AMATH 571 Intelligent Control through Learning and Optimization (3) Design or near-optimal controllers for complex dynamical systems, using analytical techniques, machine learning, and optimization. Topics from deterministic and stochastic optimal control, reinforcement learning and dynamic programming, numerical optimization in the context of control, and robotics. Prerequisite: vector calculus; linear algebra; MATLAB. Offered: jointly with CSE 579.

AMATH 573 Coherent Structures, Pattern Formation and Solitons (5) Methods for nonlinear partial differential equations (PDEs) leading to coherent structures and patterns. Includes symmetries, conservation laws, stability Hamiltonian and variation methods of PDEs; interactions of structures such as waves or solitons; Lax pairs and inverse scattering; and Painleve analysis. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: A, odd years.

AMATH 574 Conservation Laws and Finite Volume Methods (5) Theory of linear and nonlinear hyperbolic conservation laws modeling wave propagation in gases, fluids, and solids. Shock and rarefaction waves. Finite volume methods for numerical approximation of solutions; Godunov's method and high-resolution TVD methods. Stability, convergence, and entropy conditions. Prerequisite: either AMATH 586 or permission of instructor. Offered: W.

AMATH 575 Dynamical Systems (5) Overview of ways in which complex dynamics arise in nonlinear dynamical systems. Topics include bifurcation theory, universality, Poincare maps, routes to chaos, horseshoe maps, Hamiltonian chaos, fractal dimensions, Liapunov exponents, and the analysis of time series. Examples from biology, mechanics, and other fields. Prerequisite: either AMATH 502 or permission of instructor. Offered: Sp, odd years.

AMATH 581 Scientific Computing (5) Project-oriented computational approach to solving problems arising in the physical/engineering sciences, finance/economics, medical, social, and

biological sciences. Problems requiring use of advanced MATLAB routines and toolboxes. Covers graphical techniques for data presentation and communication of scientific results. Prerequisite: either a course in numerical analysis or permission of instructor.

AMATH 582 Computational Methods for Data Analysis (5) Exploratory and objective data analysis methods applied to the physical, engineering, and biological sciences. Brief review of statistical methods and their computational implementation for studying time series analysis, spectral analysis, filtering methods, principal component analysis, orthogonal mode decomposition, and image processing and compression. Prerequisite: either MATLAB and linear algebra or permission of instructor. Offered: W.

AMATH 583 High-Performance Scientific Computing (5) Introduction to hardware, software, and programming for large-scale scientific computing. Overview of multicore, cluster, and supercomputer architectures; procedure and object oriented languages; parallel computing paradigms and languages; graphics and visualization of large data sets; validation and verification; and scientific software development. Prerequisite: AMATH 581, or permission of instructor. Offered: Sp.

AMATH 584 Applied Linear Algebra and Introductory Numerical Analysis (5) Numerical methods for solving linear systems of equations, linear least squares problems, matrix eigen value problems, nonlinear systems of equations, interpolation, quadrature, and initial value ordinary differential equations. Prerequisite: either a course in linear algebra or permission of instructor. Offered: jointly with MATH 584; A.

AMATH 585 Numerical Analysis of Boundary Value Problems (5) Numerical methods for steady-state differential equations. Two-point boundary value problems and elliptic equations. Iterative methods for sparse symmetric and non-symmetric linear systems: conjugate-gradients, preconditioners. Prerequisite: either AMATH 581, AMATH 584/MATH 584, or permission of instructor. Offered: jointly with MATH 585; W.

AMATH 586 Numerical Analysis of Time Dependent Problems (5) Numerical methods for time-

dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence theory. Spectral and pseudospectral methods. Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with ATM S 581/MATH 586; Sp.

AMATH 590 Special Topics (1-5, max. 30) Topics of current interest in applied mathematics. Offered: AWWSpS.

AMATH 600 Independent Research or Study (*-) Credit/no-credit only.

AMATH 601 Internship (1-10, max. 30)

AMATH 700 Master's Thesis (*-) Credit/no-credit only.

AMATH 800 Doctoral Dissertation (*-) Credit/no-credit only.

COMPUTATIONAL FINANCE AND RISK MANAGEMENT

CFRM 405 Mathematical Methods for Quantitative Finance (3) NW, QSR Covers selected mathematical methods needed to begin a master's program in quantitative finance. Topics include applications of calculus, linear algebra, and constrained optimization methods to fixed income, portfolio optimization, futures, options, and risk management. Prerequisite: either AMATH 352, MATH 136, or MATH 308.

CFRM 410 Probability and Statistics for Computational Finance (3) Covers basic concepts and methods of probability and statistical analysis and modeling for computational and quantitative finance. Coverage is carefully aligned with leading problems concerning prices and returns of individual assets and portfolios of assets. Key applications include financial risk management and portfolio performance analysis. Prerequisite: CFRM 405.

CFRM 415 Introduction to Financial Markets (3) Introduction to fundamentals of investment science and financial derivatives. Topics include basics of interest rates and present value calculations, fixed

income securities, term structure of interest rates, the concept of financial arbitrage, pricing of futures, forwards, and call/put options, binomial lattice model, portfolio theory, and capital asset pricing model. Prerequisite: CFRM 405 and CFRM 410, may be taken concurrently.

CFRM 420 Introduction to Computational Finance and Financial Econometrics (3) Covers probability models, data analysis, quantitative, and statistical methods using applications in finance, and introduction to and use of the R programming system for data analysis and statistical modeling. Prerequisite: CFRM 405, CFRM 410, or instructor permission.

CFRM 421 Machine Learning for Finance (4) Fundamentals of machine learning techniques with applications to finance. Assessing, organizing, and analyzing financial data, and learning the analytical tools and numerical schemes in machine learning to perform statistical analysis on financial data. Develops practical financial tools such as trading rules and risk indicators. Prerequisite: CFRM 405 and CFRM 410.

CFRM 422 Introduction to Trading Systems (4) Introduces electronic trading systems. Uses the R programming language to develop, evaluate, and optimize quantitative trading strategies. Students apply trading strategies through a live paper-trading account with an online broker using real time market data. Prerequisite: CFRM 420 and CFRM 425.

CFRM 425 R Programming for Quantitative Finance (3) Introduction to R programming language for applications in quantitative finance. Covers R syntax, data structures & manipulation, data analysis and statistics. Working with time series and computing asset returns with R will be covered, as will be the R package system and contributed packages. Recommended: The course does not require prior R programming experience, but programming experience in another language is acceptable.

CFRM 430 Fixed Income Analytics (4) NW Covers fixed income markets and securities, data sources, analytics and portfolio management methods, in particular the valuation, risks, and risk management of fixed income securities. Uses a hands-on data-oriented and computational focus. Prerequisite: CFRM 405; CFRM 410; and CFRM 415.

CFRM 442 Credit Risk Management (4) NW Theory, applications and computational methods for credit risk measurement and management. Statistical and mathematical modeling of credit risk, emphasizing numerical methods and R programming. Methods include logistic regression, Monte Carlo simulation, and portfolio cash flow modeling. Covers default risk regression, analytics, and portfolio models of credit risk. Prerequisite: CFRM 405 and CFRM 410.

CFRM 500 Special Studies in Computational Finance and Risk Management (1-6, max. 18) Lecture and discussions of topics of current interest in computational finance and risk management. Prerequisite: permission of instructor.

CFRM 501 Investment Science (4) Introduction to the mathematical, statistical and financial foundations of investment science. Topics include: utility functions, mean-variance portfolio theory, tail risk measures, factor model types for portfolio construction, classical and robust methods of fitting factor models, and covariance and correlation estimation. Prerequisite: CFRM 425. Offered: A.

CFRM 502 Financial Data Science (4) Covers applications of statistical techniques for analyzing financial data, as well as modeling and computational methods in key areas in quantitative finance. Includes factor modeling, financial time series, and portfolio analytics. Focuses on advanced topics in statistical finance, finance theory, and financial applications. Prerequisite: CFRM 501.

CFRM 503 Asset Allocation and Portfolio Management (4) Covers long-only and long-short portfolio optimization with real-world constraints and costs using industrial strength optimization software; classical mean-variance and modern mean-versus downside risk optimization for dealing with fat-tailed skewed asset returns; optimization and risk analysis with factor models; and equity, mixed asset class, and fund-of-hedge portfolios. Prerequisite: either CFRM 501 and CFRM 502, or permission of instructor. Offered: S.

CFRM 504 Options and Other Derivatives (4) Covers financial instrument options and derivatives. Explores how to price options and other derivatives and use them to hedge investment risk. Involves theory, statistical modeling, numerical methods, and computation using the R programming language.

Prerequisite: co-requisite: CFRM 501 or permission of instructor. Offered: A.

CFRM 505 Monte Carlo Methods in Finance (4) Monte Carlo simulations in quantitative finance for portfolio assembly and financial risk management. Students learn theory and methods of tracking the behavior of underlying securities in an option or portfolio and determine the derivative's value by taking the expected value of the discounted payoffs at maturity. Offered: A.

CFRM 506 Financial Data Access and Analysis with SQL, VBA, and Excel (4) Provides skills in retrieving and manipulating financial data and in creating computational solutions to quantitative finance problems using SQL, VBA, and Excel. Also teaches skills in leveraging the powerful financial data modeling and analysis capabilities of R in conjunction with SQL, VBA, and Excel. Prerequisite: either CFRM 501 or equivalent, or permission of instructor. Offered: A.

CFRM 507 Optimization Methods in Finance (4) Covers theory and efficient solution methods for optimization problems in finance. Includes financial solution methodologies using linear, non-linear, quadratic, and integer formulations; and dynamic and stochastic programming. Prerequisite: Linear algebra and matrix notation; statistics and probability; and experience with R language and MS Excel. Offered: A.

CFRM 509 Ethics in the Finance Profession (2) Addresses ethical theory to recognize and demonstrate an applied understanding of ethical conduct in financial markets, financial management and financial services. Explore assessments of, and responses to, ethical challenges in finance. Includes financial law and regulation.

CFRM 520 Financial Software Development and Integration with C++ (4) Practical introduction to C++ programming for financial applications. Focuses on developing basic object oriented programming skills in C++ to implement computational finance solutions. Also includes integrating C++ applications with R, MATLAB, SQL, and VBA.

CFRM 521 Machine Learning for Finance (4) Introduces the fundamentals of machine learning techniques with applications to finance. Focuses on

assessing, organizing, and analyzing financial data, and learning the analytical tools and numerical schemes in machine learning to perform statistical analysis on financial data. Develop practical financial tools such as trading rules and risk indicators. Prerequisite: CFRM 502 or equivalent, which may be taken concurrently; programming skills in R or MATLAB.

CFRM 522 Introduction to Trading Systems (4)

Introduces electronic trading systems. Uses the R programming language to develop, evaluate, and optimize quantitative trading strategies. Students apply trading strategies through a live paper-trading account with an online broker using real time market data.

CFRM 523 Advanced Trading Systems (4) Provides a detailed research process and tools for replicating, assessing, conceptualizing, and developing systematic trading strategies. Students apply their knowledge in projects to replicate and evaluate existing research and to create and evaluate a new strategy model. Prerequisite: CFRM 522.

CFRM 524 Advanced C++ for Finance (4) Builds on CFRM 520 and covers modern algorithms, techniques, and libraries in C++ that enhance both computational performance and reliability in the implementation of quantitative financial models. Prerequisite: CFRM 520 or equivalent, or instructor permission.

CFRM 525 FinTech, Blockchains, and Cryptocurrencies (4) Covers financial technology (FinTech) innovations and development, and the associated computational finance and risk management methods and perspectives. Includes real-world applications, including robo-advising, AI and Machine Learning for trading, etc. Also covers blockchain technology with focus on its applications to finance, especially cryptocurrencies. Prerequisite: CFRM 501; and CFRM 506 or CFRM 507, or equivalent, or instructor permission; recommended: Ability to program and compile in R and/or Python.

CFRM 530 Fixed Income Analytics (4) Covers fixed income markets and securities, data sources, analytics and portfolio management methods, in particular the valuation, risks, and risk management of fixed income securities. Uses a hands-on data-oriented and computational focus. Offered: A.

CFRM 531 Portfolio Performance Analysis and Benchmarking (4) Covers fundamental principles and commonly used methods in performance measurement, analysis, and benchmarking of portfolio evaluation. Prerequisite: CFRM 501, MBA level investments course, or equivalent. Offered: A.

CFRM 532 Endowment and Institutional Investment Management (2) Focuses on the endowment management process and specific challenges facing institutional fund managers. Includes evaluating the role of an endowment, portfolio construction, risk management, manager selection, and alternative asset class investing. Utilizes concepts from finance and investments, macroeconomics, and mathematical optimization. Prerequisite: CFRM 501. Offered: S.

CFRM 540 Risk in Financial Institutions (4) Introduces the concepts and methodologies of financial risk management. Uses derivatives for hedging risk, emphasizing fixed income and exchange rate derivatives. Includes models, credit derivatives, mortgage backed securities, and asset backed securities. First in a sequence of three on financial risk management. Prerequisite: either CFRM 501 or permission of instructor. Offered: W.

CFRM 541 Quantitative Risk Management (4) Provides a comprehensive treatment of the theoretical concepts and modeling techniques of quantitative risk management focusing on practical tools to solve real-work problems. Covers methods for market, credit, and operational risk modeling.

CFRM 542 Credit Risk Management (4) Theory, applications & computational methods for credit risk measurement & management. Statistical and mathematical modeling of credit risk, emphasizing numerical methods & R programming. Methods include logistic regression, Monte Carlo simulation, & portfolio cash flow modeling. Covers default risk regression, analytics, & portfolio models of credit risk. Offered: A.

CFRM 550 Stochastic Calculus for Quantitative Finance (4) Provides a systematic examination of financial derivatives pricing using stochastic calculus. Examines popular stochastic differential equation models such as Geometric Brownian motion, Vasicek, Hull-White, Cox-Ingersoll-Ross, Black-Karasinski, Heath-Jarrow-Morton, and Brace-

Gatarek-Musiela, as well as Poisson and Levy processes. Applications include equity, fixed-income, and credit derivatives. Offered: S.

CFRM 580 Energy Markets Analytics and Derivatives

(4) Practices of valuation and risk management applied to energy portfolios. Covers valuation and risk methodologies applied to power, gas, and oil portfolios and discusses different market and credit risk metrics most relevant to energy market portfolios.

CFRM 586 Financial Time Series Forecasting

Methods (4) Covers financial time series forecasting methods and their use in making investment decisions for asset management purposes. Asset-class specific forecasting methods. Uses the R statistical modeling and data analysis system for implementing and evaluating such forecasting methods. Prerequisite: CFRM 501 or permissions of instructor. Offered: W.

CFRM 590 Special Topics (1-5, max. 15) Topics of current interest in computational finance not covered by other graduate courses.

CFRM 600 Independent Research or Study (1-6, max. 18)

CFRM 601 Internship (1-6, max. 30)

CFRM 700 Master's Thesis (1-6, max. 18)

ARCTIC STUDIES

ARCTIC 101 Elementary Inuktitut: Inuit Language (3)

S. MALLON Fundamentals of oral and written modern Inuktitut, the Inuit language, including an introduction to the elements of Inuit culture. Offered: AS.

ARCTIC 102 Elementary Inuktitut (Inuit Language)

(3) *S. MALLON* Continues the process of laying the groundwork for communicative work in Inuktitut, begun in ARCTIC 101. Offered: W.

ARCTIC 103 Elementary Inuktitut (Inuit Language)

(3) *S. Mallon* Continues the process of laying the groundwork for communicative work in Inuktitut, begun in ARCTIC 101 and ARCTIC 102 Prerequisite: ARCTIC 102 Offered: Sp.

ARCTIC 200 Indigenous Diplomacies and International Relations in the Arctic (3) I&S *Fabbi*

Provides an overview of current issues and geopolitics in the Arctic including those of the eight Arctic nation-states, six Permanent Participants (indigenous organizations) on the Arctic Council, and other non-Arctic nation-state interests. Offered: A.

ARCTIC 201 Intermediate Inuktitut (Inuit Language)

(3) VLPA *S. Mallon* First course in the second-year Inuktitut language sequence. Prerequisite: ARCTIC 103 Offered: A.

ARCTIC 202 Intermediate Inuktitut (Inuit Language)

(3) VLPA *S. Mallon* Second course in the second-year Inuktitut language sequence. Prerequisite: ARCTIC 201 Offered: W.

ARCTIC 203 Intermediate Inuktitut (Inuit Language)

(3) VLPA *S. Mallon* Third course in the second-year Inuktitut language sequence. Prerequisite: ARCTIC 202 Offered: Sp.

ARCTIC 220 At the Top of the World: Arctic

Histories (5) I&S *Elena Campbell* History of human understanding of and relationship to the Arctic by tracing the social, economic, political, and environmental transformations of the Earth's northernmost region, from earliest settlements to the end of the twentieth century (the creation of the Arctic Council in 1996), as well as shifts in ideas that accompanied these changes. Offered: jointly with HSTCMP 220.

ARCTIC 301 Advanced Inuktitut (Inuit Language) (3)

VLPA *S. Mallon* First course in the third-year Inuktitut language sequence. Prerequisite: ARCTIC 203 Offered: A.

ARCTIC 302 Advanced Inuktitut (Inuit Language) (3)

VLPA *S. Mallon* Second course in the third-year Inuktitut language sequence. Prerequisite: ARCTIC 301 Offered: W.

ARCTIC 303 Advanced Inuktitut (Inuit Language) (3)

VLPA *S. Mallon* Third course in the third-year Inuktitut language sequence. Prerequisite: ARCTIC 302 Offered: Sp.

ARCTIC 387 Study Abroad: Arctic Studies (1-5, max. 15)

Relates Arctic geopolitics, indigenous

internationalism, the arts, and/or natural sciences to the regions and peoples of the circumpolar world. Equivalency for upper division Arctic minor of Jackson School course work taken on UW study abroad or direct exchange. Specific content varies and is evaluated on an individual basis.

ARCTIC 391 Climate Change - An International Perspective: Science, Art, and Activism (5)

I&S/VLPA R. PAVIA Explores climate change science in the context of geographic, social, and political constraints, considering the role of art, activism, and Arctic indigenous peoples in communicating impacts and mitigation. Students gain knowledge in key atmospheric and ocean science principles along with the role of science in society Offered: jointly with JSIS B 391; Sp.

ARCTIC 400 Integrating Policy and Science in Arctic Studies (3) I&S/NW Gallucci, Hellmann

Introduces Arctic resources and access from physical, biological, and political perspectives, focusing on the latter. Emphasizes political alliances among nation states as well as initiatives by indigenous peoples that involve mutual needs for access to Arctic resources for mining, transport, and food. Offered: Sp.

ARCTIC 401 Current Issues Concerning the Arctic Region (3, max. 9) I&S

Addresses current issues impacting the Arctic region from the perspective of visiting scientists, social scientists, practitioners, and Arctic indigenous leaders. Credit/no-credit only. Offered: Sp.

ARCTIC 498 Special Topics in Arctic Studies (1-5, max. 10) Content varies by instructor.

ART, ART HISTORY, AND DESIGN ART

ART

ART 101 Visual Art and Creative Thinking (5) VLPA

Explores how we observe/interpret our visual world. Introduces art and design terminology, techniques and analysis. Class sessions include short drawing, writing, critical thinking exercises, as well as lectures by visiting arts professionals and group activities. Ideal class for students exploring majors in Art, Art history or Design.

ART 102 Advanced Placement (AP) Studio Art:

Drawing (5) VLPA Course awarded based on

Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ART 103 Advanced Placement (AP) Studio Art: 2D

Design (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ART 104 Advanced Placement (AP) Studio Art: 3D

Design (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ART 105 International Baccalaureate (IB) Visual Art

(5) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

ART 131 Alternative Approaches to Art and Design

(5, max. 20) VLPA Presentation of process through which artists discover and translate ideas, feelings, and concerns into images or objects. Use of a wide variety of methods and approaches, from traditional to technological, to promote visual expression. Discussion and critiques leading toward better understanding the creative process.

ART 140 Basic Photography (5) VLPA

Introduces theory, techniques, and processes of still photography in an artistic context. Emphasizes photography's creative potential.

ART 190 Introduction to Drawing (5) VLPA

Builds basic drawing skills, develops understanding of primary concepts which relate to drawing and develops an understanding of the grammar or syntax of two-dimensional language. Students move beyond their current knowledge and abilities and link new skills, concepts, and understandings to creative expressing.

ART 191 Color Studies Studio (5) VLPA Lin

Examination of color as a distinct visual phenomenon with investigations of its practical, theoretical, and illusionary aspects. Employs various media and materials in exercises and compositions that demonstrate properties of color structure, symbolism, and perception and the potential application to art and design.

ART 200 Artist Mindset (5) VLPA Where do ideas come from? How does the practice of art connect across disciplines? Promotes critical curiosity. Students gain experience evaluating images and developing ideas. Demystifies each individual's capacity to be an imaginative thinker, and dispels myths about what it means to be an artist today.

ART 233 Introduction to 3D4M: Glass (5, max. 10) VLPA This introductory studio course investigates the material glass and its applications in the fine arts. Examines historical, technical, and contemporary practices. Prepares students for further exploration with the material at the intermediate and advanced levels.

ART 240 Intermediate Photomedia I (5) VLPA Includes studio projects examining the expressive and conceptual uses of alternative photographic materials and techniques. May include and introduction to photography, large format, and studio lighting. Prerequisite: ART 140.

ART 241 Intermediate Photomedia II (5) VLPA Introduces the creative use of photographic digital workflow in the processing, cataloging, and printing of camera generated digital imaging. Examines a variety of manipulations and transformation of both photographic and non-photographic imagery, involving multiple programs, procedures, and hardware (Macintosh platform) . Prerequisite: ART 240.

ART 242 Intermediate Photomedia III (5) VLPA Covers topics in digital imaging, including specialized output, interactive presentations, the moving image, and web-based works. Emphasizes creative exploration of both software and hardware tools and the possibilities of integration with other art media. Prerequisite: ART 140.

ART 245 Concepts in Printmaking (5) VLPA Introduction to contemporary printing methods such as monotype, monoprint, stencil, and photocopy. Survey of historical and current approaches to the art of printmaking.

ART 246 Works on Paper/Monotype (5) VLPA Introduces contemporary imaging methods, expands traditional drawing methods, and encourages relationship of content to structure. Introduces

relationship of printmaking and painting to drawing through monotype methods.

ART 253 Introduction to 3D4M: Ceramics (5, max. 10) VLPA Introduces ceramic hand-building and wheel throwing techniques. Explores functional and conceptual considerations with clay in a contemporary context and art practice. Offered: AWSp.

ART 260 Introduction to Contemporary Art for Interdisciplinary Practice (5) VLPA Introduction to recurring themes and practices in the visual arts. Moves beyond medium-based categories, surveying a diverse range of issues that motivate artists and create content in contemporary art. Examines the importance and influence of the visual arts in the larger context of contemporary culture and society.

ART 272 Introduction to 3D4M: Sculpture (5) VLPA Introduces three dimensional concepts in the production of art and a critical, formal vocabulary in the pursuit of individual expression. Offers an overview of materials and technical processes.

ART 280 Media, Time, and Technology Arts (5) VLPA Develops a "new genre" attitude toward exploration and research in contemporary visual arts, based on computer/ human interface and electronic technology. Includes performance art, environmental art, sound art, light art, video art, interactive installation, kinetic art, conceptual art.

ART 281 Art Makerspaces: Woodworking (2) VLPA The ideation process and creation of art and design require a strong knowledge of materials and equipment. Covers the knowledge and skill building in the medium of wood needed to turn concepts into reality. Recommended: No previous experience needed Credit/no-credit only.

ART 285 Introduction to New Genres (5) VLPA Develops abilities to generate ideas and translate concepts. Emphasis on questioning preconceived notions of the role of art in culture. History and practice of conceptually-based art, including installation, video, performance, and sound; challenges students to identify the appropriate form or medium to express ideas and content.

ART 290 Beginning Drawing: The Figure (5) VLPA Introduction to the human figure as historically

traditional subject matter as well as an important component in self expression. Covers proportion, foreshortening, and composition. Prerequisite: ART 190.

ART 292 Beginning Painting (5, max. 10) VLPA

Beginning oil painting. Prerequisite: ART 290.

ART 300 Photography and Extended Practice (5)

VLPA Concepts and techniques of contemporary lens-based practices considered through discussions, image surveys, field trips, screenings, readings and critiques. Prerequisite: ART 240.

ART 301 Moving Images (5) VLPA

Development and articulation of an individual, experimental, and critical approach to artistic studio practice using the moving image. Prerequisite: ART 240.

ART 302 Research and Exhibition Practice (5) VLPA

Students expand their practice through experimentation with a variety of materials and presentation strategies. Completed work exhibited in spaces across the UW. One-on-one and group feedback. Prerequisite: ART 240.

ART 303 Art Systems: Installation, Performance, and the Structures of Presentation (5) VLPA

Utilizing photo, video, critique, and exhibition skills, students learn the importance of art-making in today's culture. Introduction to installation and performance art. Investigates comprehensive systems and contexts in which art is produced and presented. Prerequisite: ART 240.

ART 333 New Materials and Processes in Glass (5, max. 15) VLPA

Explores the process through which artists discover and translate ideas, feelings, and concerns into images or objects. Investigations include various glass forming methodologies and material properties. Topics rotate and may include mold-making, kiln casting, photo processes, mixed medial, cold fabrication, enamels, cold-working, hot glass practices, and sculptural applications. Prerequisite: ART 233.

ART 339 Photography (5, max. 15) VLPA Introduces a range of theories, ideas, techniques, and processes of still photography in a fine art context. Emphasizes photography's creative potential.

ART 340 Advanced Photomedia (5, max. 15) VLPA

Explores the concepts and techniques of contemporary photographic practice, including non-traditional approaches to photography and related media. Explores 3-dimensional installation practices, collaborative projects, and the moving image. Examines the use and role of photography and related media in contemporary culture. Introduces how an artist's work responds to these contemporary issues. Prerequisite: ART 242. Offered: AWSp.

ART 345 Intermediate Printmaking (5, max. 25)

VLPA Development of mature and personal statement within context of the print form through studio practice and group discussion and critique. Processes and media emphasis varies on a revolving basis.

ART 350 Printmaking Special Projects (5, max. 15)

VLPA In depth study of a printmaking method such as sequential printing, multi-block printing, white-ground aquatint, or sugar-lift aquatint.

ART 351 Furniture Design and Making (5, max. 10)

VLPA Introduction to furniture design and making. Covers history of furniture from 1850 to present and includes hands-on learning resulting in design and fabrication of three unique tables. No previous experience required.

ART 352 Furniture Design and Production (5, max. 10) VLPA

Hands-on woodworking and furniture production. Includes development of technique and collaboration with fabrication shops and design professionals. Uses design drawing, model building, and full-scale construction prototypes as tools of communication. End-of-term exhibit places work on public view.

ART 353 Intermediate Ceramic Art (5, max. 20)

VLPA Explores a variety of ceramic processes and conceptual development including: press and slip molds, glaze formulation, multiples and installation, tiles and bricks, intermediate wheel, time, space, and scale. Prerequisite: ART 253.

ART 355 Materials in Context for Interdisciplinary Practice (5) VLPA

Focuses on exploring the meanings, uses, and visual/sculptural potentials of both traditional and innovative new materials, both natural and man-made.

ART 360 Topics in Studio Art and Practice (5, max. 25) VLPA Examines a variety of cutting edge, emerging, and interdisciplinary approaches in studio art and practice. Topics vary.

ART 361 Critical Issues in Contemporary Art (5, max. 15) VLPA Surveys critical ideas in contemporary art practice. Includes lectures by nationally recognized artists to introduce a wide range of artistic positions and practices. Engages students with the major issues informing contemporary art and new modes of practice.

ART 365 Social Practice (5) VLPA Introduces overlapping territories of art and social practice, the practice of Socially Engaged Art. Focuses on environmentalism, consumerism, economies, society and culture, activism, and the place for creative practice in our contemporary life.

ART 372 Intermediate Approaches to Sculpture (5, max. 15) VLPA Explores a variety of processes and conceptual thinking used in the context of making sculpture. Topics rotate and may include work in wood, metal, found object, and other materials to create objects, installations, experiences, and fabrications. Prerequisite: ART 272 Offered: AWSp.

ART 390 Intermediate Drawing (5, max. 10) VLPA Prerequisite: ART 290.

ART 392 Intermediate Painting (5, max. 10) VLPA Prerequisite: ART 290 and ART 292

ART 393 Intermediate Painting Topics (5) VLPA Revolving topics in the study of painting at the intermediate level. Prerequisite: ART 392.

ART 395 The Creative Process: Strategies and Outcomes (5) VLPA Explores the nature of the creative process in the visual arts. Focuses on experiential learning through projects of ideation, experimentation, problem solving, editing, and creating narrative meanings.

ART 400 Interdisciplinary Visual Arts Senior Studio (5, max. 15) VLPA *Labitzke* Focuses on the development of exhibition quality artwork, culminating in a group show. Covers curatorial issues, installation, and presentation. Assignments are designed to strengthen oral presentation skills,

artist's written statement, critiquing abilities, and ability to place work within a larger art historical framework.

ART 421 Video Art (5, max. 15) VLPA

ART 440 Senior Thesis in Photomedia (5, max. 20) VLPA Development of a coherent artistic theme or topic evolved over three consecutive quarters resulting in a finished thesis portfolio. Prerequisite: ART 340.

ART 450 Individual Projects in Printmaking (5, max. 15) VLPA Individual media study within the context of group discussion and critique.

ART 453 3D4M Senior Studio (5, max. 20) Includes individual studio work, seminars, source presentations, field trips, professional practices, and culminates with the BA thesis exhibition.

ART 457 Artist Handmade Books (5) VLPA The creative and structural development of an artist's book. Focuses on issues of sequential imagery, conceptual development, and the relationship between work and image.

ART 458 Alternative Approaches to Drawing (5) VLPA Advanced works-on-paper class. Focuses on drawing issues such as formal process, working methods, conceptual development, and practical working applications.

ART 480 Cross-Disciplinary Honors in Art (5, max. 10) VLPA Designed for Senior Honors students in the Division of Art and is a graduation requirement of the "BA in Art with Honors" degree. Taught on a rotating cycle by Division of Art faculty from all of the four options: Interdisciplinary Visual Arts, Photomedia, Painting & Drawing and Three-Dimensional Forum. Includes critiques, studio visits, discussion, readings, and interactions with visiting artists. Prerequisite: Art Honors students only.

ART 485 Alternative Contexts: Site Responsive Interventions (5) VLPA Focuses on experimental and conceptual approaches; examines the historical lineage of art interventions as a means of developing contemporary forms. Examines the ways sites are constructed spatially, socially, and historically.

Students produce projects designed to interact with existing structures and situations.

ART 490 Advanced Drawing (5, max. 15) VLPA Study at an advanced level involving history, practice, and theory of drawing as an art form. Prerequisite: ART 390.

ART 492 Advanced Painting: The Figure (5, max. 10) VLPA Drawing and painting from the model. Prerequisite: ART 390; ART 393.

ART 494 Senior Seminar in Painting and Drawing (5, max. 15) VLPA Development of individuality in painting through creative exercises. Prerequisite: ART 393

ART 496 Art Internship (1-5, max. 10) Internships in conjunction with Art faculty and partners in the large visual arts community. Credit/no-credit only.

ART 497 Study Abroad-Studio Individual Projects (3-10, max. 20) VLPA

ART 498 Individual Projects - Art (2-5, max. 15) Independent projects in studio art.

ART 499 Independent Study in Glass (2-5) Independent projects in the Glass studios.

ART 501 Graduate Student Teaching Mentorship (2-5, max. 15) Independent study for graduate students to work under the direction of a faculty member as they prepare for and teach an undergraduate class. Credit/no-credit only.

ART 512 Graduate Seminar (3, max. 9)

ART 515 Graduate Studio Photomedia (2-15, max. 60) Photomedia graduate studio and seminar, including readings, discussions, and studio critiques.

ART 550 Printmaking (3-15, max. 60)

ART 553 3D4M Grad Studio (2-15, max. 60)

ART 561 Critical Issues in Contemporary Art Practice (5, max. 10) Surveys critical ideas in contemporary art practice. Includes lectures by nationally recognized artists to introduce a wide range of artistic positions and practices. Engages students

with the major issues informing contemporary art and new modes of practice. Prerequisite: Grads in Art, Art History or Design only. Offered: AWSp.

ART 590 Interdisciplinary Graduate Seminar in Contemporary Practices (5, max. 25) Constructive forum for developing dialogue and critique in practicum-based setting. Professional development highlights the student's experience.

ART 591 Graduate Studio: Drawing (5, max. 15) Supervised studio for advanced-level students from various media-based disciplines designed to develop an interest in and familiarity with aspects of drawing. Utilization of various media. Discussion of historical and contemporary issues concerning drawing.

ART 592 Graduate Studio: Painting (2-10, max. 60) Offered: AWSp.

ART 594 Graduate Seminar in Painting and Drawing (2-15, max. 15) Designed as a forum for the presentation and criticism of student work as well as for discussion of contemporary directions in visual art. Credit/no-credit only.

ART 595 Master of Fine Arts Research Project (2-5, max. 10) An independent research project related to and informed by the MFA student's studio work. Final project form may be a lecture, slide presentation, or paper.

ART 600 Independent Study or Research (*-)

ART 700 Master's Thesis (*-)

ART HISTORY

ART H 200 Art in the Modern Imagination: Athena to Lady Gaga (5) VLPA Informs ability to see art as a tool to examine history, ideology, beauty, and ultimately the image-saturated present. Also to distinguish between historical context and modern projection on artworks. Further, to discover how art transcends its context and still speaks in a language in which people can become literate.

ART H 201 Survey of Western Art-Ancient (5) VLPA Major achievements in painting, sculpture, architecture, and the decorative arts in Europe, the

Near East, and North Africa, from prehistoric times to the beginnings of Christianity.

ART H 202 Survey of Western Art-Medieval and Renaissance (5) VLPA Emphasizes the arts of the Byzantine Empire and Western Christendom from Late Antiquity to the High Renaissance.

ART H 203 Survey of Western Art-Modern (5) VLPA Western art from 1520 to the present.

ART H 204 Art History and Visual Culture (5, max. 15) VLPA/I&S Study of art and visual culture as instruments of knowledge and methods of human expression that operate in many arenas of history, tradition, and the contemporary environment.

ART H 206 Survey of Native-North American Art (5) VLPA/I&S Survey of the indigenous arts of North America north of Mexico from ancient through contemporary times. Focuses on the historical and cultural contexts of the arts and the stylistic differences between tribal and individual artists' styles.

ART H 209 Themes and Topics in Art History (5, max. 15) VLPA Introduces students to new ideas, developing themes, and current research in art history and visual culture.

ART H 211 Fashion Systems: Europe-Asia (5) VLPA/I&S *R. Silberstein* Introduces the historical development of fashion systems in early modern and modern Europe and Asia. Explores topics including: Fashioning the Body; Gender and Fashion; Fashion as Conspicuous Consumption; Fashion as Urban Spectacle; the Politics of Fashion. Offered: jointly with JSIS A 211.

ART H 212 Chinese Art and Visual Culture (5) VLPA/I&S Surveys the highlights of Chinese visual arts from the Neolithic to the present. Studies jade, bronze, lacquer, silk, Buddhist sculpture, ceramics, calligraphy, painting, architecture, film, and installation art forms at a moment in Chinese history when work in those media was especially innovative and important.

ART H 214 Art of India: Mohenjo-Daro to the Mughals (5) VLPA/I&S Surveys the material culture and artistic production of South Asia, which includes

the present-day nation states of India, Pakistan, Bangladesh, Nepal, and Sri Lanka, from antiquity until the early modern period.

ART H 220 Survey of American Art (5) I&S/VLPA Broad survey of key issues and achievements in the history of the visual arts, including painting, sculpture, architecture, photography and prints, among other media, made in the United States or by American artists living abroad from the colonial era to the present.

ART H 233 Survey of Native Art of the Pacific Northwest Coast (5) VLPA/I&S Surveys indigenous art of the Pacific Northwest Coast from the Columbia River in the south to Southeast Alaska in the north and from ancient through contemporary times. Focuses on the historical and cultural contexts of the art and the stylistic differences between tribal and individual artists' styles.

ART H 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and opera used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with HSTEU 250/ITAL 250; W.

ART H 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gaylard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes, make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ITAL 260/JSIS A 260; W.

ART H 261 Italian Cities (5) VLPA Introduces Italian culture by focusing on the past and present of five of the nation's most important cities: Rome, Florence, Venice, Milan, and Naples. Taught in English. Offered: jointly with ITAL 261.

ART H 270 Art/Identity Politics: Issues of Representations in Contemporary Art (5) VLPA Introduces participants to various ways contemporary artists and art movements have explored the intersection of visual representation, identity formation, and politics, one of the most persistent themes in art since the 1960s.

ART H 272 French Impressionism and Post Impressionism (5) I&S/VLPA Examines the lives and works of the French Impressionists and Post Impressionists within the cultural, social, and economic context of their time. Overarching themes include the examination of subject matter, gender issues, contemporary influences in the art world, and modernity.

ART H 273 History and Theory of Photography (5) I&S/VLPA Survey of photography from its beginnings in the early 19th century to the digital imaging of today. Study photography as an artistic medium, a social text, a technological adventure, and a cultural practice. Key photographers, cultural movements and recurring themes will be explored with close attention to the social and cultural contexts in which photographs were produced, circulated and consumed.

ART H 290 History of Architecture (5) VLPA/I&S Introduction to the history of architecture across a broad range of cultural contexts.

ART H 309 Topics in Art History (5, max. 25) VLPA Topics vary.

ART H 310 Chinese Art and Archaeology Neolithic to Han Dynasty (5) VLPA/I&S Introduces Chinese art and archaeology from the Neolithic to the Han Dynasty. Focuses on the history of developing technology and the archaeological basis for understanding the development of art and visual culture in early China.

ART H 311 Arts of Imperial China (5) VLPA/I&S Introduces the role of painting in the history of Imperial China from the fourth to the seventeenth century. Topics for reading and discussion include political forces, regional geography, social structure, gender, traditional philosophies, and religious and spiritual influences.

ART H 312 Art and Empire in India, 1750-1900 (5) VLPA Surveys the transformation in the visual arts between the Mughal and British empires in India. Topics of learning and discussion include changes and new developments in artistic production, patronage, viewing publics and protocols, technology, roles of art institutions, and exchanges between media.

ART H 314 Modern and Contemporary Art in India (5) VLPA Surveys the visual arts of India from the late colonial through the postcolonial period. Topics include impact of colonialism, anti-colonial nationalist claims for art, shifting status of oil paintings, emergence of a national style, new art movements in urban centers, and art in the service of forge postcolonial identities and alliances.

ART H 333 Indigenous Body Adornment (5) VLPA/I&S, DIV Selected examples of body adornment in indigenous cultures, focusing on Oceania and North America, including tattooing, jewelry, clothing, and hairstyles. Topics include adornment's capacity to express individual, clan, or national identity in ceremonial and quotidian contexts and ethics of such expressions and their use or misuse by the dominant society. Recommended: Art H 233 or previous experience in any 100 or 200 level art history class

ART H 340 Pre-Classical Art and Archaeology (3) VLPA K. Topper Survey of the art and the other material remains of the civilizations in the Aegean from the Neolithic Age to the end of the Bronze Age, with special emphasis on Minoan Crete and the Mycenaean kingdoms of mainland Greece, illustrated by slides. The history, techniques, and results of significant excavations are examined. Offered: jointly with CL AR 340.

ART H 341 Greek Art and Archaeology (3) VLPA S. Levin-Richardson, K. Topper Survey of the material remains and the developing styles in sculpture, vase painting, architecture, and the minor arts from the geometric to the Hellenistic periods, illustrated by slides. Principal sites and monuments, as well as techniques and methods of excavation, are examined in an attempt to reconstruct the material culture of antiquity. Offered: jointly with CL AR 341.

ART H 342 Roman Art and Archaeology (3) VLPA Kathryn R. Topper Roman architecture and art, with emphasis on the innovations of the Romans; illustrated by slides. Offered: jointly with CL AR 342.

ART H 343 Hellenistic Art and Archaeology (3) VLPA K. Topper Survey of the art of Greece and the eastern Mediterranean from the time of Alexander the Great to the Roman conquest. Principal sites with their sculpture, painting, mosaics, and minor

arts examined in lectures illustrated with slides.
Offered: jointly with CL AR 343.

ART H 347 Pompeii: A Time Capsule of Ancient Life (5) VLPA/I&S, DIV S. Levin-Richardson Explores the power differential between men and women, slaves and masters, and citizens and foreigners in the cultural melting pot of ancient Pompeii, which was preserved by a volcanic eruption in 79 CE. Graffiti, skeletal remains, everyday objects, humble and world-class art and monuments will be analyzed. Offered: jointly with CL AR 347; AWSp.

ART H 354 Medieval Art (5) VLPA Survey of art, architecture, and material culture of Western Christendom circa 700-1500.

ART H 361 Italian Renaissance Art (5) VLPA Sculpture, painting, and architecture from 1300 to 1600.

ART H 366 Northern Renaissance Art (5) VLPA An overview of Netherlandish, French, and German art in the context of cultural developments circa 1400-1570.

ART H 373 Southern Baroque Art (5) VLPA Art of Italy and Spain, circa 1590 to circa 1710.

ART H 374 Northern Baroque Art (5) VLPA The art of northern Europe, circa 1590 to circa 1710.

ART H 380 Nineteenth- and Twentieth-Century Art (5) VLPA Arts and architecture of Europe and America from Romanticism to the present.

ART H 381 Art Since World War II (5) VLPA/I&S Art of Europe and the United States in the decades since World War II: painting, sculpture, and architecture, multiplication of new forms (video, performance pieces, land and installation pieces), changing context of patronage, publicity, and marketing.

ART H 384 American Art (5) VLPA/I&S Achievements and issues in painting, architecture, sculpture, and other arts in the United States from the colonial era to the present.

ART H 390 American Architecture through an Ecological Lens (5) I&S/VLPA Introduction to the history of American architecture and urbanism as

seen from an ecological perspective, from the time of indigenous inhabitants to the present.

ART H 391 Paris Architecture (5) VLPA/I&S The architecture of Paris from its pre-Roman origins to the present.

ART H 400 ART History and Criticism (2-5, max. 15) VLPA Courses on special topics, frequently by visiting faculty, which cannot be offered on a continuing basis. Consult art history office for subjects offered.

ART H 412 Art History and the Study of Chinese Bronzes (5) VLPA/I&S An investigation of Chinese Bronzes to illuminate some general ideas about the discipline and practice of art history. Focuses on a case study examining the work of a twentieth-century practitioner of art history and comparing it with that of a famous scholar from a neighboring discipline.

ART H 413 Selected Topics in Chinese Art (5, max. 15) VLPA Specific theme or area of Chinese art, such as the art of Bronze Age China or Chinese painting under Communist rule.

ART H 414 Topics in South Asian Art (5, max. 15) VLPA/I&S Explores topics on the art and visual culture of South Asia with a particular focus on India.

ART H 419 Japanese Architecture (3) VLPA Survey of Japanese architecture from its origins to modern times. Although Shinto architecture, tea houses, gardens, and modern developments are discussed, the primary focus is on the development of Japanese Buddhist architecture. Offered: jointly with ARCH 453.

ART H 435 Thematic Studies in Native-American Art (5, max. 15) I&S/VLPA Wright Approach to Native-American art through themes and issues. Focus varies from year to year (e.g. Shamanism in Native-American art, gender identity in Native-American art, social and political aspects of Native-American art, issues in contemporary Native-American art).

ART H 442 Greek Painting (3) VLPA K. Topper Study of painted decoration on Greek vases, with emphasis on stylistic developments and cultural and historical influences. Painting on other media also examined as evidence allows. Offered: jointly with CL AR 442.

ART H 443 Roman Painting (3) VLPA *S. Levin-Richardson, K. Topper* Study of surviving painting from the Roman world, with emphasis on wall paintings from Pompeii and Herculaneum. Principal topics for discussion: the four styles of Pompeian painting the dependence of Roman painters on Greek prototypes, and the significance of various kinds of painting as domestic decoration. Offered: jointly with CL AR 443.

ART H 444 Greek and Roman Sculpture (3) VLPA *K. Topper* History and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis on Greek sculpture of the fifth century BC. Offered: jointly with CL AR 444.

ART H 446 Greek Architecture (3) VLPA *K. Topper* Detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. Offered: jointly with CL AR 446.

ART H 447 The Archaeology of Early Italy (3) VLPA *S. Levin-Richardson, K. Topper* Study of the principal archaeological sites of early Italy, including Etruria, Sicily, southern Italy, and archaic Rome up to the Republican period. Attention given to the material remains and their relationship to the Etruscan, ancient Sicilian, and early Roman civilizations. Offered: jointly with CL AR 447.

ART H 448 The Archaeology of Italy (3) VLPA *S. Levin-Richardson, K. Topper* Study of the principal archaeological sites in Italy with special emphasis on ancient Rome. Sites include the Alban hills, Ostia, Pompeii, Herculaneum, Tarquinia, Paestum, Tivoli, and Praeneste. Attention given to the relationship between material remains and their purpose in ancient life. Illustrated by slides. Offered: jointly with CL AR 448.

ART H 452 Art, Religion, and Politics in the Early Christian Period, 300-700 AD (3) VLPA/I&S *Kartsonis* Evolution of the art of the early Christian period (300-700 AD) in the context of contemporary religious, political, and cultural developments. Offered: jointly with RELIG 452.

ART H 453 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) VLPA/I&S *Kartsonis* Evolution of the art of Byzantium (700-1453 AD) in the context of

contemporary religious, political, and cultural developments. Offered: jointly with JSIS D 453.

ART H 454 Topics in Byzantine and Medieval Art (5, max. 15) VLPA Topics in Byzantine and Medieval Art.

ART H 461 Gender and Sexuality in Classical Art and Archeology (3/5) I&S/VLPA, DIV *S. Levin-Richardson, K. Topper* Examines gender and sexuality in the visual and archaeological records of Greece and Rome, with a focus on topics such as the body, clothing, the gaze, homoeroticism, sexual labor, gendered spaces, and transgressive genders and sexualities. Recommended: previous coursework in Greek and/or Roman art at the 200- or 300-level is encouraged. Offered: jointly with CL AR 461; AWSp.

ART H 471 Rome in the Seventeenth Century (5) VLPA Painting, sculpture, and architecture; concentration on Caravaggio, Bernini, Poussin, and Borromini.

ART H 473 Topics in Baroque Art (5, max. 15) VLPA Approaches to the study of Baroque art through particular themes, genres, contexts, new research, and emerging issues. Focus varies from year to year.

ART H 480 Art Museums: History, Theory, Practice (5) VLPA Explores the history of art museums in America and Europe from the nineteenth century to the present. Topics include connoisseurship and conservation, theories of design and display, architectural challenges, auction houses, dealers, curators, directors, impact of education departments, museums' changing relationship to public audiences, visual arts, and the law.

ART H 483 Post-Impressionism to 1918 (5) VLPA Post-Impressionism and the great revolution of early twentieth-century art, with emphasis on painting. From the first revisions of Impressionism around 1880 to Fauvism, Cubism, Futurism, the Blaue Reiter, and Dadaism.

ART H 484 Topics in Modern Art (5, max. 15) VLPA Approach to art of the nineteenth and twentieth centuries through particular themes, genres, contexts, or other issues. Focus varies from year to year.

ART H 486 Abstract Expressionism: History and Myth (5) VLPA Thematic and chronological survey of abstract expressionism, including major genres of critical interpretation, revisionist scholarship, and the relationship of artistic production to a larger context of visual production.

ART H 488 American Architecture (3) American architecture from indigenous Native American traditions to the present. Offered: jointly with ARCH 455.

ART H 491 Twentieth-Century Architecture (3) VLPA Architecture in the twentieth century, mainly in Europe and the United States. Traces roots of Modernism in Europe in the 1920s, its demise (largely in the United States) in the 1960s, and recent trends such as Post-Modernism and Deconstructivism. Offered: jointly with ARCH 457.

ART H 492 Alternative Art Forms Since 1960 (5) VLPA Survey of "post-studio" art forms developed in the 1960s by artists who did not equate artmaking with painting, sculpture, or other traditional forms. Topics include: happenings, Fluxus, land projects, artists' video, artists, books, performance, site works, and art made for distribution on CD-ROM and on the web.

ART H 493 Architecture Since 1945 (3) VLPA Theories and forms in architecture from the end of World War II to present. Includes new wave Japanese architects, recent Native American developments, and non-Western as well as Western trends. Offered: jointly with ARCH 459.

ART H 494 Paris: Architecture and Urbanism (3/5) VLPA/I&S Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ARCH 458/JSIS A 433.

ART H 495 Italian Fascism: Architecture and Power (5) VLPA/I&S Fascism in Italy as studied within the broader European context of nationalism, imperialism, and modernization, with particular emphasis on the arts - literature, film, architecture, and urbanism. Offered: jointly with ITAL 475.

ART H 498 Individual Projects, Undergraduate Practicum (2-5, max. 10) Fieldwork or internships in art-related areas in the community. Practical experience in areas such as arts administration, gallery and museum operations, collection cataloguing, curatorial responsibilities, and art education. Credit/no-credit only.

ART H 499 Individual Projects (2-5, max. 10)

ART H 500 Methods of Art History (5) Introduction to the specialized bibliography of art historical research and to the wide variety of approaches to art historical problems of all periods and regions.

ART H 501 Seminar in the General Field of Art (5, max. 15)

ART H 504 Methods of Art History: Faculty Research (2) Discussion and analysis of methodological issues posed in faculty research. Credit/no-credit only. Offered: W.

ART H 509 Seminar in Special Topics in Art History (5, max. 15) Specific focus changes from quarter to quarter.

ART H 511 Seminar in Chinese Art (5, max. 15) Critical appraisal of the principal research methods, theories, and types of literature dealing with the art of China.

ART H 514 Seminar in South Asian Art (5, max. 30) VLPA/I&S Critical appraisal of the principle research methods, theories, and types of literature dealing with the art of South Asia.

ART H 521 Topics in Asian Art (5, max. 20) Investigates a series of topics in Asian art.

ART H 522 Topics in Ancient, Classical, and Medieval Art (5, max. 20) Investigates a series of variable topics in ancient, classical, and medieval art.

ART H 523 Topics in Italian and Northern Renaissance Art (5, max. 20) Investigates a series of variable topics in Italian and Northern Renaissance art.

ART H 524 Topics in Baroque and Eighteenth Century Western Art (5, max. 20) Investigates a

series of variable topics in baroque and eighteenth century Western art.

ART H 525 Topics in Modern and Contemporary Art and Architecture (5, max. 20) Investigates a series of variable topics in modern and contemporary art and architecture.

ART H 533 Seminar in North American Native Art (5, max. 15) Problems in North American Indian visual arts. Content varies.

ART H 541 Seminar in Greek and Roman Art (5) S. *Levin-Richardson, K. Topper* In-depth study of selected topics and problems of the art of ancient Greece and Rome. Offered: jointly with CL AR 541.

ART H 551 Seminar in Early Christian, Byzantine, and/or Medieval Art and Architecture (5, max. 15) Problems in early Christian, Byzantine, and medieval art and architecture. Content varies. Prerequisite: permission of instructor.

ART H 561 Seminar in Italian Renaissance Art (5, max. 15) Problems and in-depth study of selected topics of the art of the Italian Renaissance.

ART H 577 Seminar in Baroque Art (5, max. 15) Iconographic and stylistic problems of the art of the Baroque period, with emphasis on the principal research methods, theories, and types of literature dealing with the art of the seventeenth and eighteenth centuries in Europe.

ART H 581 Seminar in Modern Art (5, max. 15) Art historical problems of the nineteenth and twentieth centuries.

ART H 590 Seminar in Criticism of Contemporary Art (5, max. 15) Contemporary art and appropriate critical methodology.

ART H 591 Seminar in Twentieth-Century Architecture (3/5) Specific focus changes from quarter to quarter. Prerequisite: graduate standing with background in art history, architecture, architectural history, or permission of instructor. Offered: jointly with ARCH 558.

ART H 597 Graduate Internship (2-5, max. 5) Internship in the field of art history with a museum,

gallery, or other faculty-approved art or architectural institution that can offer the student substantial research or curatorial experience. Credit/no-credit only.

ART H 598 Master's Practicum (*, max. 15) Credit/no-credit only.

ART H 599 Reading and Writing Projects (2) Art historical issues, methods, and materials. Required of all graduate majors registered in 400-level art history courses. Open also to graduate nonmajors.

ART H 600 Independent Study or Research (*-)

ART H 700 Master's Thesis (*-) Credit/no-credit only.

ART H 800 Doctoral Dissertation (*-) Credit/no-credit only.

DESIGN

DESIGN 150 What is Design: Practices, Principles, and Perspectives (3) VLPA Explores design activities and perspectives that affect the relationship between people, technology, and the world. Areas of research and practice, approaches, and principles provide an overview of how Design is represented in the field.

DESIGN 165 Introduction to Industrial Design (5) VLPA Provides a general introduction to industrial design. Develops students' knowledge through lectures, readings, and studio projects that focus on the history of the discipline and the processes of brainstorming, ideation, skill building, problem solving, and professional presentation used in the creation of design. Includes participation by guest designers.

DESIGN 166 Design Foundations (5) VLPA Examines the rudiments of visual structure and problem solving in two and three-dimensional design. Emphasizes design methodology and design processes with emphasis on the formal principles of composition and organization.

DESIGN 206 Design Methods (5) VLPA Explores fundamental methods and design process in industrial design, interaction design, and visual communication design, including contextual

research, participatory design, problem finding, ideation, conceptual design, design variations, design selection, detail design, and design communication.

DESIGN 207 Design Drawing (5) VLPA Concentrates on developing skills used to communicate ideas that exist in the imagination. Focuses on study of design drawing history and development of basic skills necessary for ideation, exploration, communication, explanation. Prepares students to visualize and discuss ideas rapidly and professionally. For design majors only. Prerequisite: DESIGN 166

DESIGN 208 Survey of Design History (5) VLPA Surveys the ideas, events, and individuals that determined the design of information, objects, culture, and commerce across societies. Examines the social, political, economic, and cultural contexts that shape design and the ideologies and relationships of similar movements in art and architecture. Includes late nineteenth century through contemporary issues.

DESIGN 209 Fundamentals of Typography (5) VLPA Develops understanding of and sensibility to typographic details used to create effective communication. Focus moves from understanding letter forms that make up words to the complexities of developing phrases, sentences, and short paragraphs with multiple levels of hierarchical meaning. Prerequisite: DESIGN 207.

DESIGN 210 Collaboration and Improvisation (5) VLPA Introduces key factors in the theory and practice of creating and participating in collaborative projects. Focuses on creating and participating in effective teams, understanding strengths and roles within teams, working through team issues, developing techniques for interdisciplinary problem solving. Prerequisite: DESIGN 166.

DESIGN 211 3-D Foundation (5) VLPA Introduction to aesthetic fundamentals of 3-dimensional form. Explores the articulation of form and space in both abstract and applied scenarios. Prepares design students for subsequent work in interaction design, design studies, industrial design, and visual communication design.

DESIGN 213 Prototyping for Designers (5) VLPA Teaches skills related to the use of physical

prototyping for ideation, testing, and presentation of designs.

DESIGN 214 Marks and Symbols (5) VLPA Investigates the formal and conceptual problems associated with mark and symbol design. Students work individually and collaboratively (in small groups) to research and develop a series of marks and symbols for specific communication goals/purposes. Prerequisite: DESIGN 209.

DESIGN 215 Visual Storytelling (5) VLPA Introduces students to visual storytelling - a powerful technique used in design to engage audiences, convey meaning, and communicate design intent. Develops this skill using print publication, web design, experience prototypes, and concept videos. Prerequisite: DESIGN 209

DESIGN 250 Visualizing Ideas (3) VLPA *Annabelle Gould* Principles inherent in the discipline of visual communication design, including fundamentals of composition, typography, semiotics, color theory, storytelling, and image-making. Students engage in creative thinking, seeing, and making to create more professional work, including resumes, posters, and digital presentations. Offered: W.

DESIGN 265 Topics in Design (5, max. 20) VLPA Revolving topics class that addresses the thinking, skills, and creative motivations that drive the practice of design.

DESIGN 266 Design Concepts and Practice (5, max. 20) VLPA Revolving topics class that addresses foundational issues and contemporary practice in the field of design.

DESIGN 300 Design and Thinking (5, max. 10) VLPA *Ozubko* Develops an approach to conceptual problem solving while exploring their fundamental principles of visual communication. Cultivate critical, analytical, and verbal skills through liberal learning experiences and design methodologies. Offered: S.

DESIGN 301 Current Issues in Design (2/5, max. 10) VLPA Current project and research in Visual Communication Design, Industrial Design, and/or Interaction Design. Thematic topics and credits vary.

DESIGN 316 Introduction to Industrial Design (5)

VLPA Introduces the fundamentals of 3-D design with emphasis on analytical and intuitive approaches to problem solving, technical skills, and form development. Prerequisite: DESIGN 207; DESIGN 211.

DESIGN 317 Intermediate ID Studio 1 (5) VLPA

Introduces theories, methods, and design development focused on design principles involving form, function, usability, and product development. Prerequisite: DESIGN 316.

DESIGN 318 Intermediate ID Studio 2 (5) VLPA

Includes studio experiences that expand upon and combine intellectual and manual skills for the practice of industrial design. Emphasizes the ideation process with form development. Prerequisite: DESIGN 317.

DESIGN 319 Advanced Design Drawing (5) VLPA

Advanced visualization and drawing using traditional and computer-aided approaches. Prerequisite: DESIGN 207 AND 211.

DESIGN 320 Industrial Design Special Projects (5, max. 15) VLPA

Progressive industrial design methodology and criticism introduced through independent or group work on projects to expand students' visual research, drawing, model making, presentation, and literacy skills. Includes contemporary manufacturing and information technologies.

DESIGN 322 Presentation for Industrial Design I (5)

VLPA Introduction to presentation skills, from quick sketching of design concepts to refined representation of the finished design in a two-dimensional format. Emphasis on accuracy and development of an individual style. Prerequisite: DESIGN 316 and DESIGN 319.

DESIGN 323 Presentation for Industrial Design (5) VLPA**DESIGN 324 Materials and Manufacturing (3) VLPA**

Two primary strategic directions: First, through lecture, explores the various materials and manufacturing processes available to designers. Second, through field visits to factories, sees how these materials and processes are used in real world production.

DESIGN 325 Physical Computing (5) VLPA Explores non-screen interactions (tangible interactions, or physical computing) . Surveys the state of the art in the field, and teaches students techniques for devising their own physically mediated interactions. Pairs of students create working prototypes of furniture which senses and responds to human interaction.

DESIGN 326 Digital Fabrication (5) VLPA Covers topics pertaining to the use of digital prototyping (3D printing, CNC) coupled with virtual modeling tools techniques like computer aided design (CAD) .

DESIGN 365 Developing Solutions in Design (5, max. 20) VLPA Revolving topics class that concentrates on learning in specific areas where design can be used to resolve contemporary issues.

DESIGN 366 Editorial Visualizations (5) VLPA

Expands focus on design process through a broad variety of image production techniques. Emphasizes concept development and the power of the image for storytelling. Design of stand-alone compositions is expanded into the development of a series of themed works. Prerequisite: DESIGN 209; DESIGN 210.

DESIGN 367 Design for Mobile Experiences (5) VLPA

Investigation of strategies and graphic interpretations to develop a critical perspective on design for mobile interaction. Emphasizes development of core methodologies, vocabulary, case studies, best practices, application prototypes. Prerequisite: DESIGN 366; DESIGN 376.

DESIGN 368 Case Studies in Corporate Identity (5)

VLPA Research and analysis of visual identity systems for complex institutional and corporate entities. Focuses on issues that concern how design programs function across diverse application and media and how they engage various audiences. Prerequisite: DESIGN 376.

DESIGN 369 Visual Systems (5)

Investigates organizational strategies and graphic interpretations using typography, images and diverse applications of design, with the objective of creating a related network of dynamic solutions.

DESIGN 370 Introduction to Motion Design (5) VLPA

Introductions to the theories and fundamentals of

motion design and planning. Explores narrative, storyboarding, composition, time and sound. Includes lectures, case studies, and demonstrations of the techniques and applications of motion graphics in broadcast media.

DESIGN 371 Interface Design 1 (5) VLPA Introduces students to the fundamental building blocks of interface design including mental models, dynamic information displays, affordances, feedback, user flows, control systems, and interactive narratives. Students use these principles to design visual interfaces and prototypes that are both inventive and functional.

DESIGN 372 Interface Design 2 (5) VLPA Introduces students to advanced topics in interface design, including complex information architectures, dynamic information design, multimodal interaction, cross-platform interface design, and tangible interface design. Takes on a hand-on approach to designing, prototyping, and evaluating interfaces across a range of devices and applications, including news services, lifestyle applications, medical devices, and games.

DESIGN 373 Case Studies in Design (5) Explores techniques which allow designers to make type, teapots, and telephones to improve the design of services and organizations. Students use mapping techniques to understand human-object systems and identify examples of useful patterns of organization of behavior in existing organizations.

DESIGN 374 Interactive Media Design (5) VLPA Introduces students to computer programming, with special emphasis on interactive data visualization - the art of creating responsive, visual representations that inform and engage. Students learn fundamental interactive media design principles, and gain practical experience creating interactive visualizations with Processing, a programming language developed specifically for artists and designers.

DESIGN 376 Typography (5) VLPA Explores how meaning, hierarchy, and legibility are affected by typographic contrast, organization, and composition. Prepares students to create dynamic compositions with type, understand how type is used as an image/conceptual visualization, understand the nuances/techniques involved in a professional

typesetting, and develop vocabulary. Prerequisite: DESIGN 209.

DESIGN 377 Marks and Symbols (5) VLPA

Investigates formal and conceptual problems associated with mark and symbol design. Students individually/collaboratively research and develop a series of marks and symbols for specific organizations. Helps develop the ability to recognize effective marks/symbols that identify/communicate an identity or idea, identify specific types of marks and symbols, and determine the most suitable types for a specific communication problem. Prerequisite: DESIGN 366, DESIGN 376.

DESIGN 378 Information Architecture and Web Design (5) VLPA

Fundamental issues in web design, including site planning, information architecture, navigation, visual hierarchy, and interactivity. Emphasis on understanding the unique functional limitations of designing for the web while building an awareness of contemporary design practice. Design a simple site and produce a working a prototype.

DESIGN 381 Design Case Studies: Interaction Design Technology and Production (5) VLPA

History, theory, and practice of ways design functions in society and culture. Emphasis on developing broad understanding of design production while working collaboratively and individually on a quarter-long research project concerned with producing a comprehensive conceptual map of the design discipline. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 383 Foundations of Interaction Design (5) VLPA

Focus on human-to-product interaction and ways we perceive, understand, and experience the world in regard to objects, environments, or on-screen controls/information. Prerequisite: DESIGN 215.

DESIGN 384 Information Visualization for

Interaction Designers (5) VLPA Surveys information visualization approaches, techniques, and concepts for the design of interaction information systems, interactive instructions, and animated information graphics.

DESIGN 385 Design Innovation and Society (5) VLPA

Surveys the role of interaction design and impact of new information technologies and interactive product/systems of everyday life, expert domains,

the formation of values and knowledge, and the production of adaptation to innovations.

DESIGN 386 Visual Storytelling (5) VLPA Investigates the form and role of visual narratives from design development in the interaction design process. Introduces planning and production of storyboards, photography, video, editing for storytelling, character development, and design concept visualization as they apply to design presentation, communication, and evaluation of interactive design sequences. Prerequisite: DESIGN 384; DESIGN 385.

DESIGN 387 Physical Interaction Design (5) VLPA Surveys approaches, concepts, and techniques for the design of interaction systems that are situated in physical environments. Prerequisite: DESIGN 384; DESIGN 385.

DESIGN 400 Design Entrepreneurship (5) VLPA Focuses on the design of products, services, and new business models as a simultaneous exercise. Bridges the skills of design and business planning by combining proven fundamentals of product design with a newly emerging paradigm for business planning and development.

DESIGN 443 Materials and Manufacture in Industrial Engineering (5) VLPA Analyzes materials used in mass-produced products, focusing on how these materials impact product design and on finishing quality of products. Emphasizes materials research and manufacturing processes. Team-based research with multi-media report-out at end of quarter. Prerequisite: DESIGN 211; DESIGN 212.

DESIGN 444 Prototype Project Development (5) VLPA Learn to apply traditional hand tools and digital prototyping machines to the creative process of industrial design.

DESIGN 445 Advanced Industrial Design (5) VLPA Emphasizes solving problems through the manipulation of design theory, application of human factors, appropriate combination of materials and manufacturing techniques, and presentation of concepts. Prerequisite: DESIGN 318.

DESIGN 446 Advanced Industrial Design: Professional Practice (5) VLPA Collaboration project with the professional design industry. Students learn how industrial designers brainstorm, develop, and

refine initial design concepts to final product solutions. Prerequisite: DESIGN 445.

DESIGN 447 Senior Projects in Industrial Design (5) VLPA Industrial design project of the student's own choosing, with consent of instructor, to refine problem solving and design ability in preparation for graduate exhibition. Prerequisite: DESIGN 446.

DESIGN 466 Publication Design (5) VLPA Stresses the research, development, organization, design, and presentation of a complex printed document, such as a journal, annual report, or large publication. Addresses all aspects of design, content, image creation, and production through a quarter-long project. Prerequisite: DESIGN 368; DESIGN 378.

DESIGN 467 Exhibition and Installation Design (5) VLPA Explores how to communicate powerful messages and stories in three-dimensional space, bringing together typography, imagery, and innovative use of materials and structures. Emphasizes sustainable processes and materials.

DESIGN 477 Type Design (3-5) VLPA Exploration of contemporary type design.

DESIGN 478 Information Design (5) VLPA Exploration of strategies for enhancing and visually presenting complex statistics and data. Various information subjects are selected and formed into charts, diagrams, graphs, tables, directories and maps. Identify, through personal investigations, the principles which provide the most successful means for presentation of information. Prerequisite: DESIGN 466.

DESIGN 479 Interaction Design (5) VLPA Exploration of design issues unique to user-centered interaction in digital media. Explore a range of formal and conceptual issues including user interface, organization, narrative, motion, time, and sound. Prerequisite: DESIGN 478.

DESIGN 480 Senior Projects in Visual Communication Design (5) VLPA Presents an opportunity for advanced, individualized design research and study. Complete a unique capstone project based on individual design interests and prior experiences in the VCD program. Public exhibition of this project is required in the BFA Graduation Exhibition.

DESIGN 481 Field Studies: Design Research Techniques (5) VLPA Students develop an understanding of significant theoretical models related to design through a series of readings, lectures, discussions, and assignments. Prerequisite: DESIGN 383.

DESIGN 483 Advanced Interaction Design (5) VLPA Explores the role of visual interface design and interaction flows in technology-driven work settings. Introduces techniques for knowledge elicitation and design of interactive systems in expert domains or special use contexts to develop interface that are useful, understandable, and usable. Prerequisite: DESIGN 383.

DESIGN 484 Senior Projects in Interaction Design (5) VLPA Explores the design of interactive products and user experience in everyday settings. Students apply interaction design and research techniques in a multi-disciplinary studio for a quarter-long interaction design project requiring collaboration between students from a variety of backgrounds including design, engineering, and computer science. Prerequisite: DESIGN 383; DESIGN 483.

DESIGN 485 Design Capstone (5) VLPA For all senior undergraduate design majors. Offered spring of senior year, ID, VCD, and IxD majors frame and develop a project based on broad themes chosen by faculty. Projects may be individual or collaborative. Cross-disciplinary projects are strongly encouraged.

DESIGN 486 Design Exhibition (1-3) Offered every spring, seniors work collaboratively to create a public exhibition, representing the culmination of their work in the program. ID, VCD and IxD seniors work in teams to develop a graphic identity, promotional materials, website, and juried exhibition. Credit/no-credit only.

DESIGN 488 Professional Practices (3) VLPA Focuses on developing the tools to create a successful transition between academia and professional practice as a working designer. Credit/no-credit only.

DESIGN 495 Design Internship (1-5, max. 10) Internships for undergraduates in conjunction with design faculty and business partners in the design community. Credit/no-credit only.

DESIGN 496 Directed Research in Interaction Design (2, max. 12) VLPA *Axel Roesler, Audrey Desjardins* Working in teams under supervision of faculty members, students review relevant literature, pose research questions, design and conduct studies, and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Offered: AWSp.

DESIGN 499 Individual Projects-Design (2-5, max. 15) Independent projects in design.

DESIGN 501 Graduate Student Teaching Mentorship (2-5, max. 15) Independent study for graduate students to work under the direction of a faculty member as they prepare for and teach an undergraduate class. Credit/no-credit only.

DESIGN 581 Graduate Seminar in Design (5, max. 30) Addresses critical issues in design through research, writing, presentations, and discussion.

DESIGN 582 Design Graduate Studio (5, max. 40) Explores a range of ideas and influences in the context of applied design.

DESIGN 590 Current Issues in Design (2/5, max. 10) Current trends and professional issues in the field of design for graduate students. Prerequisite: graduate standing in Design, or other graduate students by permission of instructor.

DESIGN 596 Directed Research in Interaction Design (2, max. 12) *Audrey Desjardins, Axel Roesler* Working in teams under supervision of faculty members, students review and critically assess relevant literature; articulate research questions; design, detail, and conduct studies; and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Offered: AWSp.

DESIGN 600 Independent Study or Research (*)

DESIGN 700 Master's Thesis (*)

ASIAN LANGUAGES AND LITERATURE

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ASIAN 200 Introduction to Asian Languages and Literature (5) VLPA Introduces approaches to the study of Asian languages and literature. Topics include theoretical, applied, historical, and comparative linguistics; literary and cultural study; philosophy; languages, and writing systems of Asia; and indigenous Asian approaches to the study of language and literature. Offered: Sp.

ASIAN 201 Literature and Culture of China: Ancient and Classical (5) VLPA/I&S Introduction to ancient and classical Chinese literature in its cultural context. Texts in English translation.

ASIAN 202 Literature and Culture of Japan: Traditional Japan (5) VLPA/I&S Introduction to traditional Japanese literature in its cultural context. Texts in English translation.

ASIAN 203 Literature and Culture of Ancient and Classical India (5) VLPA/I&S Introduction to ancient and classical Indian literature in its cultural context. Texts in English translation.

ASIAN 204 Literature and Culture of China from Tradition to Modernity (5) VLPA/I&S Introduction to modern Chinese literature in its cultural context. Texts in English translation.

ASIAN 205 Literature and Culture of Japan from Tradition to Modernity (5) VLPA/I&S Introduction to Japanese literature of the nineteenth and twentieth centuries in its cultural context. May also include some Korean literature. Texts in English translation.

ASIAN 206 Literature and Culture of South Asia from Tradition to Modernity (5) VLPA/I&S *Heidi R Pauwels* Introduction to medieval and modern South Asian literature in its cultural context. Texts in English translation.

ASIAN 207 Special Topics in Literature and Culture of Asia (5, max. 10) VLPA/I&S Introduction to the literature of one or more Asian traditions considered in its cultural context. Content varies depending on the specialization and interest of instructor. Texts in English translation.

ASIAN 211 Languages and Cultures of China (5) VLPA/I&S Provides a general survey of the languages and language-families in China, emphasizing the rich linguistic diversity found there today. Languages compared with English, from linguistic and cultural perspectives, to demonstrate not only characteristics but also mutual dependence throughout their development.

ASIAN 223 Buddhist Literature (5) VLPA/I&S Introduction to Buddhist literature in India, China, and Japan including biographies, poetry, narratives, ritual manuals, doctrinal treatises, and historical accounts. Attention also given to issues of textual composition, transmission, authorship, audience, context, and function. Taught in English. Offered: W.

ASIAN 225 Indian Philosophical Literature (5) VLPA/I&S *Prem Pahlajrai* Introduction to various topics pertaining to the vast philosophical literature of India, such as its origins and contexts, dharma; karma and free will; logic and argument. A variety of systems from Hindu, Buddhist, Jain, theistic, and non-theistic schools are covered. Taught in English. Offered: WS.

ASIAN 263 Great Works of Asian Literature (5) VLPA Selected major works of Asian literature. Taught on a rotational basis with the literary traditions of China, Japan, India covered in successive years. Content varies depending on specialization and interest of instructor. Primary emphasis on literary values of works and their tradition; attention also given to historical and social contexts and the thought and value systems of the culture involved.

ASIAN 301 Songs of the Saints of India (5) VLPA/I&S India's wisdom through popular songs of its saints of the devotional tradition. Texts as significant in contemporary religion and politics, whether protesting existing hierarchies of caste and gender, or confirming the status quo. Readings in English translation.

ASIAN 401 Introduction to Asian Linguistics (5) VLPA *Zev Handel, Kaoru Ohta* Linguistic analysis, with emphasis on languages of East, Southeast, South, and Central Asia. Includes phonetics, phonemics, morphology, syntax, historical reconstruction, linguistic typology, comparative grammar. Survey of major languages and language families of Asia. Diverse Asian languages as subjects

of linguistic analysis. Prior knowledge of linguistics not required.

ASIAN 404 Writing Systems (5) VLPA *William G. Boltz, Zev Handel* Comprehensive theoretical and historical overview of written language worldwide. Includes origins and early development of writing in the Near East, Asia, and the Americas; relationships between spoken and written languages; types and characteristic of writing systems (logographics, syllabic, and alphabetic) ; and methods used for decipherment of ancient languages. Offered: W.

ASIAN 405 Advanced Problems in Asian Linguistics (3) VLPA Advanced problems in the analysis of the languages of East, Southeast, South, and Central Asia. Includes phonology, morphology, syntax, lexicography, historical reconstruction, linguistic typology, and comparative grammar. Prerequisite: ASIAN 401. Instructors: Handel, K. Ohta, Shapiro

ASIAN 491 Internship in Teaching Asian Languages and Cultures (1-2, max. 5) Teaching internship in a language course (undergrad or grad students are eligible) or a disciplinary course (graduate students only) , as arranged with the supervising instructor. Faculty permission required. 3 hr/week internship earns 1 credit, 6 hr/week internship earns 2 credits. Credit/no-credit only. Offered: AWSpS.

ASIAN 494 Ramayana in Comparative Perspective (5) VLPA, DIV *Pauwels* Examines and compares different versions (mainly South Asian) of the Ramayana, including the widely popular television version. Focuses on some famous and controversial passages, with special attention to gender issues. Incorporates background readings from the most recent research. Offered: jointly with JSIS A 461.

ASIAN 498 Special Topics (1-5, max. 15) VLPA Offered occasionally by permanent or visiting faculty members. Topics vary. Offered: AWSpS.

ASIAN 503 Seminar in Asian Linguistics (1-5, max. 15) Topics vary. Prerequisite: permission of instructor. Instructors: Handel, A. Ohta, K. Ohta Offered: AWSp.

ASIAN 510 Teaching Asian Languages (5) A. OHTA Methodology for teaching modern foreign languages, focusing on languages taught by teaching assistants in the department. Eclectic and practical

overview for current and potential TAs. Consideration of broader issues involved in language program management. Strong hands-on component, including observation, teaching, materials development, and portfolio development for job seekers. Prerequisite: proficiency in an Asian language Credit/no-credit only. Offered: A.

ASIAN 541 Seminar in Asian Textual and Digital Cultures (5) Topics may differ with each offering but will include aspects of textual and digital production in Asian cultures.

ASIAN 580 Seminar in Hinduism Studies (5) Pauwels Introduction to the academic study of Hinduism for graduate students. Examines major problems currently addressed in the academic study of Hinduism and the methods used. Provides a historical perspective on past scholarship. Offered: jointly with RELIG 580.

ASIAN 585 Seminar in Buddhism (2/5) Systems and history of Buddhist thought. Original and secondary sources are used. Combines the methods of specialists in south, central, and east Asian Buddhism with those of historians of religion and philosophy. Prerequisite: permission of instructor. Instructors: Cox Offered: AWSp.

ASIAN 590 Seminar in Translation Studies (5, max. 15) H. CHO Seminar study of topics in translation studies and Asian literatures/cultures.

ASIAN 600 Independent Study or Research (*-) Offered: AWSpS.

ASIAN 700 Master's Thesis (*-) Offered: AWSpS.

ASIAN 800 Doctoral Dissertation (*-) Offered: AWSpS.

BENGALI

BENG 101 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. First in a sequence of three. Offered: A.

BENG 102 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. Second in a sequence of three. Prerequisite: BENG 101. Offered: W.

BENG 103 Elementary Bengali (5) Offers a balance of all four skills: speaking, reading, listening, and writing. Consists of lectures on grammar, drill sections, oral and written exercises, aural comprehension exercises, and readings in elementary-level texts. Third in a sequence of three. Prerequisite: BENG 102. Offered: Sp.

BENG 200 Introduction to modern Bengali language, literature and culture (5) VLPA Evolution of modern Bengali language, literature, and culture from the fifteen hundreds to the present. Topics may include the Bengali "renaissance"; the works of the Nobel Laureate Rabindranath Tagore, Nazrul Islam, and other writers; films of Satyajit Ray and other film-makers; or the emergence of Bangladesh. Texts in English.

BENG 201 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation and role-play. First in a sequence of three. Prerequisite: BENG 103. Offered: A.

BENG 202 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation and role-play. Second in a sequence of three. Prerequisite: BENG 201. Offered: W.

BENG 203 Intermediate Bengali (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an intermediate level. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural

comprehension exercises, and topic-based conversation and role-play. Third in a sequence of three. Prerequisite: BENG 202. Offered: Sp.

BENG 301 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. First in a sequence of three. Prerequisite: BENG 203. Offered: A.

BENG 302 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. Second in a sequence of three. Prerequisite: BENG 301. Offered: W.

BENG 303 Advanced Bengali (5) VLPA Further development of proficiency in reading, writing, listening, and speaking standard colloquial Bengali at an advanced level with the aim of preparing students to do research. Readings in fiction and non-fiction literature, vocabulary and grammar exercises, writing of essays and creative pieces, aural comprehension exercises, and topic-based conversation. Third in a sequence of three. Prerequisite: BENG 302. Offered: Sp.

BENG 499 Independent Study (3-5, max. 15)
Offered: AWSpS.

CHINESE

CHIN 101 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. First in a sequence of three. Offered: A.

CHIN 102 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 101. Offered: W.

CHIN 103 First-Year Chinese for Non-Heritage Learners (5) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 134. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 102. Offered: Sp.

CHIN 111 First-Year Chinese for Heritage Learners (5) Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context. First in a sequence of three. Offered: A.

CHIN 112 First-Year Chinese for Heritage Learners (5) Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 111. Offered: W.

CHIN 113 First-Year Chinese for Heritage Learners (5) VLPA Intended for students who have some formal or home training in listening to and speaking Mandarin. Focuses on reading comprehension and writing characters in context. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 112. Offered: Sp.

CHIN 130 International Baccalaureate (IB) Beginning Chinese (5/10) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

CHIN 131 International Baccalaureate (IB) Intermediate-Beginning Chinese (5) Course awarded based on International Baccalaureate (IB) score.

Consult the Admissions Exams for Credit website for more information.

CHIN 133 Advanced Placement (AP) Chinese Language (5) Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

CHIN 134 First-Year Intensive Chinese for Non-Heritage Learners (15) Introduction to the standard language. Emphasis on learning correct pronunciation and basic structure. Drill in oral use of the language. Open only to students who do not have any previous training in Chinese. Cannot be taken for credit in combination with CHIN 101, CHIN 102, or CHIN 103. Offered: S.

CHIN 138 First-Year Intensive Chinese for Heritage Learners (15) Intended for students who have some formal or home training in listening to and speaking Chinese. Focuses on reading, comprehension, and writing characters in context. Cannot be taken for credit in combination with CHIN 111, CHIN 112, or CHIN 113. Offered: S.

CHIN 145 Foreign Study: First-Year Chinese (1-15, max. 20) Modern 100-level Chinese language studied abroad. Evaluation by department/faculty required.

CHIN 201 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Aural and oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 103 or CHIN 134. Offered: A.

CHIN 202 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 201. Offered: W.

CHIN 203 Second-Year Chinese for Non-Heritage Learners (5) VLPA Advanced grammar and vocabulary expansion stressed. Oral practice and structural drills continued. Cannot be taken for credit in combination with CHIN 234. Third in a

sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 202. Offered: Sp.

CHIN 211 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Emphasizes writing. Continues aural and oral practice. Cannot be taken for credit in combination with CHIN 234. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 113 or CHIN 138. Offered: A.

CHIN 212 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Cannot be taken for credit in combination with CHIN 234. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 211. Offered: W.

CHIN 213 Second-Year Chinese for Heritage Learners (5) VLPA Stresses advanced grammar and vocabulary expansion. Emphasizes reading and writing. Continues aural and oral practice. Cannot be taken for credit in combination with CHIN 234. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 212. Offered: Sp.

CHIN 230 International Baccalaureate (IB) Advanced-Beginning Chinese (5-15) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

CHIN 231 Advanced Placement (AP) Chinese Language (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

CHIN 232 Advanced Placement (AP) Chinese Language (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

CHIN 234 Second-Year Intensive Chinese for Non-Heritage Learners (15) VLPA Continuation of first-year non-heritage Chinese. Stresses advanced grammar and vocabulary expansion. Continues aural and oral practice and structural drills. Cannot be taken for credit in combination with CHIN 201, CHIN 202, or CHIN 203. Prerequisite: minimum grade of 2.0 in either CHIN 103 or CHIN 134. Offered: S.

CHIN 245 Foreign Study: Second-Year Chinese (1-15, max. 20) VLPA Modern 200-level Chinese language studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 301 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers general topics, reading ability of simple unedited text, as well as writing skill in short essay form. First in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 203. Offered: A.

CHIN 302 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers general topics, reading ability of simple unedited text, as well as writing skill in short essay form. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 301. Offered: W.

CHIN 303 Third-Year Chinese for Non-Heritage Learners (5) VLPA Focuses on oral and aural proficiency. Covers general topics, reading ability of simple unedited text, as well as writing skill in short essay form. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 302. Offered: Sp.

CHIN 330 International Baccalaureate (IB) Intermediate Chinese (5-15) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

CHIN 331 Chinese Extensive Reading (3/5, max. 10) VLPA Combines extensive reading and text-based discussion to promote both language and literacy skills in Modern Standard Chinese. Prerequisite: CHIN 113 or CHIN 203.

CHIN 342 The Chinese Language (5) VLPA *Zev Handel, Chan Lu* Nature and structure of the Chinese language, covering structural characteristics, genetic and typological affiliation, standard Mandarin and Chinese dialects, Chinese writing system, history of the Chinese language, and cultural aspects. Prerequisite: either CHIN 103, CHIN 113, CHIN 134, or CHIN 138.

CHIN 345 Foreign Study: Third-Year Chinese (1-15, max. 20) VLPA Modern 300-level Chinese language

studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 373 Chinese Poetry (5) VLPA Introduction to Chinese poetry. A study of its origins, forms, major themes, and relevant conventions. All readings in English. No knowledge of Chinese required.

CHIN 374 Chinese Prose (5) VLPA *Knechtges* Survey of great works of Chinese prose, including philosophical writings, historical works, short narratives, essays, and rhyme-prose. All readings in English. No knowledge of Chinese required.

CHIN 380 Pre-Modern Chinese Narrative (5) VLPA Premodern Chinese fiction in English translation. Historical and cultural contexts of narrative traditions. Emphasis on the Ming and Qing periods; works and topics vary from year to year.

CHIN 381 Literature in Modern China (5) VLPA Twentieth-century Chinese literature in English translation. Introduces the historical and cultural context of modern Chinese writing, as well as various critical approaches to its study.

CHIN 385 Popular Culture in Twentieth-Century China (5) VLPA/I&S Introduction to Chinese popular culture from the turn-of-the-century to the present. Topics include cinema, popular music, and popular fiction; emphasis varies from year to year.

CHIN 395 Foreign Study: Intermediate Chinese Literature or Linguistics (1-15, max. 15) VLPA Intermediate Chinese literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 411 Fourth-Year Chinese (5) VLPA Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either CHIN 213 or CHIN 303. Offered: A.

CHIN 412 Fourth-Year Chinese (5) VLPA Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 411. Offered: W.

CHIN 413 Fourth-Year Chinese (5) VLPA Reading of unedited texts including newspaper articles, literary selections, and academic essays. Oral discussion, listening comprehension, and composition. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 412. Offered: Sp.

CHIN 431 Chinese Extensive Reading (3/5, max. 10) VLPA Combines extensive reading and text-based discussion in order to promote both language and literacy skills in Modern Standard Chinese. Prerequisite: CHIN 113 or CHIN 203.

CHIN 442 The Chinese Language (5) VLPA Covers the same topics as CHIN 342 (students attend CHIN 342 lectures), with additional readings and assignments. Provides necessary background for 500-level courses in Chinese linguistics and textual study. Intended for graduate students or advanced undergraduates. Required: Reading ability in Chinese.

CHIN 443 Structure of Chinese (5) VLPA Outline of the major grammatical structures of Chinese. Focus on learning and teaching problems. Prerequisite: CHIN 413

CHIN 445 Foreign Study: Fourth-Year Chinese (1-15, max. 20) VLPA Modern 400-level Chinese language studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 451 Introduction to Classical Chinese (5) VLPA Structure and history of Classical Chinese; its cultural and linguistic place in the history of the literary language. Prerequisite: either CHIN 113, CHIN 203, or CHIN 234.

CHIN 452 First-Year Classical Chinese (5) Exercises and selected readings in pre-Han texts. Focus on grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 451. Instructors: Boltz Offered: W.

CHIN 453 First-Year Classical Chinese (5) Exercises and selected readings in pre-Han texts. Focus on grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in CHIN 452. Instructors: Boltz Offered: Sp.

CHIN 461 History of Chinese Literature (5) VLPA
Chinese literature from earliest times to the end of the Six Dynasties. Offered: A.

CHIN 462 History of Chinese Literature (5) VLPA
Chinese literature from the Tang to the end of the Song. Prerequisite: CHIN 461 Offered: W.

CHIN 463 History of Chinese Literature (5) VLPA
Chinese literature from the Yuan to recent times. Offered: WSp.

CHIN 470 Advanced Readings in Modern Chinese (5) VLPA
Reading and translation of scholarly articles and selections in the humanities and social sciences. Prerequisite: minimum grade of 2.5 in either CHIN 213 or CHIN 303.

CHIN 473 Seminar in Early Medieval China (5) VLPA
History and culture of Early Medieval China and the intellectual-philosophical writings that transformed Chinese culture. Prerequisite: CHIN 213 or CHIN 303.

CHIN 482 Advanced Readings in Modern Chinese (5) VLPA
Modern texts in the original, mainly works published since the beginning of the twentieth century. Focus on literature, primarily short story and essay. Prerequisite: minimum grade of 2.5 in either CHIN 213 or CHIN 303

CHIN 495 Foreign Study: Advanced Chinese Literature or Linguistics (1-5, max. 15) VLPA
Advanced Chinese literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required.

CHIN 496 Special Studies in Chinese (5, max. 15) VLPA
Topics vary.

CHIN 499 Undergraduate Research (3-5, max. 15)
For Chinese language and literature majors. Offered: AWSpS.

CHIN 531 Introduction to Historical Phonology (5)
Sources and methods in the study of phonology. Prerequisite: CHIN 442 or permission of instructor.

CHIN 540 Seminar in Linguistics (2/5, max. 15) Z.
Handel Advanced topics in Chinese linguistics. Subject emphasis varies from year to year.

CHIN 545 Seminar in Applied Linguistics (5, max. 15)
C. Lu Selected topics in applied linguistics. Prerequisite: Permission of instructor. Offered: AWSp.

CHIN 551 First-Year Classical Chinese (5) Exercises and selected readings in pre-Han texts. Grammar, systematic sentence analysis, and distinctive functions of grammatical particles. First in a sequence of three. Prerequisite: either CHIN 113, CHIN 203, or CHIN 234, or equivalent.

CHIN 552 First-Year Classical Chinese (5) Exercises and selected readings in pre-Han texts. Grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Second in a sequence of three. Prerequisite: either a minimum grade of 2.0 in CHIN 551 or equivalent.

CHIN 553 First-Year Classical Chinese (5) Exercises and selected readings in pre-Han texts. Grammar, systematic sentence analysis, and distinctive functions of grammatical particles. Third in a sequence of three. Prerequisite: either a minimum grade of 2.0 in CHIN 552 or equivalent.

CHIN 559 Introduction to Methods and Materials in Sinology (2/5) Introduction to the basic reference works and methods of research in Chinese language and literature. Includes a history of Sinology, survey of basic bibliographies, dictionaries, atlases, catalogs, journals, literary collections, concordances, and other sources. Prerequisite: CHIN 551, CHIN 552. Offered: AWSp.

CHIN 561 History of Chinese Literature (2/5) Part of a three-quarter series of graduate-level courses on the history of Chinese literature. Focuses on major writers and works from earliest times to the Tang dynasty.

CHIN 562 History of Chinese Literature (2/5) Part of a three-quarter series of graduate-level courses on the history of Chinese literature. Focuses on major writers and works from the Tang and Song dynasties.

CHIN 563 History of Chinese Literature (5) Third in a three-term series of courses on the history of Chinese literature. Covers genres, works, and writers from the Yuan dynasty (13th century) through the twentieth century. While noting the continuation of

classical traditions, it focuses on the development of vernacular genres.

CHIN 564 Introduction to Philology and Lexicology

(5) *W. Boltz* Provides an introduction to textual criticism for students of pre-modern Chinese texts. In particular the course will focus on two related subjects: philological method and lexicological analysis. Prerequisite: Ability to read Classical Chinese. Offered: AWSp.

CHIN 571 Readings in Pre-Modern Texts (5, max.

15) *P. Wang* Close readings of pre-modern Chinese texts. Selections vary. Recommended: Four years' college-level study of modern Chinese and one year of classical Chinese (or the equivalent) , plus previous coursework in Chinese literature and/or history. Offered: AWSp.

CHIN 572 Readings in Modern Texts (5, max. 15)

J. Hamm Readings in Chinese literature and related fields. Addresses critical issues and involves reading representative secondary scholarship; the primary focus is on both broad and intensive reading of the primary texts. Selections vary. Prerequisite: Reading fluency in modern Chinese and at least one year's study of Classical are required; previous coursework in history and literary studies is strongly recommended. Offered: AWSp.

CHIN 582 Seminar in Vernacular Literature (5, max.

15) Reading and analysis of Chinese vernacular literary texts. Selections vary. Prerequisite: Permission of instructor.

CHIN 583 Seminar in Modern Literature (5, max. 25)

Directed study of selected works of modern Chinese literature. Primary focus on the novel, short story, and essay. Selections vary. Prerequisite: Permission of instructor.

CHIN 585 Seminar in Poetry (5, max. 15)

P. Wang Directed study of selected works of Chinese poetry. Selections vary. Prerequisite: Ability to read Classical Chinese. Offered: AWSp.

CHIN 587 Seminar in Modern Culture (5, max. 15)

J. Hamm Directed study of aspects of twentieth-century Chinese literary and popular cultures. Provides both historical coverage and a grounding in various theoretical and methodological problems. Topics include print culture, cinema, popular music,

as well as aspects of material culture; emphasis varies. Prerequisite: Permission of instructor. Offered: AWSp.

HINDI

HINDI 101 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation.

Introduction to Devanagai script. First in a sequence of three. Offered: A.

HINDI 102 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation.

Introduction to Devanagari script. Second in a sequence of three. Prerequisite: HINDI 101. Offered: W.

HINDI 103 Elementary Hindi (5) Modern literary Hindi. Reading, writing, and conversation.

Introduction to Devanagari script. Third in a sequence of three. Prerequisite: HINDI 102. Offered: Sp.

HINDI 201 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar.

Intermediate-level prose and poetry readings. Oral drills. First in a sequence of three. Prerequisite: HINDI 103. Offered: A.

HINDI 202 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar.

Intermediate-level prose and poetry readings. Oral drills. Second in a sequence of three. Prerequisite: HINDI 201. Offered: W.

HINDI 203 Intermediate Hindi (5) VLPA Systematic expansion of vocabulary and grammar.

Intermediate-level prose and poetry readings. Oral drills. Third in a sequence of three. Prerequisite: HINDI 202. Offered: Sp.

HINDI 301 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama.

Advanced conversation and composition. First in a sequence of three. Prerequisite: HINDI 203. Offered: A.

HINDI 302 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama.

Advanced conversation and composition. Second in

a sequence of three. Prerequisite: HINDI 301.
Offered: W.

HINDI 303 Advanced Hindi (5) VLPA Rapid reading of contemporary Hindi prose, poetry, and drama. Advanced conversation and composition. Third in a sequence of three. Prerequisite: HINDI 302. Offered: Sp.

HINDI 404 Derivational Morphology of Hindi/Urdu (5) VLPA A systematic introduction to the derivational morphology of Hindi/Urdu. Sanskrit, Persian, Arabic, and English elements in Hindi/Urdu. Treatment of derivational prefixes and suffixes, stem alternations, and methods of compound formation. Prerequisite: HINDI 203.

HINDI 421 Survey of Modern Hindi Literature: Short Story (5) VLPA/I&S H. PAUWELS Survey of Hindi literature from the late nineteenth century to the present. Readings from representative short stories situated in their socio-historical context and related to popular perception, a. o. Bollywood films. Prerequisite: HINDI 303 or instructor's permission.

HINDI 422 Survey of Modern Hindi Literature: Poetry (5) VLPA/I&S H. PAUWELS Survey of Hindi literature from the late nineteenth century to the present. Readings from representative poems situated in their socio-historical context and related to popular perception, a. o. Bollywood films. Prerequisite: HINDI 303.

HINDI 423 Survey of Modern Hindi Literature: Novel (5, max. 15) VLPA H. PAUWELS Survey of Hindi literature from the late nineteenth century to the present. Includes readings from representative novels, situated in their socio-historical context, and related to popular perception, a. o. Bollywood films. Prerequisite: HINDI 303.

HINDI 424 Survey of Modern Hindi/Urdu Literature: Drama (5, max. 15) I&S/VLPA H. PAUWELS Survey of Hindi-Urdu literature from the late nineteenth century to the present. Readings from representative dramas. The modern Hindi-Urdu theater that has developed in North India is important historically and, through its influence on the popular movies of Bollywood, forms an important part of contemporary popular culture of South Asia. Offered: jointly with URDU 424; W.

HINDI 431 Advanced Conversational Hindi (3, max. 9) VLPA Conversational practice in contemporary Hindi. Prerequisite: HINDI 203.

HINDI 451 Advanced Hindi Readings (5, max. 15) VLPA Readings in modern standard Hindi prose texts drawn from diverse disciplines. Prerequisite: HINDI 303.

HINDI 499 Undergraduate Research (3-5, max. 15) Primarily for Hindi language and literature majors. Offered: AWSpS.

HINDI 501 Studies in Classical Hindi Literature (Braj) (5, max. 15) I&S/VLPA Heidi R Pauwels Introduction to Classical Hindi literature in Braj. Readings of selected prose and poetry by Surdas, Raskhan, Bihari, and others, situated in their socio-historical context and related to popular perception, in contemporary music recordings, theatrical performances, and Bollywood films. Prerequisite: HINDI 303 or higher or instructor permission.

HINDI 502 Studies in Classical Hindi Literature (Avahdi) (2/5, max. 15) VLPA/I&S H. PAUWELS Introduction to Classical Hindi-Urdu literature in Avadhi. Readings of selected poetry by Tulsidas, Malik Muhammad Jayasi, Qutban Suhrawardi, and others, situated in their socio-historical context and related to popular perception, in contemporary music recordings, theatrical performances, and Bollywood films. Prerequisite: HINDI 303 or higher or by special permission.

HINDI 503 Studies in Classical Hindi Literature (Sant Bhasha) (2/5, max. 15) VLPA/I&S H. PAUWELS Introduction to the language and literature of Sant poets. Readings include works by and about Kabir, Raidas, Dadu, and others, including from Sikh sacred scriptures, situated in the historical context and with reference to contemporary music recordings, theatrical performances, and also Bollywood film and television show versions of poets' lives. Prerequisite: HINDI 303 or equivalent.

HINDI 504 Studies in Classical Hindi Literature (Rajasthani) (5) VLPA/I&S H. PAUWELS Introduction to the literary language of Rajasthan. Includes reading of extracts from representative selections from Rajasthani literature, situated in their socio-historical context, and related to popular perception in contemporary music recordings, theatrical

performances, and Bollywood films. Prerequisite: HINDI 303 or higher or instructor permission.

HINDI 510 Structure of Hindi (3) Grammatical analysis of Hindi phonology, syntax, and semantics. Readings from both Western and native grammarians. Prerequisite: HINDI 403 or permission of instructor. Instructors: Shapiro

HINDI 524 Survey of Modern Hindi/Urdu Literature: Drama (5, max. 15) *H. PAUWELS* Survey of Hindi-Urdu literature from the late nineteenth century to the present. Readings from representative dramas. Modern Hindi-Urdu theater in North India is important historically and, its influence on popular movies of Bollywood, forms an important part of contemporary popular culture of South Asia. Offered: jointly with URDU 524; W.

INDIAN

INDN 401 Pali (5) VLPA Introduction to Pali language and literature. Prerequisite: SNKRT 103 or SNKRT 513

INDN 402 Pali (5) VLPA Introduction to Pali language and literature.

INDN 410 Prakrit (5, max. 15) VLPA Introduction to the various Prakrit or Middle Indo-Aryan dialects (Gandhari, Magadhi, Maharashtri, Sauraseni) from literary, canonical, and inscriptional sources. Prerequisite: SNKRT 103 or SNKRT 513.

INDN 490 Senior Seminar (5) Seminar study of special topics in the languages and literatures of South Asia.

INDN 499 Undergraduate Research (3-5, max. 15) Primarily for South Asian language and literature majors. Offered: AWSpS.

INDN 530 Readings in Pali Literature (5, max. 15) Reading and interpretation of intermediate and advanced texts in Pali. Prerequisite: INDN 402 or equivalent

INDN 590 Special Topics in Indology (1-5, max. 27) Studies in selected research topics in South Asian languages and literatures. Prerequisite: graduate standing and permission of instructor.

INDONESIAN

INDO 111 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. First in a sequence of three. Offered: A.

INDO 112 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 111. Offered: W.

INDO 113 Elementary Indonesian (5) Introduction to modern standard Indonesian. Emphasis on grammar and conversational drills. Practice with basic phonological, morphological, and syntactic structures. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 112. Offered: Sp.

INDO 201 Indonesian for Heritage Speakers (5) VLPA *Desiana Pauli Sandjaja* Designed for Indonesian heritage speakers who have background of informal Indonesian and want to improve the formal Indonesian in all four skills: reading, writing, listening, and speaking. Oral discussion, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. First in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 113. Offered: A.

INDO 202 Indonesian for Heritage Speakers (5) VLPA *Desiana Pauli Sandjaja* Designed for Indonesian heritage speakers who have background of informal Indonesian and want to improve the formal Indonesian in all four skills: reading, writing, listening, and speaking. Oral discussion, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 201. Offered: W.

INDO 203 Indonesian for Heritage Speakers (5) VLPA *Desiana Pauli Sandjaja* Designed for Indonesian heritage speakers who have background of informal Indonesian and want to improve the

formal Indonesian in all four skills: reading, writing, listening, and speaking. Oral discussion, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 202. Offered: Sp.

INDO 211 Intermediate Indonesian (5) VLPA

Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. First in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 113. Offered: A.

INDO 212 Intermediate Indonesian (5) VLPA

Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 211. Offered: W.

INDO 213 Intermediate Indonesian (5) VLPA

Review/expansion of fundamental grammatical patterns: morphological and syntactic structures, development of conversational skills, reading some literary and cultural materials, writing compositions. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 212. Offered: Sp.

INDO 311 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers on discussion of readings. Writing compositions. First in a sequence of three. Prerequisite: minimum grade of 2.0 in either INDO 203 or INDO 213. Offered: A.

INDO 312 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers on discussion of readings. Writing compositions. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 311. Offered: W.

INDO 313 Advanced Indonesian (5) VLPA Expanding vocabulary; preparing for research work using original sources; improving reading fluency in modern standard written Indonesian using novels, short stories, newspapers, and other authentic materials. Conversation practice centers on discussion of readings. Writing compositions. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 312. Offered: Sp.

INDO 411 Fourth-Year Indonesian (3) VLPA D.

Sandjaja Speaking, reading, writing, and listening at a native level. Oral discussion/debate, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. First in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 313. Offered: A.

INDO 412 Fourth-Year Indonesian (3) VLPA D.

Sandjaja Speaking, reading, writing and listening at a native level. Oral discussion/debate, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 411. Offered: W.

INDO 413 Fourth-Year Indonesian (3) VLPA D.

Sandjaja Speaking, reading, writing and listening at a native level. Oral discussion/debate, listening comprehension, and composition focused on authentic Indonesian text, films, as well as TV news programs. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in INDO 412. Offered: Sp.

INDO 499 Undergraduate Research (3-5, max. 15)

Primarily for Southeast Asian studies majors. Offered: AWSpS.

JAPANESE

JAPAN 101 First-Year Japanese (5)

Elementary speaking, listening, reading, and writing skills in modern Japanese. First in a sequence of three. Offered: A.

JAPAN 102 First-Year Japanese (5)

Elementary speaking, listening, reading, and writing skills in modern Japanese. Second in a sequence of three. Prerequisite: either JAPAN 101 or JAPAN 111. Offered: W.

JAPAN 103 First-Year Japanese (5) Elementary speaking, listening, reading, and writing skills in modern Japanese. Third in a sequence of three. Prerequisite: either JAPAN 102 or JAPAN 112. Offered: Sp.

JAPAN 120 Extensive Reading in Japanese (2, max. 8) VLPA *Izumi Matsuda* Using the Extensive Reading method, students read Japanese books at their current reading level without dictionaries. Allows students to focus on the content of stories rather than translating each sentence. Students acquire cultural knowledge and expand their vocabulary. Prerequisite: either JAPAN 101 or JAPAN 111; recommended: ability to read hiragana characters. Credit/no-credit only.

JAPAN 130 International Baccalaureate (IB) Beginning Japanese (5/10) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 131 International Baccalaureate (IB) Intermediate-Beginning Japanese (5) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 133 Advanced Placement (AP) Japanese Language (5) Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 134 First-Year Intensive Japanese (15) Fundamentals of the modern Japanese language. Oral communication skills, basic grammar, and reading/writing of hiragana, katakana, and basic kanji. No initial knowledge of Japanese is presumed. Equivalent of JAPAN 111, JAPAN 112, JAPAN 113. Satisfies requirement for entry to JAPAN 211. Students with prior background must take placement test. Offered: S.

JAPAN 145 Foreign Study: Elementary Japanese (1-15, max. 20) For participants in study abroad programs in Japan who complete 100-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 201 Second-Year Japanese (5) VLPA Development of further skills in the spoken and

written languages. Students must enroll in both a lecture and quiz section to receive credit. First in a sequence of three. Prerequisite: either JAPAN 103, JAPAN 113, or JAPAN 134. Offered: A.

JAPAN 202 Second-Year Japanese (5) VLPA Development of further skills in the spoken and written languages. Students must enroll in both a lecture and quiz section to receive credit. Second in a sequence of three. Prerequisite: either JAPAN 201 or JAPAN 211. Offered: W.

JAPAN 203 Second-Year Japanese (5) VLPA Development of further skills in the spoken and written languages. Students must enroll in both a lecture and quiz section to receive credit. Third in a sequence of three. Prerequisite: either JAPAN 202 or JAPAN 212. Offered: Sp.

JAPAN 230 International Baccalaureate (IB) Advanced-Beginning Japanese (5-15) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 231 Advanced Placement (AP) Japanese Language (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 232 Advanced Placement (AP) Japanese Language (5) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 234 Second-Year Intensive Japanese (15) VLPA Equivalent of JAPAN 211, JAPAN 212, JAPAN 213. Satisfies requirements for entry to JAPAN 311, but recommended primarily for those going to Japan shortly upon completion. Prerequisite: either JAPAN 103, JAPAN 113, or JAPAN 134. Offered: S.

JAPAN 245 Foreign Study: Intermediate Japanese (1-15, max. 20) VLPA For participants in study abroad programs in Japan who complete 200-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 301 Third-Year Japanese (5) VLPA

Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. First in a sequence of three. Prerequisite: a minimum grade of 2.0 in either JAPAN 203, JAPAN 213, or JAPAN 234. Offered: A.

JAPAN 302 Third-Year Japanese (5) VLPA

Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. Second in a sequence of three. Prerequisite: minimum grade of 0.7 in either JAPAN 301 or JAPAN 311. Offered: W.

JAPAN 303 Third-Year Japanese (5) VLPA

Intermediate-level skills in both spoken and written languages. Some introduction to unedited materials. Third in a sequence of three. Prerequisite: minimum grade of 0.7 in either JAPAN 302 or JAPAN 312. Offered: SpS.

JAPAN 304 Third-Year Conversational Japanese (3) VLPA

Designed for students to enhance speaking and listening ability in daily situations. Students given ample opportunities to practice speaking Japanese using various materials presented in class. Broadens student's Japanese proficiency through conversing with fellow students and native Japanese speakers. Prerequisite: a minimum grade of 2.0 in JAPAN 203; may not have taken any 400-level JAPAN course.

JAPAN 317 Chanoyu, The Japanese Culture of Tea (5) VLPA

This class traces the evolution of tea drinking in Japan from a monastic ritual introduced from China to an amusement for the samurai class and thence to its culmination as an aesthetic and ethical discipline that has greatly influenced various forms of cultural production through the "wabi" ideal of beauty and the spirit of Zen. Prerequisite: any 100-level, 200-level, 300-level, or 400-level JAPAN course (any of which may be taken concurrently) . Offered: ASpS.

JAPAN 321 Classical Japanese Literature (5) VLPA

Atkins Introduction to the literature and culture of Japan from the earliest times until the mid-nineteenth century. Close readings of tales, poems, plays, or essays with an emphasis on understanding cultural and historical contexts. In English. Offered: A.

JAPAN 322 Modern Japanese Literature (5) VLPA

Introduction to the literature and culture of Japan from the mid-nineteenth century to the present. Close reading of novels, short stories, criticism, or other texts with an emphasis on understanding cultural and historical contexts. In English. Offered: W.

JAPAN 325 Introduction to Japanese Cinema and Media (5) VLPA *Bhowmik, Jesty, Mack* Introduction to Japanese film within their social and historical contexts.

JAPAN 330 International Baccalaureate (IB)

Intermediate Japanese (5-15) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

JAPAN 334 Third-Year Intensive Japanese (15) VLPA

Equivalent to JAPAN 311, JAPAN 312, and JAPAN 313. Prerequisite: a minimum grade of 2.0 in either JAPAN 203, JAPAN 213, or JAPAN 234. Offered: S.

JAPAN 343 Japanese Language in Society (5) VLPA/I&S

Amy Snyder Ohta Survey of issues in Japanese language use. Areas covered include dialectical variation, language attitudes, gender differences, and pragmatics. Prerequisite: either JAPAN 103, JAPAN 113, JAPAN 201, JAPAN 202, JAPAN 203, JAPAN 211, JAPAN 212, JAPAN 213, JAPAN 234, JAPAN 301, JAPAN 302, JAPAN 303, JAPAN 311, JAPAN 312, JAPAN 313, JAPAN 334, or JAPAN 345.

JAPAN 344 Foreign Language Teaching in the Japanese Context: EFL in Japan and JFL in North America (5)

Teaching methods course focused communicative, 4-skills, approaches for teaching foreign language in Japan (English as a foreign language) and in North America (Japanese as a foreign language) . Includes portfolio development and job-seeking strategies. Prerequisite: a minimum grade of 2.0 in either JAPAN 203, JAPAN 213, or JAPAN 234.

JAPAN 345 Foreign Study: Advanced Japanese (1-15, max. 20) VLPA

For participants in study abroad programs in Japan who complete 300-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 360 Topics in Japanese Culture (5, max. 15)

VLPA Focuses on literature from a limited time period or particular aspects of pre-modern or modern Japanese culture.

JAPAN 361 Topics in Japanese Cinema and Media

(5, max. 15) VLPA *Bhowmik, Jesty, Mack* Introduces Japanese film through topics organized according to a specific theme or focused on a relatively limited time period. Students learn contemporary approaches to film with an emphasis on understanding them within their social and historical contexts, often through a specific interpretive methodology.

JAPAN 380 Contemporary Japanese Art and Society

(5) VLPA Introduces Japanese avant-garde and contemporary culture, with particular focus on performance, the visual arts, literature, and film, through topics organized according to a specific theme or focused on a relatively limited time period. Students learn current approaches to modern and contemporary creative cultures with emphasis on understanding texts and works within their social and historical contexts.

JAPAN 395 Foreign Study: Japanese Linguistics or Literature (1-20, max. 20) VLPA

For participants in study abroad programs in Japan who complete coursework in Japanese literature or linguistics.

JAPAN 401 Fourth-Year Japanese I (5) VLPA/I&S

Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in Japanese. First in a sequence of three. Prerequisite: minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334. Offered: A.

JAPAN 402 Fourth-Year Japanese II (5) VLPA/I&S

Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Second in a sequence of three. Conducted in Japanese. Prerequisite: either JAPAN 401, JAPAN 421, or a minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334. Offered: W.

JAPAN 403 Fourth-Year Japanese III (5) VLPA/I&S

Reading, class discussion, oral presentations, and composition on topics related to the Japanese language and present-day Japan. Conducted in

Japanese. Third in a sequence of three. Prerequisite: either JAPAN 401, JAPAN 402, JAPAN 421, JAPAN 422, or minimum grade of 2.5 in JAPAN 303, JAPAN 313, or JAPAN 334. Offered: Sp.

JAPAN 411 Practical Communication through

Japanese TV Dramas (5) VLPA Develops advanced Japanese skills in practical communication, culture and understanding of social issues in Japan through intensive and extensive viewing and discussion of Japanese TV dramas, selected by the instructor and by students. Prerequisite: either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 412 Virtual Tokyo (5) VLPA

Develops Japanese skills through virtual visits to Tokyo. Using online resources, videos, and articles, students explore the culture, history, geography, and events in Tokyo, developing language skills and deepening knowledge of Japan and Japanese culture. Prerequisite: a minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 413 Japanese Conversation Through Movies

(5) VLPA Develops Japanese language skills through Japanese movies and related materials. Incorporates viewing Japanese movies with talking, reading, and writing about them. Focus on development of conversation skills. Prerequisite: minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 418 Advanced Japanese through Content (5,

max. 15) VLPA 4th-year language course builds skills in Japanese via contemporary documentaries, video blogs, and articles. Individualization promotes growth and development of students with differing goals and strengths in advanced Japanese. Prerequisite: a minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 431 Readings in Modern Japanese Literature

(5, max. 15) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: a minimum grade of 2.5 in either JAPAN 303, JAPAN 313 or JAPAN 334.

JAPAN 432 Readings in Modern Japanese Literature

(5, max. 15) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: a minimum grade

of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 433 Readings in Modern Japanese Literature (5, max. 15) VLPA Reading and discussion of selected modern literary texts in the original language, concentrating on the short story. Close attention to grammar and syntax. Prerequisite: a minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334.

JAPAN 434 Seminar in Premodern Japanese Literature (5) VLPA Seminar study of special topics in Premodern Japanese literature. Prerequisite: JAPAN 321.

JAPAN 435 Seminar in Modern Japanese Literature (5) VLPA Seminar study of special topics in modern Japanese literature. Prerequisite: either JAPAN 321, JAPAN 322, JAPAN 325, JAPAN 360, JAPAN 361, or JAPAN 380.

JAPAN 441 The Acquisition of Japanese as a Second or Foreign Language (5) Focuses on how Japanese is acquired or learned by non-native speakers in North America and Japan. Includes study of how Japanese is learned in both naturalistic settings such as study abroad and in foreign language classrooms. Prerequisite: either JAPAN 203, JAPAN 213, any 300-level JAPAN course, or any 400-level JAPAN course (any of which may be taken concurrently) ; and either JAPAN 343, JAPAN 344, ASIAN 401, CHIN 342, any 200-level LING course, or any 300-level LING course.

JAPAN 442 Japanese Syntax and Semantics (5) VLPA *T. OGIHARA* Introduces issues in Japanese syntax and semantics. Emphasizes description generalizations, rather than theoretical proposals. Prerequisite: either LING 200 or LING 400; recommended: LING 461; at least two years of coursework in Japanese. Offered: jointly with LING 412.

JAPAN 443 Topics in Japanese Sociolinguistics (5) VLPA/I&S Methodology and theory of sociolinguistic analysis. Reading of research literature and training in analysis of Japanese language data. Prerequisite: either JAPAN 303, JAPAN 313, JAPAN 334, or JAPAN 345, which may be taken concurrently; and either CHIN 342, ASIAN 401, JAPAN 343, JAPAN 344, JAPAN

441, any 200-level LING course, or any 300-level LING course.

JAPAN 445 Foreign Study: Fourth-Year Japanese (1-15, max. 20) VLPA For participants in study abroad programs in Japan who complete 400-level language courses in approved programs in Japan. Evaluation by department/faculty required.

JAPAN 451 Fifth-Year Japanese I (5) VLPA Builds advanced language skills beyond fourth-year Japanese, using authentic readings and media.

JAPAN 452 Project Work in Advanced Japanese (5, max. 15) VLPA Students pick their own topics, bring their own reading materials to share with classmates, and complete three projects. Provides students skills to use in future occupations and to become a more independent and resourceful language learner.

JAPAN 453 Fifth-Year Japanese III (5) VLPA Builds advanced language skills beyond fourth-year Japanese, using authentic readings and media.

JAPAN 460 Advanced Studies in Japanese Literature (5, max. 15) VLPA Advanced study of Japanese literature that is usually focused on a specific topic and specialist approaches to that topic. Prerequisite: JAPAN 322 or JAPAN 360.

JAPAN 461 Advanced Studies in Japanese Cinema and Media (5) VLPA Advanced study of Japanese cinema and media that is usually focused on a specific topic and specialist approaches to that topic. Prerequisite: JAPAN 325 or JAPAN 361.

JAPAN 471 Introduction to Classical Japanese (5) VLPA Introduction to classical Japanese writing system, grammar, and vocabulary. Prerequisite: a minimum grade of 2.5 in either JAPAN 303, JAPAN 313, or JAPAN 334; may not be repeated. Offered: A.

JAPAN 472 Readings in Classical Japanese Literature I (5) VLPA Continued study of the classical language with a transition to reading literary works and understanding their cultural contexts. Prerequisite: JAPAN 471. Instructors: Atkins Offered: W.

JAPAN 473 Readings in Classical Japanese Literature (5) VLPA Readings in prose, poetry, and drama,

antiquity to nineteenth century. Prerequisite: JAPAN 472. Offered: Sp.

JAPAN 499 Undergraduate Research (3-5, max. 15)

For Japanese language and literature majors. Offered: AWSpS.

JAPAN 505 Kambun (5) Introduction to Kambun, a method of reading texts written in Chinese as classical Japanese. Prerequisite: permission of instructor. Instructors: Atkins

JAPAN 531 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 532 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 533 Advanced Readings in Modern Japanese Literature (5, max. 15) Rapid reading of modern literary and critical texts. Prerequisite: permission of instructor.

JAPAN 540 Seminar on Japanese Linguistics (3, max. 15) Problems in the history and structure of the Japanese language. Topics vary each quarter, according to the needs and interests of the students. Prerequisite: JAPAN 440 or permission of instructor. Instructors: A. Ohta

JAPAN 561 No and Kyogen (5, max. 15) Close reading and analysis of No texts in Japanese, with some attention to Kyogen. Discussion of categorization, structure, imagery, style, mode, theme, authorship, source material, theory, and problems of translation. Prerequisite: permission of instructor.

JAPAN 571 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 572 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 573 Advanced Readings in Classical Japanese Literature (5) Continued readings in classical literary texts. Prerequisite: permission of instructor.

JAPAN 580 Development of Modern Japanese Fiction (5, max. 15) Reading and translation of major works of modern fiction in the original, with emphasis on the chronological development of modern prose style. Prerequisite: permission of instructor.

JAPAN 590 Seminar in Japanese Literature (5, max. 15) Close examination of selected periods, writers, or genres, including problems of literary criticism in Japanese literature. Prerequisite: permission of instructor.

JAPAN 591 Seminar in Japanese Cinema and Media (5, max. 15) Close examination of the history of Japanese film, or a select aspect of Japanese film study such as a particular genre, director, or scholarly approach. Prerequisite: permission of instructor. Instructors: Jesty

JAPAN 595 Seminar in Modern and Contemporary Japanese Art and Society (5, max. 15) Close examination of selected media, genres, or periods of Japanese modern, avant-garde, and contemporary creative cultures including performance, the visual arts, literature, and film, as well as introduction to state of the scholarly field. Prerequisite: permission of instructor.

KOREAN

KOREAN 101 First-Year Korean (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. First in a sequence of three. Offered: A.

KOREAN 102 First-Year Korean (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no formal or informal background in the language. Second in a sequence of three. Prerequisite: KOREAN 101. Offered: W.

KOREAN 103 First-Year Korean (5) Elementary speaking, listening, reading, and writing skills in modern Korean. Open only to students with no

formal or informal background in the language. Third in a sequence of three. Prerequisite: KOREAN 102. Offered: Sp.

KOREAN 130 International Baccalaureate (IB) Beginning Korean (5/10) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

KOREAN 131 International Baccalaureate (IB) Intermediate-Beginning Korean (5) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

KOREAN 134 First-Year Intensive Korean (15) Covers the fundamentals of the modern Korean language. Includes Hangeul, oral communication skills, and basic grammar. Presumes no initial knowledge of Korean. Equivalent to KOREAN 101, KOREAN 102, and KOREAN 103. Cannot be taken for credit in combination with KOREAN 101, KOREAN 102, and KOREAN 103 or KOREAN 135. Students with prior background must take placement test. Offered: S.

KOREAN 145 Foreign Study: Elementary Korean (1-15, max. 20) For participants in study abroad programs who complete elementary language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 201 Second-Year Korean (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior to first-year Korean at UW. First in a sequence of three. Prerequisite: either KOREAN 103, KOREAN 134, or interview with instructor. Offered: A.

KOREAN 202 Second-Year Korean (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior to first-year Korean at UW. Second in a sequence of three. Prerequisite: either KOREAN 201 or interview with instructor. Offered: W.

KOREAN 203 Second-Year Korean (5) VLPA Development of further skills in the spoken and written languages. Open only to students with no formal or informal background in the language prior

to first-year Korean at UW. Third in a sequence of three. Prerequisite: either KOREAN 202 or interview with instructor. Offered: Sp.

KOREAN 204 Spoken Korean (5) VLPA The Korean language as spoken in ordinary conversational situations. Phonetic accuracy and appropriateness of idiom. May be taken any summer after completion of first-year Korean. Prerequisite: KOREAN 103.

KOREAN 230 International Baccalaureate (IB) Advanced-Beginning Korean (5-15) VLPA Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

KOREAN 245 Foreign Study: Intermediate Korean (1-15, max. 20) VLPA For participants in study abroad programs who complete intermediate language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 301 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. First in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 203, KOREAN 212, or KOREAN 213. Offered: A.

KOREAN 302 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 301. Offered: W.

KOREAN 303 Third-Year Korean (5) VLPA Advanced/intermediate level skills in spoken and written language. Continued oral and aural proficiency with added emphasis on ability to read simple, unedited real-life materials and write in short essay form. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in KOREAN 302. Offered: Sp.

KOREAN 330 International Baccalaureate (IB) Intermediate Korean (5-15) VLPA Course awarded based on International Baccalaureate (IB) score.

Consult the Admissions Exams for Credit website for more information.

KOREAN 345 Foreign Study: Advanced Korean (1-15, max. 20) VLPA For participants in study abroad programs who complete advanced language courses in approved programs in Korea. Evaluation by department/faculty required.

KOREAN 360 Topics in Korean Literature and Culture (5, max. 15) VLPA *H. CHO* Focuses on Korean literature from a limited time period or particular aspects of Korean culture.

KOREAN 365 Korean Pop Culture (5, max. 15) VLPA Focuses on Korean popular culture in modern and contemporary Korea and beyond.

KOREAN 395 Foreign Study: Intermediate Korean Literature and Linguistics (1-5, max. 20) VLPA Intermediate Korean literature or linguistics studies abroad in approved programs. Evaluation by department/faculty required. Offered: AWSpS.

KOREAN 411 Readings in Contemporary Korean (5) VLPA Provides experiences in reading a variety of contemporary styles. Includes informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Prerequisite: KOREAN 303. Offered: A.

KOREAN 412 Readings in Contemporary Korean (5) VLPA Provides experience in reading a variety of contemporary styles. Materials from published works include informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Offered: W.

KOREAN 413 Readings in Contemporary Korean (5) VLPA Provides experience in reading a variety of contemporary styles. Materials from published works include informal essays, short stories, one-act plays, academic essays, and newspaper editorials. Offered: Sp.

KOREAN 415 Readings in Korean Literature and Culture (5) VLPA *H. CHO* Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: A.

KOREAN 416 Readings in Korean Literature and Culture (5) VLPA *H. CHO* Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: W.

KOREAN 417 Readings in Korean Literature and Culture (5) VLPA *H. CHO* Reading and discussion of selected modern literary texts and other cultural texts in the original language. Offered: Sp.

KOREAN 435 Seminar in Modern Korean Literature and Culture (5, max. 15) VLPA *H. CHO* Seminar study of special topics in modern Korean literature and culture.

KOREAN 440 Introduction to Korean Linguistics (5, max. 15) VLPA Introduction to major topics in the linguistic description of Korean language. Prerequisite: either ASIAN 201, LING 200, or LING 400.

KOREAN 442 Special Topics in Korean Language and Culture (5, max. 15) VLPA Focuses on particular aspects and topics of Korean language and culture. Prerequisite: either KOREAN 203 or KOREAN 212.

KOREAN 445 Foreign Study: Korean Literature (1-15, max. 20) VLPA Modern 400-level Korean language studied abroad in approved programs in Korean. Evaluation by department/faculty required.

KOREAN 495 Foreign Study: Advanced Korean Literature and Linguistics (1-5, max. 20) VLPA Intermediate Korean literature or linguistics studied abroad in approved programs. Evaluation by department/faculty required. Offered: AWSpS.

KOREAN 499 Undergraduate Independent Study (3-5, max. 15) For Korean language and literature majors. Offered: AWSpS.

KOREAN 531 Advanced Readings in Modern Korean Literature (5) Literature and literary criticism in Korean. Prerequisite: fourth-year Korean or equivalent.

KOREAN 532 Advanced Readings in Traditional Vernacular Korean Literature (5) Readings in traditional Korean vernacular literature, including poetry, sung narrative, and fiction. Prerequisite: fourth-year Korean or equivalent.

SANSKRIT

SNKRT 101 Elementary Sanskrit (5) VLPA Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. First in a sequence of three. Offered: A.

SNKRT 102 Elementary Sanskrit (5) VLPA Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. Second in a sequence of three. Prerequisite: SNKRT 101. Offered: W.

SNKRT 103 Elementary Sanskrit (5) VLPA Basic grammar and vocabulary of the classical language. Reading of elementary texts from the epic or Puranic literature. Third in a sequence of three. Prerequisite: SNKRT 102. Offered: Sp.

SNKRT 201 Intermediate Sanskrit (5) VLPA Further study of classical grammar; introduction to classical literature and Vedic language and texts. First in a sequence of three. Prerequisite: SNKRT 103 Offered: A.

SNKRT 202 Intermediate Sanskrit (5) VLPA Further study of classical grammar; introduction to classical literature and Vedic language and texts. Second in a sequence of three. Prerequisite: SNKRT 201 Offered: W.

SNKRT 203 Intermediate Sanskrit (5) VLPA Further study of classical grammar; introduction to classical literature and Vedic language and texts. Third in a sequence of three. Prerequisite: SNKRT 202 Offered: Sp.

SNKRT 311 Advanced Sanskrit (5, max. 15) VLPA Reading and analysis of classical texts, chosen according to students' interests. First in a sequence of three. Prerequisite: SNKRT 203 Offered: A.

SNKRT 312 Advanced Sanskrit (5, max. 15) VLPA Reading and analysis of classical texts, chosen according to students' interests. Second in a sequence of three. Prerequisite: SNKRT 311 Offered: W.

SNKRT 313 Advanced Sanskrit (5, max. 15) VLPA *Richard G Salomon* Reading and analysis of classical texts, chosen according to students'

interests. Third in a sequence of three. Prerequisite: SNKRT 312 Offered: Sp.

SNKRT 491 Vedic Studies (5) VLPA Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. First in a sequence of two. Prerequisite: SNKRT 303 or SNKRT 513.

SNKRT 492 Vedic Studies (5) VLPA Readings of selected Vedic texts, with linguistic, religious, and historical analyses. Includes background material on Vedic religion, literature, and culture. Second in a sequence of three.

SNKRT 494 Readings in Religious Classics of India (5) VLPA Reading and analysis of the older religious brahmanical texts. Prerequisite: SNKRT 202 or SNKRT 522.

SNKRT 495 Studies in Indian Thought (5, max. 15) VLPA Religious and philosophical traditions in South Asia. The original documents studied vary from year to year. Prerequisite: SNKRT 202 or SNKRT 522.

SNKRT 499 Undergraduate Research (3-5, max. 15) Primarily for Sanskrit language and literature majors. Offered: AWSpS.

SNKRT 511 Elementary Sanskrit (5) Basic grammar and vocabulary of the classical language through the reading of elementary texts. First in a sequence of three.

SNKRT 512 Elementary Sanskrit (5) Basic grammar and vocabulary of the classical language through the reading of elementary texts. Second in a sequence of three. Prerequisite: SNKRT 511.

SNKRT 513 Elementary Sanskrit (5) Basic grammar and vocabulary of the classical language through the reading of elementary texts. Third in a sequence of three. Prerequisite: SNKRT 512.

SNKRT 521 Intermediate Sanskrit (5) Further study of classical grammar; introduction to classical literature of various genres. First in a sequence of three. Prerequisite: SNKRT 513.

SNKRT 522 Intermediate Sanskrit (5) Further study of classical grammar; introduction to classical literature of various genres. Second in a sequence of three. Prerequisite: SNKRT 521.

SNKRT 523 Intermediate Sanskrit (5) Further study of classical grammar; introduction to classical literature of various genres. Third in a sequence of three. Prerequisite: SNKRT 522.

SNKRT 531 Advanced Sanskrit (5, max. 15) Reading and analysis of classical texts, chosen according to students' interests. First in a sequence of three. Prerequisite: SNKRT 523.

SNKRT 532 Advanced Sanskrit (5, max. 15) Reading and analysis of classical texts, chosen according to students' interests. First in a sequence of three. Prerequisite: SNKRT 523.

SNKRT 533 Advanced Sanskrit (5, max. 15) Reading and analysis of classical texts, chosen according to students' interests. Third in a sequence of three. Prerequisite: SNKRT 532.

SNKRT 550 Seminar on Sanskrit Literature (5, max. 15) Detailed study of selected authors, periods, or traditions, within the context of Indian literary history. Prerequisite: SNKRT 203, SNKRT 523 or permission of instructor.

SNKRT 555 Seminar on Sanskrit Grammar (5, max. 15) Reading and critical study of traditional literature on grammar and language, including texts of Paninian and other schools. Offered: A.

SNKRT 560 Readings in Philosophical Sanskrit (5, max. 15) Intensive reading and analysis of Hindu or Buddhist philosophical texts. Prerequisite: SNKRT 494 or permission of instructor.

SNKRT 570 Seminar in Indian Epigraphy and Paleography (5, max. 15) Introduction to the study of inscriptions and other original documents in Sanskrit and Prakrit languages and in Kharosthi, Brahmi, and derived scripts. History of writing in India and development of Indic scripts. Methods of critical evaluation of inscriptions as sources of political and cultural history. Prerequisite: SNKRT 203 or SNKRT 523.

SNKRT 581 Readings in Buddhist Texts (5, max. 15) Interpretation of original sources. Texts vary from year to year. Prerequisite: ability to study sources in the original languages, an introduction to Buddhist thought, and permission of instructor.

SNKRT 582 Readings in Buddhist Texts (5, max. 15) Interpretation of original sources. Texts vary from year to year. Prerequisite: ability to study sources in the original languages, an introduction to Buddhist thought, and permission of instructor.

URDU

URDU 101 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. First in a sequence of three.

URDU 102 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Second in a sequence of three. Prerequisite: URDU 101

URDU 103 Elementary Urdu (5) Modern literary Urdu. Reading, writing, conversation, and listening comprehension. Introduction to Perso-Arabic script. Third in a sequence of three. Prerequisite: URDU 102.

URDU 201 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. First in a sequence of three. Prerequisite: URDU 103.

URDU 202 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Second in a sequence of three. Prerequisite: URDU 201

URDU 203 Intermediate Urdu (5) VLPA Systematic expansion of vocabulary and grammar. Intermediate-level prose and poetry readings. Expansion of skills in reading, writing, speaking, and listening comprehension. Third in a sequence of three. Prerequisite: URDU 202

URDU 301 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. First in a sequence of three. Prerequisite: URDU 203

URDU 302 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Second in a sequence of three. Prerequisite: URDU 301

URDU 303 Advanced Urdu (5) VLPA Rapid reading of contemporary Urdu prose and poetry. Advanced conversation and composition. Third in a sequence of three. Prerequisite: URDU 302

URDU 401 Fourth-Year Urdu (5) VLPA *J. AHMAD, J. DUBROW* Speaking, reading, writing and listening at a native level. Oral discussion, listening comprehension, and composition focused on unedited Urdu texts and films in various genres. First in a sequence of three. Prerequisite: URDU303 Offered: A.

URDU 402 Fourth-Year Urdu (5) VLPA *J. AHMAD, J. DUBROW* Speaking, reading, writing and listening at a native level. Oral discussion, listening comprehension, and composition focused on unedited Urdu texts and films in various genres. Second in a sequence of three. Prerequisite: URDU401 Offered: W.

URDU 403 Fourth-Year Urdu (5) VLPA *J. DUBROW* Speaking, reading, writing and listening at a native level. Oral discussion, listening comprehension, and composition focused on unedited Urdu texts and films in various genres. Third in a sequence of three. Prerequisite: URDU402 Offered: Sp.

URDU 424 Survey of Modern Hindi/Urdu Literature: Drama (5, max. 15) I&S/VLPA *H. PAUWELS* Survey of Hindi-Urdu literature from the late nineteenth century to the present. Readings from representative dramas. The modern Hindi-Urdu theater that has developed in North India is important historically and, through its influence on the popular movies of Bollywood, forms an important part of contemporary popular culture of South Asia. Offered: jointly with HINDI 424; W.

URDU 499 Independent Study (3-5, max. 15) For Urdu language and literature majors. Offered: AWSpS.

URDU 524 Survey of Modern Hindi/Urdu Literature: Drama (5, max. 15) H. PAUWELS Survey of Hindi-Urdu literature from the late nineteenth century to the present. Readings from representative dramas. Modern Hindi-Urdu theater in North India is important historically and, its influence on popular movies of Bollywood, forms an important part of contemporary popular culture of South Asia. Offered: jointly with HINDI 524; W.

VIETNAMESE

VIET 101 First-Year Non-Heritage Vietnamese (5) First in the three-quarter sequence of elementary Vietnamese for students with no prior exposure to Vietnamese language at home or in the community.

VIET 102 First-Year Non-Heritage Vietnamese (5) Second in the three-quarter sequence of elementary Vietnamese for students with no prior exposure to Vietnamese language at home or in the community. Prerequisite: either VIET 101, VIET 111, or VIET 121.

VIET 103 First-Year Non-Heritage Vietnamese (5) Third in the three-quarter sequence of elementary Vietnamese for students with no prior exposure to Vietnamese language at home or in the community. Prerequisite: either VIET 102, VIET 112, or VIET 122.

VIET 111 Elementary Vietnamese (5) Turner Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. First in a sequence of three. Offered: A.

VIET 112 Elementary Vietnamese (5) Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. Second in a sequence of three. Prerequisite: VIET 111. Offered: W.

VIET 113 Elementary Vietnamese (5) Introduction to modern Vietnamese conversation. Emphasis on correct pronunciation, spelling, and sentence structure. Designed for students with no previous exposure to Vietnamese. Third in a sequence of three. Prerequisite: VIET 112. Offered: Sp.

VIET 121 First-Year Heritage Vietnamese (5) For heritage students already exposed to informal, spoken Vietnamese at home or in the community.

VIET 122 First-Year Heritage Vietnamese (5) For heritage students already exposed to informal, spoken Vietnamese language at home or in the community. Prerequisite: either VIET 101, VIET 111, or VIET 121.

VIET 123 First-Year Heritage Vietnamese (5) For heritage students already exposed to informal, spoken Vietnamese language at home or in the community. Prerequisite: either VIET 102, VIET 112, or VIET 122.

VIET 145 Foreign Study: Elementary Vietnamese (1-15, max. 20) For participants in study abroad programs who complete elementary language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 211 Intermediate Vietnamese (5) VLPA Development of conversation skills, reading for comprehension, and writing short compositions. First in a sequence of three. Prerequisite: VIET 113. Offered: A.

VIET 212 Intermediate Vietnamese (5) VLPA Development of conversation skills, reading for comprehension, and writing short compositions. Second in a sequence of three. Prerequisite: VIET 211. Offered: W.

VIET 213 Intermediate Vietnamese (5) VLPA Development of conversation skills, reading for comprehension, and writing short compositions. Third in a sequence of three. Prerequisite: VIET 212. Offered: Sp.

VIET 214 Accelerated Heritage Vietnamese (5) VLPA VIET 214 is primarily offered to heritage Vietnamese students who regularly speak the language at home or in the community. This course includes an introduction of diverse Vietnamese regional dialects, further develops reading and writing skills, and discussions about contemporary Vietnamese topics. Offered: AWSpS.

VIET 245 Foreign Study: Intermediate Vietnamese (1-15, max. 20) VLPA For participants in study

abroad programs who complete intermediate language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 249 Urban Vietnam: Work and Culture (3/5) VLPA/I&S Explains vibrant changes and static phenomena in Vietnamese society and culture during the last half a century, since the country gained independence from foreign intervention. Examines interdependence among the state, society, and individuals, and how this impacts individual people's lives since the country joined the global economy in the 1990s. Offered: AWSpS.

VIET 311 Advanced Vietnamese (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing comprehensive exercises, and topic-based conversations. First in a series of three. Prerequisite: VIET 213.

VIET 312 Advanced Vietnamese (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing comprehensive exercises, and topic-based conversations. Second in a series of three. Prerequisite: VIET 311.

VIET 313 Advanced Vietnamese (5) VLPA Develops proficiency in reading, writing, listening, and speaking standard colloquial Vietnamese at an advanced level to prepare students to do research. Includes readings in fiction and nonfiction literature, vocabulary and grammar, writing comprehensive exercises, and topic-based conversations. Third in a series of three. Prerequisite: VIET 312.

VIET 345 Foreign Study: Advanced Vietnamese (1-15, max. 20) VLPA For participants in study abroad programs who complete 300-level language courses in approved programs in Vietnam. Evaluation by department faculty required.

VIET 361 Postwar Vietnam in Literature, Media, and Film (5) I&S/VLPA Explores how social and political changes in Vietnam since 1975 have made profound impacts upon the lives of Vietnamese people at home and abroad. Via literary and visual genres,

students learn to realize the critical relationship between utopian dreams and everyday realities while Vietnam rebuilt itself and re-integrated with the world.

VIET 496 Special Studies in Vietnamese (3-5, max. 15) VLPA Topics vary. Emphasizes improving language skills for research. Offered: AWSp.

VIET 499 Undergraduate Research (3-5, max. 15) Undergraduate research/independent study in Vietnamese language and literature. Offered: AWSp.

ASTROBIOLOGY

ASTBIO 115 Astrobiology: Life in the Universe (5) NW *David C. Catling, Roger Buick, Victoria S Meadows, Woodruff T Sullivan* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with ASTR 115/BIOL 114/ESS 115/OCEAN 115.

ASTBIO 501 Astrobiology Disciplines (4) R. *BUICK, D. CATLING, V. MEADOWS* Review of research and subject matter relevant to astrobiology from within the disciplines of biology, astronomy, oceanography, atmospheric science, chemistry, planetary science, and geology. Offered: A, even years.

ASTBIO 502 Astrobiology Topics (4) R. *BUICK, D. CATLING, V. MEADOWS* Investigation in detail of research topics of current interest. Offered: A, odd years.

ASTBIO 550 Professional Development for Astrobiology (2) Seminar in preparation for the academic job market; writing and reviewing grant proposals; building and managing interdisciplinary research teams; understanding the multiple career paths available in astrobiology; interdisciplinary teaching; and professional ethics. Credit/no-credit only. Offered: W, odd years.

ASTBIO 575 Seminar in Astrobiology (1, max. 10) Discussion of recent research in astrobiology. Credit/no-credit only. Offered: W, even years.

ASTBIO 576 Astrobiology Colloquium (1, max. 15) Current research topics in astrobiology. Credit/no-credit only. Offered: ASp.

ASTBIO 600 Independent Study or Research (*) Study or research under the supervision of individual faculty members.

ASTRONOMY

ASTR 101 Astronomy (5) NW, QSR Introduction to the universe, with emphasis on conceptual, as contrasted with mathematical, comprehension. Modern theories, observations; ideas concerning nature, evolution of galaxies; quasars, stars, black holes, planets, solar system. Not open for credit to students who have taken ASTR 102 or ASTR 301; not open to upper-division students majoring in physical sciences or engineering. Offered: AWSpS.

ASTR 102 Introduction to Astronomy (5) NW, QSR Emphasis on mathematical and physical comprehension of nature, the sun, stars, galaxies, and cosmology. Designed for students who have had algebra and trigonometry and high school or introductory-level college physics. Cannot be taken for credit in combination with ASTR 101 or ASTR 301. Offered: A.

ASTR 105 Exploring the Moon (5) NW *Smith* Examines the questions why did we go to the moon, what did we learn, and why do we want to go back. Offered: W.

ASTR 109 Measuring the Universe (3) I&S/NW M. *McQuinn* How did we measure the distance to the Sun, the mass of the Earth, the age of the Universe? How do we know that everyday matter is composed of atoms? Provides a mostly descriptive, historical introduction to the methods different societies have devised to solve such quandaries, in the process constraining nature's laws and shaping the physical sciences into their modern form.

ASTR 115 Astrobiology: Life in the Universe (5) NW *David C. Catling, Roger Buick, Victoria S Meadows, Woodruff T Sullivan* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts

majors. Offered: jointly with ASTBIO 115/BIOL 114/ESS 115/OCEAN 115.

ASTR 150 The Planets (5) NW, QSR For liberal arts and beginning science students. Survey of the planets of the solar system, with emphases on recent space exploration of the planets and on the comparative evolution of the Earth and the other planets. Offered: A/WSpS.

ASTR 160 Introduction to Exoplanets (3/5) NW Introduction to exoplanets. Explores how studies of extrasolar planets have changed our views of how planets and planetary systems form and evolve. Examines the science behind the search for Earth-like planets and life beyond our Solar System. May not earn credit if credit earned in ASTR 419.

ASTR 190 Modern Topics in Astronomy for Non-Science Majors (3/5, max. 10) NW Topics of current interest, such as origin of chemical elements, novae and supernovae, white dwarfs, neutron stars, black holes, active galaxies, quasars, or interstellar medium and astrochemistry. Choice of topics depends on instructor and class interest. Prerequisite: either one 100- or one 200-level ASTR course.

ASTR 192 Pre-Major in Astronomy Research Seminar (3-5) NW Introduction to astronomical computing and research methods for students interested in astronomy and in the premajor-in-astronomy program. Co-requisite: ASTR 102. Offered: A.

ASTR 201 The Universe and the Origin of Life (5) NW, QSR Sequel to 101 or 102, emphasizing modern views of the atomic and molecular evolution of the universe from the initial "big bang" through the formation of the solar system and the emergence of biological forms on the earth. The latter part of the course considers questions about the existence of, and communication with, extraterrestrial intelligent life, and finally the ultimate fate of the cosmos.

ASTR 210 Distance and Time: Size and Age in the Universe (5) NW, QSR Space and time as basic concepts in physical science. How we define and measure them, how the concepts have developed over the centuries, and how modern measurements allow us to determine the size and age of the universe.

ASTR 211 The Universe and Change (5) NW, QSR Gravity as central to the form and evolution of the universe. Conceptual formulation of gravity from the Renaissance to Einstein. Its consequences from the falling of an apple to the slowing of the expansion of the universe. Offered: W.

ASTR 216 The Impact Threat to Earth (3) NW *Chris Laws, Toby R. Smith* Earth has been hit by large rocks in the past, and will be hit by such rocks in the future. Explores the history and future of impacts on Earth. Investigates why and how often we are hit, how big is the material that hits us. What can we do about it? Recommended: ASTR 101 or ASTR 150. Offered: Sp.

ASTR 270 Public Outreach in Astronomy (3) VLPA/NW Emphasis on giving effective scientific presentations, developing and giving educational programs to school-age groups, and communicating knowledge of astronomy to others. Give talks at the Jacobsen Observatory on campus and presentations in the Astronomy Department's planetarium. Learn to operate a telescope and the planetarium equipment. Prerequisite: one astronomy course at either the 100-, 200-, or 300-level. Offered: Sp.

ASTR 300 Introduction to Programming for Astronomical Applications (3) QSR Introduction to programming needed for astronomical applications: Linux operating systems, PERL, IDL. Recommended for astronomy majors planning to take 400-level astronomy courses, to pursue individual research projects, or to apply for research experience for undergraduate appointments. Prerequisite: either ASTR 321, ASTR 322, or ASTR 323, any of which may be taken concurrently. Offered: AW.

ASTR 301 Astronomy for Scientists and Engineers (3) NW Introduction to astronomy for students in the physical sciences or engineering. Topics similar to ASTR 101, but the approach uses more mathematics and physics. Prerequisite: PHYS 123.

ASTR 302 Python for Astronomy (3) NW, QSR Teaches how to effectively use Python for research and astronomical data analysis. Introduction to key tools and libraries used in astronomy and how to use these to analyze data, visualize datasets, automate analyses, and apply this knowledge to reproducing results of some key astronomy papers. Prerequisite: ASTR 300; recommended: knowledge of Python and

related astronomy libraries at the ASTR 300 level highly recommended.

ASTR 313 Science in Civilization: Physics and Astrophysics Since 1850 (5) I&S/NW Organization and pursuit of the physical and astrophysical sciences, focusing on the major unifying principles of physics and astronomy and the social and cultural settings in which they were created. Offered: jointly with HSTCMP 313.

ASTR 321 The Solar System (3) NW Solar system; planetary atmospheres, surfaces and interiors, the moon, comets. The solar wind and interplanetary medium. Formation of the solar system. Prerequisite: PHYS 224 which may be taken concurrently. Offered: Sp.

ASTR 322 The Contents of Our Galaxy (3) NW Introduction to astronomy. Basic properties of stars, stellar systems, interstellar dust and gas, and the structure of our galaxy. Prerequisite: PHYS 224 which may be taken concurrently. Offered: A.

ASTR 323 Extragalactic Astronomy and Cosmology (3) NW Galaxies, optical and radio morphology and properties. Clusters of galaxies, radio sources, and quasars. Observational cosmology. Prerequisite: ASTR 322 which may be taken concurrently. Offered: W.

ASTR 324 Introduction to Astrostatistics and Machine Learning in Astronomy (3) QSR *Mario Juric* Introduces students to data science tools and techniques commonly used in data driven astronomy and astrophysics. Combines introductory theoretical background with hands-on work on examples of data analysis with modern astronomical datasets. Prerequisite: MATH 124 or MATH 134; MATH 125 or MATH 135; MATH 126; and ASTR 300 or ASTR 302; recommended: basic understanding of scientific measurement and statistics at the level of a first-year undergraduate lab. Offered: Sp.

ASTR 400 Undergraduate Research Seminar (1) NW Introduces research topics conducted by astronomy faculty. Each week a faculty member describes her/his current research and the opportunities available for interested majors to participate in the research. Credit/no-credit only. Offered: A.

ASTR 419 Exoplanets (3) NW Exoplanet properties, discovery, and habitability. Examines the science involved in the search for Earth-like planets and life beyond our Solar System. Topics include: exoplanet environments, modelling exoplanet planetary systems, planetary habitability, detection, and properties of exoplanets. May not earn credit if credit earned in ASTR 160. Prerequisite: ASTR 321.

ASTR 421 Stellar Observations and Theory (3) NW Observations and theory of the atmospheres, chemical composition, internal structure, energy sources, and evolutionary history of stars. Prerequisite: ASTR 322. Offered: W.

ASTR 423 High-Energy Astrophysics (3) NW High-energy phenomena in the universe. Includes supernova, pulsars, neutron stars, x-ray and gamma-ray sources, black holes, cosmic rays, quasi stellar objects, active galactic nuclei, diffuse background radiations. Radiative emission, absorption processes, and models derived from observational data. Prerequisite: PHYS 224; PHYS 225.

ASTR 425 Cosmology (3) QSR Studies the universe as a whole. Overview of fundamental observations of cosmology and an introduction to general relativity. Examines theories of the past and future history of the universe, the nature of dark matter and dark energy, and the origin of ordinary matter on the large-scale structure. Prerequisite: PHYS 224; PHYS 225. Instructors: Agol, Connolly, Quinn

ASTR 427 Methods of Computational Astrophysics (3) NW *Quinn* Provides hands-on experiences in writing computer programs to solve astrophysics problems. Topics include: interpolation and extrapolation, integration, ordinary, differential equations, root finding, optimization, linear algebra, Monte-Carlo partial differential equations, and parallel techniques.

ASTR 480 Introduction to Astronomical Data Analysis (5) NW Hands-on experience with electronic imaging devices (CCDs) and software for image reduction and analysis. Introduction to operating systems, reduction software, and statistical analysis with applications to CCD photometry. Prerequisite: ASTR 300; ASTR 323, which may be taken concurrently. Offered: Sp.

ASTR 481 Introduction to Astronomical Observation

(5) NW Theory and practice of obtaining optical data at a telescope. Preparation, obtaining data with a CCD on a telescope, and subsequent data analysis for completion of a research project. Prerequisite: ASTR 480. Offered: S.

ASTR 482 Writing Scientific Papers (2)

Principles of organizing, developing, and writing resumes, scientific research papers for journals, and astronomy articles for general public interest. Prerequisite: ASTR 481, ASTR 499, PHYS 494, PHYS 495, or PHYS 496, any of which may be taken concurrently. Instructors: Szkody Offered: A.

ASTR 497 Topics in Current Astronomy (1-3, max. 9)

NW Recent developments in one field of astronomy or astrophysics.

ASTR 498 Independent Study (1-3, max. 15) NW

Astronomy-related projects supervised by a faculty member. Projects may be hardware, software, or library work in preparation for conducting astronomical research. Credit/no-credit only.

ASTR 499 Undergraduate Research (*, max. 15)

Special astronomical problems and observational projects, by arrangement with instructor.

ASTR 500 Practical Methods for Teaching

Astronomy (1-3, max. 5) Seminar in the preparation of lecture and workshop materials with emphasis on demonstration, visual aids, and the evaluation of students' progress. Credit/no-credit only.

ASTR 507 Physical Foundations of Astrophysics I (3)

Thermodynamics from an astronomer's point of view: black body radiation, basic radiative transfer, equation of state, degenerate gases, crystallization at high density.

ASTR 508 Physical Foundations of Astrophysics II (3)

Introduction to astronomical hydrodynamics and magnetohydrodynamics, basic theorems and application to stellar and interstellar magnetic fields. Introduction to plasma physics and waves in a plasma.

ASTR 509 Physical Foundations of Astrophysics III

(3) Potential theory as applied to astrophysical systems. Orbits. Integrals of motion. Equilibrium and

stability of stellar systems. Encounters of stellar systems. Kinetic theory of collisional systems. Applications of stellar dynamics to star clusters, galaxies, and large-scale structure.

ASTR 510 Nuclear Astrophysics (3)

Big bang nucleosynthesis; nuclear reactions in stars; solar neutrinos and neutrino oscillations; core-collapse supernovae; nucleosynthesis in stars, novae, and supernovae; neutron stars; composition and sources of cosmic rays; gamma ray bursts; atmospheric neutrinos. Offered: jointly with PHYS 554; A.

ASTR 511 Galactic Structure (3)

Kinematics, dynamics, and contents of the galaxy. Spiral structure. Structure and evolution of galaxies.

ASTR 512 Extragalactic Astronomy (3)

Types of galaxies. Integrated properties, content, and dynamics. Extragalactic distance scale, groups and clusters. Radio sources. Observational cosmology.

ASTR 513 Cosmology and Particle Astrophysics (3)

Big bang cosmology; relativistic world models and classical tests; background radiation; cosmological implications of nucleosynthesis; baryogenesis; inflation; galaxy and large-scale structure formation; quasars; intergalactic medium; dark matter.

ASTR 519 Radiative Processes in Astrophysics (3)

Theory and applications of astrophysical radiation processes: transfer theory; thermal radiation; theory of radiation fields and radiation from moving charges; bremsstrahlung; synchrotron; Compton scattering; plasma effects.

ASTR 521 Stellar Atmospheres (3)

Theory of continuous radiation and spectral line formation. Applications to the sun and stars. Prerequisite: PHYS 421 or equivalent.

ASTR 531 Stellar Interiors (4)

Physical laws governing the temperature, pressure, and mass distribution in stars. Equation of state, opacity, nuclear energy generation, computational methods. Models of main sequence stars and star formation. Prerequisite: PHYS 421 or equivalent.

ASTR 532 Stellar Evolution (3)

Theoretical and observational approaches to stellar evolution.

Structure of red giants, supernovae, and white dwarfs. Observations of star clusters and the chemical composition of stars as they relate to the theory of stellar structure. Prerequisite: ASTR 531.

ASTR 541 Interstellar Matter (3) Physical conditions and motions of neutral and ionized gas in interstellar space. Interstellar dust, magnetic fields, formation of grains, clouds, and stars. Prerequisite: modern physics or permission of instructor.

ASTR 555 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ATM S 555/ESS 581.

ASTR 557 Origin of the Solar System (3) Nebular and nonnebular theories of the solar system origin; collapse from the interstellar medium, grain growth in the solar nebula, formation of planetesimals and planets, early evolution of the planets and other possible planetary systems; physical and chemical evidence upon which the ideas concerning the origin of the solar system are based. Offered: jointly with ESS 583.

ASTR 558 Exoplanets (3) Modern theory and observations of extrasolar planets, including detection and characterization techniques, orbital dynamics, atmospheric structure and dynamics, and planet formation. Prerequisite: either ASTR 507, ASTR 508, ASTR 519, or permission of instructor. Offered: W.

ASTR 561 High Energy Astrophysics (3) Observed properties of supernovae, x-ray stars, radio sources, quasars. Theories explaining such objects. Origin of cosmic rays.

ASTR 575 Seminar in Astronomy (1-2, max. 20) Discussion of recent research in astronomy and astrophysics. Prerequisite: permission of department. Credit/no-credit only.

ASTR 576 Astronomy Colloquium (1, max. 20) Current research topics in astronomy and astrophysics. Prerequisite: permission of department. Credit/no-credit only.

ASTR 581 Techniques in Optical Astronomy (5)

Theory and practice of obtaining optical data. Astronomical photoelectric photometers, spectrographs, interferometers, CCDs, and infrared equipment. Data-reduction techniques with emphasis on statistical analysis using digital computers. Observations with MRO thirty-inch telescope.

ASTR 597 Topics in Observational Astrophysics (1-5, max. 20)

ASTR 598 Topics in Theoretical Astrophysics (1-5, max. 20)

ASTR 599 Advanced Astronomy Seminar (1-3, max. 6) Practical exercises in astrophysics. Emphasis on methods and techniques of simulation, acquisition, evaluation, and analysis of observational data and its interpretation using models of astrophysical systems. Prerequisite: permission of instructor.

ASTR 600 Independent Study or Research (*-)

ASTR 700 Master's Thesis (*-)

ASTR 800 Doctoral Dissertation (*-)

BIOLOGY

BIOL 100 Introductory Biology (5) NW Develops an awareness of science by studying basic biological principles and their application to problems of humans and society in the contexts of special topics or themes, which vary quarter to quarter. For non-science majors only.

BIOL 103 Sex, Death, and Evolution (2) NW *Jon Herron* Evolution is the conceptual foundation for all the life sciences. Overview of theoretical and empirical evolutionary biology using examples that involve sex and/or death. Designed for non-majors.

BIOL 105 Drug Dilemmas: The Biology of Cannabinoids and Opioids (2) NW Covers the biology of two - the drug group related to heroin and the drug group related to cannabis. Studies the biology of these drugs to make predictions about human responses and impacts. Investigates social and legal factors interacting with drug biology.

BIOL 106 Introductory Biology Seminar (1/3, max. 6) NW Focuses on current topics in biology. Topics vary from quarter to quarter. Designed to enhance learning skills of students who intend to take BIOL 180/BIOL 200/BIOL 220 and major in one of the biological sciences.

BIOL 107 Biology of Vaccines (3) NW Vaccines and other immunotherapies, biological interactions with our immune system, impacts on society. Why certain immunization schedules are used for infants and how pathogens and cancers are removed by our immune system. Offered: W.

BIOL 108 Evolution and Human Behavior (5) I&S/NW Introduction to evolution by natural selection, examining the light it can throw on human biology and behavior in such areas as the nature of sex differences, sexual conflict, and conflict between parents and children. Offered: jointly with BIO A 100.

BIOL 110 Freshman Discovery Seminar in Biology (5) NW Introduces incoming freshman to research basics and scholarly inquiry skills used in the study of biology.

BIOL 114 Astrobiology: Life in the Universe (5) NW *David C. Catling, Roger Buick, Victoria S Meadows, Woodruff T Sullivan* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with ASTBIO 115/ASTR 115/ESS 115/OCEAN 115.

BIOL 118 Survey of Physiology (5) NW Human physiology, for nonmajors and health sciences students. Offered: AWSpS.

BIOL 119 Elementary Physiology Laboratory (1) NW Prerequisite: BIOL 118 which may be taken concurrently. Offered: AWSpS.

BIOL 120 Current Controversies in Biology (2-5, max. 6) NW Explores a current controversial topic in biology, stressing information needed by the general public to make informed personal, political, and ethical decisions relating to this topic.

BIOL 130 Introduction to Neuroscience (4) NW *Horacio O. De La Iglesia, Bingni W Brunton, William J Moody* Provides a broad introduction to the study of brain function in humans and other animals. Emphasizes how circuits within the brain process sensory information and generate complex movements. No credit if NBIO 301, NBIO 302, or BIOL 461 already taken. Offered: Sp.

BIOL 161 Advanced Placement (AP) in General Biology 1 (5-) NW Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information. Credit/no-credit only.

BIOL 162 Advanced Placement (AP) in General Biology 2 (-5) NW Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information. Credit/no-credit only.

BIOL 180 Introductory Biology (5) NW Mendelian genetics, evolution, biodiversity of life forms, ecology, and conservation biology. Open to all students interested in biology whether intending to major in the biological sciences, enroll in preprofessional programs, or fulfill a Natural World requirement. First course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220) . Offered: AWSpS.

BIOL 200 Introductory Biology (5) NW For students intending to take advanced courses in the biological sciences or enroll in preprofessional programs. Metabolism and energetics, structure and function of biomolecules, cell structure and function, animal development. Second course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220) . Prerequisite: minimum grade of 1.7 in either BIOL 180, B BIO 180, T BIOL 120, or TESC 120; either CHEM 143, CHEM 145, CHEM 223, CHEM 237, or OCEAN 295, or concurrently taking either CHEM 220, CHEM 152, CHEM 153, or CHEM 155. Offered: AWSpS.

BIOL 220 Introductory Biology (5) NW For students intending to take advanced courses in the biological sciences or enroll in preprofessional programs. Animal physiology, plant development and physiology. Final course in a three-quarter series (BIOL 180, BIOL 200, BIOL 220) . Prerequisite: minimum grade of 2.0 in either BIOL 200, B BIO 200, or T BIOL 130. Offered: AWSpS.

BIOL 240 Intensive Introductory Biology: Human Health Emphasis (15) NW *J. Doherty, S. Freeman, A. Schivell* Comprehensive introduction to biology from the standpoint of interactions between biology, human health, society, and the larger ecosystem. Covers Mendelian genetics, evolution, biodiversity of life forms, ecology, conservation biology, metabolism and energetics, structure and function of biomolecules, cell structure and function, animal physiology, and plant physiology. Offered: S.

BIOL 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with FISH 250/OCEAN 250; AS.

BIOL 270 Data Reasoning in a Digital World (4) I&S *Jevin West, Carl T Bergstrom* Our world is rife with misinformation. This is a course about "calling b***s*** on" - spotting, dissecting, and publicly refuting - false claims and inferences based on quantitative, statistical, and computational analysis of data. Spotting misinformation; causal fallacies; statistical traps; data visualization; big data; interpreting scientific claims; fake news and social media; refutation techniques. Prior math/stat background unnecessary. Offered: A.

BIOL 280 The History of Life (4) NW *P. WARD* Follows the history of life from its first formation including the origin of life and life's diversification from single cells through multi-cellularity. Examines fossils and DNA evidence from understanding the sequence of events and evolutionary history of life.

BIOL 293 Study Abroad - Biology (1-10, max. 10) NW For participants in UW Study Abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements without approval.

BIOL 302 Laboratory Techniques in Cell and Molecular Biology (4) NW *T. Imaizumi, L. Martin-Morris* Explores the use of various cell and molecular laboratory techniques, such as PCR, cloning, gel electrophoresis, and bacterial transformation through hands-on experiments. Students produce a portfolio of techniques they have learned.

Prerequisite: either BIOL 355 or a minimum grade of 2.5 in either BIOL 200, BIOL 240, B BIO 200, or T BIOL 130.

BIOL 305 Science Communication: Video Storytelling in Biology (3) NW/VLPA *P. Boersma* Students make a short film on a biological story, concept, or theory. Includes developing a storyline, getting the shots to make compelling viewing, editing, and producing a short video. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: Sp.

BIOL 310 Survey of Human Anatomy (5) NW *C. Self* Covers the major systems of the human body (integumentary, skeletomuscular, lymphatic, respiratory, digestive, nervous, endocrine, cardiovascular and reproductive) and the interactions of cells and tissues that help humans live, grow and change. Focus on anatomy (not physiology) to offer students a greater understanding of the structures, development, and evolution of the of human body. Offered: ASP.

BIOL 311 Biology of Fishes (3/5) NW Covers morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of aquatic sciences. 3-credit option does not include laboratory. Offered: jointly with FISH 311; W.

BIOL 313 Civilizational Biology (4) I&S/NW *Ben Wiggins* Explores fundamental biology needed to build and maintain human society (both historically and after a future apocalyptic event) . Focuses on engineering and innovating necessary biology tools from raw materials (bread, soap, preservatives, textiles, salt, etc.) and in biological/cultural practices (birth, death, medical care, conservation, etc) . Prerequisite: BIOL 220 or BIOL 240.

BIOL 315 Biological Impacts of Climate Change (3) NW Covers the biological impacts of climate change, including changes in species distributions and interactions, altered phenology, and ecosystem dynamics. Discusses implications of these biological impacts for society (e.g., food security, public health, and resource management) . Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120.

BIOL 317 Plant Classification and Identification (5) NW R. *Olmstead* Classification and diversity of seed plants; concepts and principles of classification, lab and field study of common plant families in Washington, and skill development for identification of species. One weekend field trip. Offered: SpS.

BIOL 331 Landscape Plant Recognition (3) NW Field recognition of important groups of woody landscape plants, emphasizing diversity at the genus and family levels. Cultivated plant nomenclature. Plant descriptive characters evident in the field with eye and hand lens. Hardiness and landscape applications. Offered: jointly with ESRM 331; Sp.

BIOL 340 Genetics and Molecular Ecology (5) NW Application of molecular markers to ecology, evolution, and the management of living resources. Emphasis on understanding the strengths and weaknesses of the approach based on case studies. Prerequisite: BIOL 200. Offered: jointly with FISH 340; A.

BIOL 350 Foundations in Physiology (3) NW Physiology core course for biological sciences majors. Analysis of basic principles of animal and plant physiology, with emphasis on cellular processes that mediate organismic processes. Serves as gateway to upper-division courses in physiology. Prerequisite: minimum grade of 2.0 in either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140. Offered: AWSpS.

BIOL 354 Foundations in Evolution and Systematics (3) NW Evolution and systematics core course for biological sciences majors. Emphasizes patterns, processes, and consequences of evolutionary change. Serves as gateway to 400-level courses and seminars in evolution, population genetics, sociobiology, conservation biology, phylogenetics, and systematics. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, T BIOL 120, or BIO A 201. Offered: ASp.

BIOL 355 Foundations in Molecular Cell Biology (3) NW Cell biology core course for biological sciences majors. Emphasis on molecular approaches to understand cell structure, function, and regulation, and the analysis of experimental design and data interpretation. Serves as a prerequisite to advanced 400-level cell, molecular, and developmental biology courses and seminars. Prerequisite: minimum grade

of 2.0 in either BIOL 200, BIOL 240, B BIO 200, T BIOL 130. Offered: AWSpS.

BIOL 356 Foundations in Ecology (3) NW Ecology core course for biological sciences majors. Emphasizes understanding species interactions in biological communities and relationships of communities to environment. Serves as a prerequisite to 400-level courses and senior seminars in ecology, population, and conservation biology. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: AW.

BIOL 359 Foundations in Quantitative Biology (3) NW, QSR Quantitative skills used in biology, with a focus on applying those skills to current biological issues. Topics include data analysis, probabilities, statistics, algorithms, and numerical simulations. No math or statistics background required. Prerequisite: BIOL 220 or BIOL 240.

BIOL 360 Cellular Anatomy (4) NW L. *Zeman* Recognition of cellular and tissue structures in plants and animals with correlations to normal physiology and disease states. Prerequisite: minimum grade of 2.0 in either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140; may not be taken for credit if credit earned in BIOL 403.

BIOL 380 Biomedical Advances and Society (3) I&S A. *Schivell* Recent biological advances studied in the context of our society, designed to foster critical thinking, public awareness, and policy impact. Topics may include human reproductive technologies, genetic engineering, embryonic stem cell research, and medical scanning improvements. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL140.

BIOL 381 Introduction to Athletic Training (Lower Extremity) ([1-3]-, max. 3) Jaqulyn Carrell, Jenn Stueckle, Kimberly Harmon, Chelsea Larsen Topics and principles of athletic training, with internship hours in the Husky Athletic Training Room assisting with the 21 Husky varsity sports. Exposes students to the work of an athletic trainer within the sports medicine team. Focuses on lower extremities. Prerequisite: BIOL 220. Offered: A.

BIOL 382 Introduction to Athletic Training (Upper Extremity) (-[1-3]-, max. 3) Jenn Stueckle, Kimberly Harmon, Chelsea Larsen, Jaqulyn Carrell Topics and principles of athletic training, with internship hours

in the Husky Athletic Training Room assisting with the 21 Husky varsity sports. Exposes students to the work of an athletic trainer within the sports medicine team. Focuses on upper extremities. Prerequisite: BIOL 381. Offered: W.

BIOL 383 Introduction to Athletic Training (Core) (-[1-3], max. 3) *Kimberly Harmon, Chelsea Larsen, Jenn Stueckle, Jaquelyn Carrell* Topics and principles of athletic training, with internship hours in the Husky Athletic Training Room assisting with the 21 Husky varsity sports. Exposes students to the work of an athletic trainer within the sports medicine team. Focuses on trunk and spine. Prerequisite: BIOL 382. Offered: Sp.

BIOL 385 Evolutionary Medicine and Public Health (3) NW Explores evolutionary causes of health and disease. Considers how natural selection and the legacies of our human, primate, mammalian and bacterial ancestries have shaped our biology. Topics include mental disorders, aging, cancer, diet, obesity, diabetes, infectious diseases, racism, and health differences between human groups. Prerequisite: either BIO A 201 or BIOL 180. Offered: jointly with BIO A 355.

BIOL 394 Practical Introduction to Beekeeping (4-6) NW *E. SUGDEN* Introduction to bee biology, pollination, and basic beekeeping theory. Students make their own hive, rear a queen bee, and prepare a publishable scientific paper and learn basic beekeeping technique. Credit/no-credit only. Offered: S.

BIOL 396 Peer Facilitation - Teaching in Biology (1-4, max. 8) NW For undergraduates working in biology courses as peer facilitators. Peer facilitators assist with labs, lectures, and course administration and gain direct classroom experience. No independent teaching or grading. Opportunities vary by quarter and instructor. Prerequisite: either BIOL 350, BIOL 354, BIOL 355, or BIOL 356. Credit/no-credit only.

BIOL 397 Preparing Specimens for Ornithological Collections and Research (5, max. 10) NW *J. Klicka* Focuses on the physiology and preparation of birds for use in scientific collections, including hands-on methods for sustainable and accurate display. Prerequisite: BIOL 220 or BIOL 240 Offered: W.

BIOL 399 Biology Internship Program (2-12, max. 15) NW *B. WIGGINS* Coordinated internship in a biology-related field. Allows a structured, real world biology work experiences off-campus. All internships must be approved by instructor. Credit/no-credit only. Offered: AWSpS.

BIOL 400 Experiments in Molecular Biology (4) NW *A. Crowe, A. Schivell* Integrated reading, writing, and experimentation in molecular biology. Design and implementation of experiments using modern molecular biology techniques to address current questions in biology. Emphasizes reading and evaluating primary research literature. Includes practice in different scientific writing styles. Prerequisite: minimum grade of 2.0 in BIOL 355.

BIOL 401 Advanced Cell Biology (3) NW Selected topics in molecular cell biology. Strong emphasis on reading and interpreting primary research literature. Writing intensive course. Prerequisite: BIOL 355.

BIOL 402 Functional Genomics (4) NW *A. Paredes* Students perform initial characterization of novel genes through epitope tagging and localization. Skills covered include: preparation of solutions, Genomic Database queries, PCR, electrophoresis, DNA purification, cloning, transformation, and immunofluorescence microscopy. Prerequisite: minimum grade of 2.0 in BIOL 355.

BIOL 404 Animal Physiology: Cellular Aspects (3) NW *Horacio O. De La Iglesia* Examines the physiology of membrane transport, nervous signaling, sensory systems, behavioral modulation, muscle, neuronal and endocrine integration, and circadian rhythms. Emphasis on the cellular and tissue level. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140; either CHEM 224 or CHEM 239. Offered: A.

BIOL 405 Cellular and Molecular Biology of Human Disease (3) NW Emphasizes the understanding of disease mechanisms through studies of genetic and cellular basis human disease and disease models. Based on analyses of primary research articles. This course does not cover infectious diseases. Prerequisite: minimum grade of 2.0 in BIOL 355; either GENOME 361 or GENOME 371; either BIOC 405, BIOC 440, BIOL 401.

BIOL 407 Molecular Cell Biology of Neural Stem Cells (4) NW C. Cabernard Examines the basic mechanisms used by stem cells to form differentiated cells. Students analyze the localization and function of Myosin family genes/proteins in the context of asymmetrically dividing neural stem cells using *Drosophilla* genetics, molecular biology and cell biology techniques. Offers opportunities for follow-up experiments based on initial observations. Prerequisite: BIOL 355.

BIOL 408 Neuroethology (4) NW Comparative exploration of the neural, hormonal, and genetic mechanisms that control behaviors necessary for survival and reproduction in animals. Model systems discussed include animal communication, mate choice, escape behavior, spatial orientation, homing and migration, and biological rhythms. Students are expected to understand fundamental concepts of neuroscience from any of the following prerequisite courses. Prerequisite: either PSYCH 333 OR BIOL 220. Offered: jointly with PSYCH 408.

BIOL 410 Current Topics in Molecular and Cellular Biology Research (2) NW R. Gardner Focuses on current research in primary literature in molecular and cellular biology. Covers three topics in depth that change to match immediately active topic areas. Prerequisite: BIOL 340, BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOL 360, or BIOL 380. Offered: Sp.

BIOL 411 Developmental Biology (4) NW Embryology and subsequent development of vertebrate and invertebrate animals, including *Xenopus*, mammals, chicks, *Drosophila*, echinoderms. Morphological changes in developing animals; experimental analysis of developing systems; underlying genetic and biochemical regulation of development. Prerequisite: BIOL 355 Offered: AW.

BIOL 413 Molecular Genetics of Development (4) NW J. Parrish Uses molecular biology, cell biology, and genetic approaches to investigate how nutrient signals influence neuron growth. Prerequisite: BIOL 355.

BIOL 414 Molecular Evolution (5) NW Survey of empirical approaches to the study of molecular evolution and ecology, drawing on examples from a variety of taxa and the recent literature. Topics include DNA sequencing and systematics,

fingerprinting approaches in behavioral ecology, and adaptive evolution at the molecular level. Prerequisite: BIOL 354. Offered: jointly with GENOME 414.

BIOL 415 Evolution and Development (3) NW D. Parichy Analysis of intertwined developmental and evolutionary processes studied through evolution of developmental genes, proteins, and expression patterns in different organisms. Includes reading and analyzing implications for ecology evolution, and human disease. Prerequisite: either a minimum grade of 3.0 in BIOL 200, BIOL 240, B BIO 200, or T BIOL 130, or a minimum grade of 2.0 in either BIOL 354 or BIOL 355.

BIOL 416 Molecular Genetics of Plant Development (3) Plant growth and development examined in molecular-genetic terms. Covers mutation, dominance, redundancy, epistasis, and key technologies for discovery of gene function as well as embryogenesis, meristem formation, flower development, and other problems in plant development. Prerequisite: BIOL 355 and either GENOME 361, or GENOME 371.

BIOL 417 Comparative Reproductive Physiology of Vertebrates (4) NW Compares the reproductive physiology of fishes, amphibians, reptiles, birds, and mammals. Prerequisite: either BIOL 350 or BIOL 355.

BIOL 418 Biological Clocks and Rhythms (4) NW H. DE LA IGLESIA Examines circadian rhythms and other forms of biological rhythmicity, including annual and tidal rhythms. Includes theoretical background as well as aspects that range from the molecular and cellular basis to the ecological and evolutionary implications of biological rhythms. Prerequisite: BIOL 350 or BIOL 355.

BIOL 419 Data Science for Biologists (4) QSR B. BRUNTON Explores, analyzes, and visualizes biological data sets using scientific computing software. Focuses on the foundations of data wrangling, data analysis, and statistics, particularly the development of automated techniques that are reproducible and scalable to large data sets. Offered: W.

BIOL 420 Game Theory in Biology (4) NW, QSR C. Bergstrom Game theory is a tool for modeling and understanding biological interactions ranging from

parental care to mate choice to animal contests to symbiosis. Studies conceptual foundations and basic methods and applies game theory in an evolutionary context to better understand the games that organisms play. Prerequisite: Either BIOL 180 or BIOL 240; and either Q SCI 291 or MATH 124

BIOL 421 Ecological and Evolutionary Physiology of Animals (4) NW *L. Buckley* Explores the role of physiology in the ecology and evolution of animals. Special emphasis on how physiology influences responses to environmental change. Prerequisite: either BIOL 350, BIOL 354, BIOL 356, or a minimum grade of 3.6 in BIOL 180 or BIOL 240.

BIOL 422 Physiology of Plant Behavior (3) NW *Elizabeth Van Volkenburgh* Focuses on plant sensory mechanisms, transport and integration of information, and behavior in response to a variety of environmental stimuli. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 423 Marine Ecological Processes (3) NW *Emily Carrington* Studies the ecology of the oceans and coastal regions, emphasizing benthic communities common to the Pacific Northwest. Prerequisite: either BIOL 180 and BIOL 356, or BIOL 180 and FISH 250/BIOL 250/OCEAN 250, or a minimum grade of 3.4 in either BIOL 180 or BIOL 240.

BIOL 424 Plant Ecophysiology (5) NW *S. Kim* Explores physiological mechanisms that underlie ecological observations, including how above- and below-ground microclimates develop and affect plant physiological processes. Discusses acclimation to environmental change along with species differences in physiological processes and plant's occupation of heterogeneous environments. Laboratories emphasize field measurement techniques. Prerequisite: either BIOL 180, B BIO 180, TESC 120, T BIOL 120, ESRM 201, ESRM 162, or FISH 162. Offered: jointly with ESRM 478; W.

BIOL 425 Plant Physiology and Development (5) NW Expanded coverage of plant growth, nutrition, metabolism, and development. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140. Offered: W.

BIOL 426 Comparative Immunology (3) NW Function and evolution of immune sensing across kingdoms. Basic bioinformatic and structural biology

skills. Prerequisite: either BIOL 354, BIOL 355, GENOME 361, or GENOME 371. Offered: W.

BIOL 427 Biomechanics (5) NW *T. Daniel* Physical biology emphasizing a mechanical approach to ecological, evolutionary, and physiological questions. Basic principles underlying fluid and solid mechanics to explore responses of animals to flows, loads, and motions. Prerequisite: either BIOL 220, B BIO 220, or T BIOL 140; either MATH 125 or Q SCI 292; either PHYS 114 or PHYS 121.

BIOL 428 Sensory Neurophysiology and Ecology Lab (5) NW *J. Riffell* Examines behavioral and physiological processes within an environmental framework. Uses a synthetic approach emphasizing applications to cell biology, physiology and behavior, and biomechanics. Prerequisite: either BIOL 350 or BIOL 355.

BIOL 430 Marine Zoology (5) NW Survey of groups of invertebrate animals represented in the San Juan Archipelago; natural history, functional morphology, ecology, distribution, habitat, adaptation, trophic interrelationships, and evolution. Prerequisite: BIOL 445, which must be taken concurrently; permission of Friday Harbor director. Offered: jointly with FHL 430.

BIOL 431 Biology of Cannabinoids (1) NW Focuses on the plant biochemistry of and human biology interaction with cannabinoid compounds such as those found in the genus *Cannabis*. Prerequisite: Any one of BIOL 313, BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOL 360, or BIOL 380. Offered: A.

BIOL 432 Marine Invertebrate Zoology (9) NW Comparative morphology and biology of marine invertebrates with emphasis on field and laboratory studies. Representatives of all major and most minor phyla are collected, observed live, and studied in detail. Taken at Friday Harbor Laboratories. Not open for credit to students who have taken BIOL 434. Offered: jointly with FHL 432; S.

BIOL 433 Marine Ecology (5) NW *Jennifer Ruesink* Study of marine ecological processes such as recruitment, disturbance, competition, and predation, and their effects on the structure and diversity of marine communities. Weekend field trips to local intertidal habitats required. Prerequisite: either BIOL 356, BIOL 472, or a minimum grade of

3.4 in either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: jointly with MARBIO 433; Sp, odd years.

BIOL 434 Invertebrate Zoology (5) NW Comparative biology and morphology of invertebrates. Laboratory work emphasizes structures and functions. Emphasizes annelids and related worms, mollusks, and arthropods. Not open to students who have taken BIOL 430 or BIOL 432. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 435 Research Apprenticeship in Marine Science (15) NW Immersive quarter in research in close collaboration with one-three faculty mentors on a specific topic that varies with the apprenticeship. Students engage in laboratory or field research in marine science, involving gathering, analyzing, and communicating results as part of a research team. Offered: jointly with FHL 435/MARBIO 435; ASpS.

BIOL 437 Herpetology (5) NW Amphibian and reptile biology, with emphasis on evolutionary relationships, ecology, behavior, morphology, physiology, and taxonomy. Lectures emphasize major trends and mechanisms maintaining diversity in form and function. Labs cover morphology and taxonomy with emphasis on the local fauna. Weekend, camping field trips required. Prerequisite: minimum grade of 2.5 in BIOL 354.

BIOL 438 Analytical Paleobiology (5) NW Introduction to the principles and analytical methods in the study of paleobiology, morphology, and systematics. Topics include paleobiogeography, morphology-based phylogenetics, evolutionary rates, biodiversity curves, functional morphology, morphometrics, and paleoecology. Emphasis on application of methods using fossil and modern specimens. Prerequisite: either BIOL 280, BIOL 354, or ESS 213. Offered: jointly with ESS 448; A.

BIOL 439 Functional Morphology (5) NW *S. Santana Mata* Uses mammals as a model system to investigate functional morphology. Focus on discussing primary literature, modern methodological tools used in functional morphology, and group research projects. Research-intensive format allows students to conduct research projects using resources and specimens in the Biology Department and Burke mammalogy collection.

Prerequisite: BIOL 443, BIOL 448, BIOL 452, BIOL 453, or 3.0 in BIOL 350, or permission of instructor. Offered: A.

BIOL 440 General Mycology (5) NW *J. Ammirati* General survey of the fungi with emphasis on life cycles, structure, physiology, economic importance. Prerequisite: either BIOL 354 or BIOL 356

BIOL 441 Trends in Land Plant Evolution (5) NW Covers key innovations and trends during the evolution of land plants. Uses an evolution of development (evo-devo) approach that compares morphological, anatomical, developmental, and molecular traits across main evolutionary lineages of plants. Prerequisite: either BIOL 220, B BIO 220, or T BIOL 140; and either BIOL 317, BIOL 350, BIOL 354, BIOL 355, or BIOL 356. Offered: A.

BIOL 442 Mushrooms and Related Fungi (5) NW *J. AMMIRATI* General biology, ecology, and classification of mushrooms, polypores, puffballs, and other related basidiomycetes. Emphasis on Pacific Northwest species. Prerequisite: BIOL 440.

BIOL 443 Evolution of Mammals and their Ancestors (5) NW Highlights the evolutionary history and systematics of mammals and their ancestors. Examines fossil and modern mammal specimens from the Burke Museum collections. Required field trip. Prerequisite: either BIOL 354, BIOL 453, or ESS 100. Offered: Sp.

BIOL 444 Ornithology (5) NW Field, lecture, and laboratory study of birds from an evolutionary perspective. Emphasizes taxonomy, breeding systems, brood parasitism, appearance, molt, migration, orientation, social behavior, song, and flight. Includes Saturday and weekend field trips for which students are required to share a portion of transportation costs. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 445 Marine Botany (5) NW Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Taken at Friday Harbor laboratories. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; BIOL 430, which must be taken concurrently. Offered: jointly with FHL 440.

BIOL 447 The Greening of the Earth: Influence of Plants on the Evolution of Terrestrial Ecosystems (5) NW *Caroline A Stromberg* Examines the evolution of terrestrial ecosystems focusing on how abiotic factors such as climate change have shaped the evolution of vegetation on earth, and how the evolution of vegetation has influenced the evolution of animals. Introduces paleoecological techniques using Burke Museum plant fossils. Prerequisite: either BIOL 354 or ESS 213. Offered: A.

BIOL 448 Mammalogy (5) NW *S. SANTANA MATA* Studies evolutionary patterns, ecology, behavior, physiology, and taxonomy of mammals. Relies on a comparative, systems approach to understand the major trends and mechanisms maintaining the diversity in form and function in mammals. Prerequisite: either BIOL 350, BIOL 354, or BIOL 356.

BIOL 449 Applied Phylogenetics (3) NW *A. LEACHE* Emphasizes the estimation of species trees - multilocus estimates of species or population relationships as opposed to genealogies of alleles. Provides students with the computation and bioinformatics skills needed to apply new phylogenetic techniques that can accommodate larger, more complex data sets. Prerequisite: minimum grade of 2.0 in BIOL 354.

BIOL 450 Vertebrate Paleontology (5) NW *C. SIDOR* Examines fossil vertebrate life, focusing on systematics and morphology of major lineages (fish, reptiles, bird, and early mammal relatives) . Examines fossil and modern vertebrates from the Burke Museum collection in the lab. Weekend field trip. Prerequisite: either BIOL 354, BIOL 452, BIOL 453 or ESS 100. Offered: jointly with ESS 452.

BIOL 451 Invertebrate Paleontology (5) NW Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology. Offered: jointly with ESS 451.

BIOL 452 Vertebrate Biology (5) NW The biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips, films, and introduction to regional vertebrate fauna. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: SpS.

BIOL 453 Comparative Anatomy of Vertebrates (5) NW Comparison of the structure of vertebrate organ systems: integument, skeletal, muscle, digestive, respiratory, cardiovascular, urinary, and reproductive, with an emphasis on evolutionary trends. Prerequisite: either BIOL 350, BIOL 355, BIOL 452, or BIOL 467. Offered: W.

BIOL 454 Entomology (5) NW Covers the biology of terrestrial arthropods, with emphasis on insects. Includes structure, classification, physiology, and ecology of insects. Interrelationships of insects and man. Requires at least one weekend field trip. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120.

BIOL 455 Human Immunology and pathology of infectious diseases: the continuing battle (4) NW Focuses on the immune system as the co-evolutionary center of a struggle between animals and pathogens in regards to human life within a germ-infested world. Deep discussion of the immune system, vaccines, pathogens (focusing on viruses) and how the battle between good and evil needs a healthy balance. Focuses on the biological aspects of cellular and system-wide defense against pathogens. Prerequisite: BIOL 350, 355, or 356. Offered: Asp.

BIOL 457 Chemical Communication (3) NW *J. Riffell* Exploration of how chemical signals are produced, transported, and influence behavior of microbes, plants, and animals. Synthetic approach, with emphasis on applications to cell biology, neurobiology, and ecology. Prerequisite: either a minimum grade of 2.5 in either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140, or a minimum grade of 2.0 in BIOL 350.

BIOL 458 Behavioral Genetics (4) NW Role of genetics in determining variation in human and animal behavior and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects, and gene expression. Prerequisite: either minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 180. Offered: jointly with PSYCH 458.

BIOL 459 Developmental Neurobiology (3) NW *M. Bosma* Invertebrate and vertebrate examples illustrate the mechanisms used in constructing nervous systems. Focus on the cellular and molecular mechanisms that underlie questions

about the basis of neuronal diversity, axonal pathfinding and target recognition, synaptogenesis, and activity-dependent plasticity. Prerequisite: minimum grade of 2.0 in either BIOL 350 or BIOL 355. Offered: Sp.

BIOL 460 Mammalian Physiology (3) NW Principles of mammalian physiology with special emphasis on the cardiac, respiratory, renal systems taught at the organ and organ systems level. Prerequisite: a minimum grade of 2.5 either BIOL 350 or NBIO 301.

BIOL 461 Neurobiology (3) NW Examination of neuronal function with a focus on sensory systems, research techniques, neurological disease and potential therapeutics. Discussion of primary literature highlights new data related to neurological disease. Prerequisite: minimum grade of 2.0 in BIOL 350; either PHYS 115 or PHYS 122. Offered: W.

BIOL 462 Advanced Animal Physiology (3) NW Physiology at levels of organisms and behavior, organ systems, and cells - an evolutionary and integrative perspective. Organismal physiology: metabolism, temperature, locomotion, osmoregulation, respiration, circulation, digestion. Prerequisite: minimum grade of 2.0 in either BIOL 350 or NBIO 301.

BIOL 463 Advanced Animal Physiology Lab (3) NW Experimental design and techniques, data analysis, written reports. Original project labs and experiments in physiology. Prerequisite: BIOL 462, which may be taken concurrently.

BIOL 464 Molecular Mechanisms of Cancer Seminar (2) NW *Alison J Crowe* Molecular mechanisms of cancer and therapeutic strategies designed to treat cancer. Additional focus on intersection of medicine and society, including racial health disparities, patient ethics, and informed consent. Prerequisite: either BIOL 350 or BIOL 355. Credit/no-credit only. Offered: A.

BIOL 465 Comparative Endocrinology (3) NW Hormonal integration of living processes at all levels in animals: molecules, cells, organs, organisms, populations. Prerequisite: BIOL 220 or BIOL 240

BIOL 466 Pathobiology of Emerging Diseases (3) NW *L. ZEMAN* Examination of the causes, alterations in cellular function, and remediation of emerging

diseases in plants and animals from a global perspective. Includes weekly scientific papers. Prerequisite: either BIOL 350, BIOL 355, BIOL 356, or BIOL 380.

BIOL 467 Comparative Animal Physiology (3) NW Studies organismal function in an evolutionary context. Uses a variety of animals to highlight transitions in metabolism, muscle function, respiration, circulation, digestion, excretion, and ion regulation. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 468 Medical Physiology (3) D. *Weigle* Students deepen their understanding of human physiology and pathophysiology by performing in-depth analyses of actual medical cases. Cases are chosen to illustrate the mechanisms of frequently encountered diseases and the clinical presentation of affected patients. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140; BIOL 350.

BIOL 469 Evolution and Medicine (3) NW C. *Bergstrom* Responds to new applications of evolutionary biology in medicine, now being discovered at an accelerating rate. Emphasizes medically relevant aspects of evolutionary biology. Prerequisite: minimum grade of 2.0 in either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120.

BIOL 470 Biogeography (4) NW Analysis of historical and ecological determinants of current and past distributions of organisms. Integrates techniques developed by taxonomists, paleontologists, geologists, evolutionists, ecologists, and biogeographers to elucidate relationships between geographical distributions and continental drift, ecological interactions, climate, and dispersal abilities of organisms. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 471 Comparative Anatomy and Physiology of Marine Organisms (5) NW *Adam P. Summers* Challenges and opportunities presented by the marine environment. Relationship between organismal form and physiological function in marine animals and plants. Field trips for collection of live local organisms. Physiology experiments and CT scanning. Offered at Friday Harbor Laboratories. Prerequisite: either BIOL 220, BIOL 240, or FISH 270/MARBIO 270/OCEAN 270; recommended: Q SCI 381 or equivalent. Offered: jointly with FHL 471; A.

BIOL 472 Community Ecology (5) NW *Janneke Hille Ris Lambers* Covers the forces that structure ecological communities (e.g. speciation / migration, the environment, species interactions) as well as anthropogenic impacts on ecological communities. Course time includes the reading of primary literature, discussions, lectures, data collection (in the field and lab) and data analysis. Includes mandatory field trips to local field sites. Prerequisite: BIOL 356.

BIOL 473 Limnology (3) NW Ecology, conservation, and management of inland aquatic ecosystems. Explores interactions among biological, chemical, and physical features of lakes and other aquatic habitats. Prerequisite: BIOL 180. Offered: jointly with FISH 473; A.

BIOL 474 Limnology Laboratory (2) NW Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with CEE 463/FISH 474; A.

BIOL 475 Paleobiology Field Methods and Research (3-5) NW Introduces field methods and research in various areas of biology, e.g., paleontology, ecology, climate change, and mycology. Includes two or more weeks away from campus at field site. Offered: jointly with ESS 449; S.

BIOL 476 Conservation Biology (5) NW Explores biological, managerial, economic, and ethical concepts affecting survival of species. Applications of ecology, biogeography, population genetics, and social sciences for the preservation of species in the face of widespread global habitat modification, destruction, and other human activities. Prerequisite: either BIOL 356, or a minimum grade of 2.5 in either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120.

BIOL 477 Seminar in Marine Biology (3) NW Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with FISH 477/OCEAN 477; W.

BIOL 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW Seminar series featuring local, national, and

internationally known speakers in fisheries management and conservation.

Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with ENVIR 478/FISH 478.

BIOL 479 Research in Marine Biology (1-15, max. 15) Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with FISH 479/MARBIO 479/OCEAN 479; AWSpS.

BIOL 480 Field Ecology (4) NW *P. Boersma* Field projects examining ecological and behavioral topics such as foraging and social behavior, species interactions, and structure of terrestrial and aquatic communities. Two weekend fieldtrips required. Prerequisite: either BIOL 356 or a minimum grade of 3.0 in either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: Sp.

BIOL 481 Experimental Evolutionary Ecology (5) NW *B. Kerr* Explores experimentally approachable questions in ecology and evolution through lectures, laboratory, and field experiments. Topics may include evolution of bacterial antibiotic resistance, the evolution of virulence, seed predation, plant biodiversity, and others. Prerequisite: either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: A.

BIOL 482 Advanced Experimental Evolutionary Ecology (2-5, max. 15) NW *B. KERR* Working in pairs or independently, students pursue supervised original field or laboratory research projects. Projects span three academic quarters, with project development beginning in autumn, research continuing in winter, and culminating in spring with production of a scientific paper. Prerequisite: BIOL 180, which must be taken concurrently. Offered: WSpS.

BIOL 483 Senior Seminar in Paleobiology (1, max. 6) Supervised readings and group discussion. Prerequisite: either BIOL 443, BIOL 447, BIOL 450/ESS 452, BIOL 451/ESS 452, ESS 450, BIO A 388, or ARCHY 470.

BIOL 484 Senior Seminar in Evolution and Systematics (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 354.

BIOL 485 Senior Seminar in Cellular, Molecular and Developmental Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: minimum grade of 2.0 in either BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOC 405, BIOC 406, BIOC 440, BIOC 441, or BIOC 442.

BIOL 486 Senior Seminar in Ecology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 356.

BIOL 487 Senior Seminar in Conservation Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 356.

BIOL 488 Senior Seminar in Physiology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 350.

BIOL 489 Senior Seminar in Plant Biology (1-3, max. 9) NW Supervised readings and group discussion. Prerequisite: BIOL 220 or BIOL 240.

BIOL 490 Undergraduate Seminar (1-3, max. 6) NW Supervised readings and group discussion of selected topics of broad biological significance. Prerequisite: either BIOL 220, BIOL 240, B BIO 220, or T BIOL 140.

BIOL 492 Teaching Biology Inclusively to Diverse Audiences (3) I&S, DIV *Linda E Martin-Morris* Designed to help biology students gain skills in disseminating science information to students at any level, patients, and the public. Pays special attention to making STEM education accessible to underrepresented populations. Includes hands-on practice in variety of learning strategies and teaching practices. Prerequisite: either BIOL 350, BIOL 354, BIOL 355, BIOL 356, or NBIO 301.

BIOL 493 Study Abroad - Advanced Biology (1-15, max. 15) NW For participants in UW Study Abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements without approval.

BIOL 494 Controversies in Biology and Society (4) NW/I&S *B. Buchwitz* Explorations of controversies in

biology and society that benefit from a biological perspective. Topics vary from quarter to quarter, but include cases from biological research, communication, education, and policy. Prerequisite: Either BIOL 350, BIOL 354, BIOL 355, or BIOL 356
Offered: W.

BIOL 495 Biology of Fermentation (3) NW *Alexander R. Paredes, Justin M Kollman* Practical application of biology and chemistry in beer and winemaking. Students learn to culture yeast, ferment foods, brew beer from malted grains, and perform chemical analysis of wine must. Prerequisite: either BIOL 310, BIOL 313, BIOL 340, BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOL 360, BIOL 380, BIOC 405, BIOC 426, BIOC 440, or BIOC 450. Offered: jointly with BIOC 495; W.

BIOL 496 Special Topics in Field Biology (1-5, max. 10)

BIOL 497 Special Topics in Biology (1-5, max. 10) NW

BIOL 498 Library Research (1-5, max. 10)

BIOL 499 Undergraduate Research (1-20, max. 20)

BIOL 500 Topics in Biology (1-3, max. 16)

BIOL 501 Topics in Biological Instruction (1-2, max. 10) Focused discussion of on-going research in instructional methods for life science courses. Credit/no-credit only.

BIOL 502 Grant Writing (2-4, max. 8) *B. KERR, J. NEMHAUSER* Introduces the steps of compiling a successful grant proposal, using the NSF graduate fellowship as a template. Offered: AWSp.

BIOL 504 Mentored Scientific Reading and Analysis (2/4, max. 16) Introduce graduate students to theory, methods, and current research in a biological discipline, and provides structured opportunity for students to practice scientific discourse. Graduate status required, or permission of instructor for undergraduates. Topics vary.

BIOL 505 Evidence-Based Teaching in Biology (1-3, max. 10) Designed to help biology students gain skills in disseminating science information to

students at any level, patients, and the public. Pays special attention to making STEM education accessible to underrepresented populations. Includes hands-on practice in variety of learning strategies and teaching practices.

BIOL 506 Scientific Manuscript Writing (4)

Introduces the writing of scientific articles. Students write a scientific manuscript, cover letter, and identify a journal for submission. Offered: W.

BIOL 511 Topics in Mathematical Biology (1-3, max. 15)

Discussion of current topics in mathematical biology. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 517 Plant Identification and Classification (5)

R. OLMSTEAD Explores the classification and diversity of seed plants; concepts and principles of phylogeny and classification; lab and field study of common plant families in Washington; and skill development for identification of species. Paper relying on original literature to demonstrate depth of understanding of one taxonomic group. One field trip. Offered: Sp.

BIOL 519 Data Science for Biologists (4) B.

BRUNTON Explores, analyzes, and visualizes biological data sets using scientific computing software. Focuses on the foundations of data wrangling, data analysis, and statistics, particularly the development of automated techniques that are reproducible and scalable to large data sets. Offered: W.

BIOL 520 Departmental Seminar (1, max. 18)

Credit/no-credit only. Offered: AWSp.

BIOL 533 Advanced Organismal Biology (9)

Advanced study and research in organismal biology. Emphasizes marine organisms and habitats of the San Juan Archipelago. Includes individual research projects. Prerequisite: permission of Director of Friday Harbor Laboratories. Offered: S.

BIOL 536 Comparative Invertebrate Embryology (9)

Studies diversity in developmental patterns in major marine taxa. Analyzes evolutionary changes in development, with emphasis on observation of live embryos and larvae. Offered: jointly with FHL 536; S.

BIOL 540 Seminar in Molecular, Cellular, and Developmental Biology (1-3, max. 15)

Weekly discussions of past and current scientific literature in cell, molecular, and/or developmental biology, review of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 541 Topics in Molecular, Cellular, and Developmental Biology (1-3, max. 15)

Focused discussion of on-going cell, molecular, or developmental biology research occurring in the instructor's laboratory. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 542 Analysis of Development (1-3, max. 15)

Analysis of structural, physiological, and molecular levels of developmental processes, including gametogenesis, fertilization, cell and tissue movements, induction, and cytodifferentiation. Graduate standing or permission of instructor.

BIOL 543 Biology of Drosophila Seminar (1, max. 12)

Weekly presentation by participants of classical literature, current literature, and research in the molecular biology, developmental biology, neurobiology, and genetics of *Drosophila*. Prerequisite: permission of instructor. Offered: AWSp.

BIOL 544 Evolution of Photosynthesis (3) R.

CATTOLICO Focuses on the evolution of photosynthetic eukaryotic cells. Interactive discussions target the morphological, genetic, and biochemical consequences of progenitor cell specialization within extant taxa.

BIOL 545 MCD-Biology Professional Skills Seminar (1, max. 6) D. PARICHY

Presentations of past or planned research in molecular, cellular, or developmental biology. Participants give presentations in either professional-meeting or chalk-talk formats. Uses written and oral evaluations by audience to focus on scientific content as well as presentation skills. Credit/no-credit only. Offered: AWSp.

BIOL 550 Seminar in Evolution and Systematics (1-3, max. 15)

Weekly discussions of past and current scientific literature in evolution and/or systematics, reviews of the state of the field, and presentation of

research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 551 Topics in Evolution and Systematics (1-3, max. 24) Focused discussion of on-going research in evolution and/or systematics occurring in the instructor's laboratory. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 552 Advanced Evolution ([2-5]-, max. 10) Successful analytical approaches to understanding evolutionary patterns and the processes that generate them, examined by using a wide array of empirical and theoretical tools. Survey of how theory, modeling, and statistics can be applied to observations and experiments in evolutionary biology.

BIOL 553 Applied Phylogenetics (3) A. LEACHE Survey of methods for estimating phylogenetic trees. Covers theory and use of phylogeny in comparative biology. Computer labs focus on analyzing real data to answer relevant biological questions. Strong computer skills necessary. Includes weekly discussions of scientific papers and an individual research project. Prerequisite: minimum grade of 2.5 in BIOL 354.

BIOL 555 Introduction to Graduate Research in Paleobiology (1) Introduction to paleobiology techniques and resources. Credit/no-credit only. Offered: jointly with ESS 558; A.

BIOL 557 Vertebrate Paleontology (5) Examines the biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips and introduction to regional vertebrate fauna. Offered: jointly with ESS 557.

BIOL 560 Seminar in Ecology (1-3, max. 15) Weekly discussions of past and current scientific literature in ecology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 561 Topics in Ecology (1-3, max. 15) Focused discussion of on-going research in ecology occurring

in the instructor's laboratory. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 563 Experimental Evolutionary Ecology (5) B. KERR Explores experimentally approachable questions in ecology and evolution through lectures, lab, and field experiments. Topics may include evolution of bacterial antibiotic resistance, the evolution of virulence, seed predation, plant biodiversity, and others. Corequisite: BIOL 481. Offered: A.

BIOL 564 Advanced Experimental Evolutionary Ecology (2-5, max. 15) B. KERR Working independently or paired with an undergraduate in BIOL 482, students pursue supervised original field or laboratory research projects. Projects span three academic quarters, with project development beginning in autumn, research continuing in winter, and culminating in spring with production of a scientific paper. Prerequisite: BIOL 563, which may be taken concurrently. Offered: AWSp.

BIOL 565 Community Ecology (5) J. HILLE RIS LAMBERS Covers the complexity of biological communities as influenced by biotic and abiotic factors, as well as the impact of human activities, like global warming, on communities.

BIOL 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with FISH 567/SEFS 567; W.

BIOL 570 Seminar in Conservation Biology (1-3, max. 15) Weekly discussions of past and current scientific literature in conservation biology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 571 Topics in Conservation Biology (1-3, max. 15) Focused discussion of on-going research in conservation biology occurring in the instructor's laboratory. Graduate status required, or permission of instructor for undergraduates. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 580 Seminar in Physiology (1-3, max. 15) Weekly discussions of past and current scientific

literature in physiology, reviews of the state of the field, and presentation of research results.

Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 581 Topics in Physiology (1-3, max. 15)

Focused discussion of on-going research in physiology occurring in the instructor's laboratory. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 583 Physiological Mechanisms of Histology (5)

L. ZEMAN Develops recognition of cellular structures with correlations to normal physiology and disease states. Lab projects cover harvesting, sectioning, staining, and mounting tissue. Includes weekly scientific papers.

BIOL 590 Seminar in Organismal Biology (1-3, max. 15)

Weekly discussions of past and current scientific literature in organismal biology, reviews of the state of the field, and presentation of research results. Discussions may cover the full breadth of the discipline or focus on selected topics.

BIOL 591 Topics in Organismal Biology (1-3, max. 15)

Focused discussion of on-going research in organismal biology occurring in the the instructor's laboratory. This is a lab meeting, so registration is limited to students already affiliated with this research laboratory.

BIOL 600 Independent Study or Research ([1-10]-)

Credit/no-credit only.

BIOL 700 Master's Thesis (*-) Credit/no-credit only.

Offered: AWSpS.

BIOL 800 Doctoral Dissertation (*-) Credit/no-credit only.

Offered: AWSpS.

CENTER FOR STATISTICS AND THE SOCIAL SCIENCES

CS&SS 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR

Develops statistical literacy. Examines objectives & pitfalls of statistical studies; study designs, data analysis, inference; graphical & numerical summaries of numerical

&categorical data; correlation and regression; estimation, confidence intervals, & significance tests. Emphasizes social science examples and cases. May only receive credit for one of STAT 220, STAT 221/CS&SS 221/SOC 221, or STAT 290. Offered: jointly with SOC 221/STAT 221; AWSp.

CS&SS 320 Evaluating Social Science Evidence (5)

I&S, QSR A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates "facts and findings" by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with SOC 320/STAT 320.

CS&SS 321 Data Science and Statistics for Social Sciences I (5) I&S, QSR

Introduction to applied data analysis for social scientists. Focuses on using programming to prepare, explore, analyze, and present data that arise in social science research. Data science topics include loading, cleaning, and exploring data, basic visualization, reproducible research practices. Statistical topics include measurement, probability, modeling, assessment of statistical evidence. Lectures intermixed with programming and lab sessions. Offered: jointly with SOC 321/STAT 321; W.

CS&SS 322 Case-Based Social Statistics II (5) I&S, QSR

Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with SOC 322/STAT 322.

CS&SS 501 Advanced Political Research Design and Analysis (5)

Testing theories with empirical evidence. Examines current topics in research methods and statistical analysis in political science. Content varies according to recent developments in the field and with interests of instructor. Offered: jointly with POL S 501.

CS&SS 503 Advanced Quantitative Political Methodology (5)

Theory and practice of likelihood inference. Includes probability modeling, maximum likelihood estimation, models for binary responses,

count models, sample selection, and basis time series analysis. Offered: jointly with POL S 503.

CS&SS 504 Applied Regression (4) Least squares estimation. Hypothesis testing. Interpretation of regression coefficients. Categorical independent variables. Interactions. Assumption violations: outliers, residuals, robust regression; nonlinearity, transformations, ACE, CART; nonconstant variance. Variable selection and model averaging. Prerequisite: either STAT 342, STAT 390/MATH 390, STAT 421, STAT 481/ECON 481, STAT 509/CS&SS 509/ECON 580, or SOC 425. Offered: jointly with STAT 504.

CS&SS 505 Review of Mathematics for Social Scientists (1) Reviews basic mathematical skills needed for a meaningful understanding of elementary statistics, data analysis, and social science methodology. Overview of core knowledge required for graduate courses in quantitative methods in social sciences. Topics include discrete mathematics, differential and integral calculus, review of matrix algebra, and basic probabilistic and statistical concepts. Credit/no-credit only. Offered: jointly with SOC 512.

CS&SS 506 Computer Environments for the Social Sciences (1) Familiarizes graduate students in the social sciences with modern environments for statistical computing. Provides an overview of available resources and a description of fundamental tools used in quantitative courses and doctoral research. Topics include interfaces to web-based resources, UNIX-based computing, and major statistical packages (R, SPLUS, and SAS) .

CS&SS 507 Methodology: Quantitative Techniques in Sociology (3) Applied regression analysis with emphasis on interactive computer graphics techniques and interpretation. Application to typical sociological problems. Offered: jointly with SOC 506.

CS&SS 508 Introduction to R for Social Scientists (1) Familiarizes students with the R environment for statistical computing (<http://www.r-project.org>) . R is a freely available, multi-platform, and powerful program for analysis and graphics similar to S-PLUS. Covers the basics of organizing, managing, and manipulating social science data; basic applications; introduction to programming; links to other major statistical packages. Credit/no-credit only.

CS&SS 509 Econometrics I: Introduction to Mathematical Statistics (4) Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the delta-method. Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Offered: jointly with ECON 580/STAT 509.

CS&SS 510 Maximum Likelihood Methods for the Social Sciences (5) *C. ADOLPH* Introduces maximum likelihood, a more general method for modeling social phenomena than linear regression. Topics include discrete, time series, and spatial data, model interpretation, and fitting. Prerequisite: POL S 501/CS&SS 501; POL S 503/CS&SS 503. Offered: jointly with POL S 510.

CS&SS 512 Time Series and Panel Data for the Social Sciences (5) *C. Adolph* Extends the linear model to account for temporal dynamics and cross-sectional variation. Focuses on model selection and real-world interpretation of model results. Topics include autoregressive processes, trends, seasonality, stationarity, lagged dependent variables, ARIMA models, fixed effects, random effects, cointegration and error correction models, panel heteroskedasticity, missing data in panel models, causal inference with panel data. Recommended: Graduate level coursework in linear regression and social science research design. Basic familiarity with or willingness to learn the R statistical language. Offered: jointly with POL S 512.

CS&SS 523 Social Networks and Health: Biocultural Perspectives (5) Examines the many ways that social interactions positively and negatively influence our health, and vice versa. Considers why such influences are important to understand, how one measures them, what recent research has shown, and explores how they relate to other health determinants, both biological and cultural Offered: jointly with BIO A 523.

CS&SS 526 Structural Equation Models for the Social Sciences (3) Structural equation models for

the social sciences, including specification, estimation, and testing. Topics include path analysis, confirmatory factor analysis, linear models with latent variables, MIMIC models, non-recursive models, models for nested data. Emphasizes applications to substantive problems in the social sciences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with SOC 529.

CS&SS 527 Survey Research Methods (4) A.

MOKDAD Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BOST 517/BOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with G H 533/HSERV 527.

CS&SS 529 Sample Survey Techniques (3) Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BOST 511, or BOST 517, or equivalent; or permission of instructor. Offered: jointly with BOST 529/STAT 529.

CS&SS 533 Research Methods in Demography (3)

Basic measures and models used in demographic research. Sources and quality of demographic data. Rate construction, standardization, the life table, stable population models, migration models, population estimation and projection, measures of concentration and dispersion, measures of family formation and dissolution. Offered: jointly with CSDE 533/SOC 533.

CS&SS 536 Analysis of Categorical and Count Data

(3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with SOC 536/STAT 536.

CS&SS 544 Event History Analysis for the Social Sciences (5) Examines life course research using event-history analysis with applications to the substantive areas of household dynamics, family formation and dissolution, marriage, cohabitation, and divorce, migration histories, residential mobility, and housing careers. Examines continuous- and discrete-time longitudinal models during practical laboratory sessions.

CS&SS 554 Statistical Methods for Spatial Data (3)

Motivates the need for, and describes methods for, the analysis of spatial data. Topics: Clustering, cluster detection, spatial regression, modeling neighborhood effects, geographical information systems. Point and aggregated data considered and data from complex surveys. Offered: jointly with SOC 534/STAT 554; W.

CS&SS 560 Hierarchical Modeling for the Social

Sciences (4) Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested within states. Provides a basic theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with SOC 560/STAT 560.

CS&SS 563 Statistical Demography (4) A. Raftery

Statistical methods and models for estimating and forecasting population quantities. Topic: Demographic rates; Population projection; Leslie matrix; modeling age-specific patterns; probabilistic population projections and Bayesian hierarchical models; estimating past and present fertility, mortality, migration and population; big data in demography. Prerequisite: Either STAT 509/CS&SS 509/ECON 509, STAT 513, or permission from the instructor. Offered: jointly with SOC 563/STAT 563; Sp.

CS&SS 564 Bayesian Statistics for the Social

Sciences (4) Statistical methods based on the idea of probability as a measure of uncertainty. Topics covered include subjective notion of probability, Bayes' Theorem, prior and posterior distributions, and data analysis techniques for statistical models. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with STAT 564.

CS&SS 565 Inequality: Current Trends and Explanations (3) Discussion of recent growth in economic inequality in the United States and competing explanations for these new trends through examination of labor market demographics, industrial composition and restructuring, and the broader political context that impacts policies like minimum wage, strength of unions, and foreign trade. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with SOC 565.

CS&SS 566 Causal Modeling (4) Construction of causal hypotheses. Theories of causation, counterfactuals, intervention vs. passive observation. Contexts for causal inference: randomized experiments; sequential randomization; partial compliance; natural experiments, passive observation. Path diagrams, conditional independence, and d-separation. Model equivalence and causal under-determination. Prerequisite: course in statistics, SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with STAT 566.

CS&SS 567 Statistical Analysis of Social Networks (4) Statistical and mathematical descriptions of social networks. Topics include graphical and matrix representations of social networks, sampling methods, statistical analysis of network data, and applications. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with STAT 567.

CS&SS 568 Game Theory for Social Scientists (5) Studies non-cooperative game-theory and provides tools to derive appropriate statistical models from game-theoretic models of behavior. Equilibrium concepts, learning, repeated games and experimental game theory. Prerequisite: MATH 112, MATH 124, or MATH 134; STAT 311/ECON 311 or equivalent. Offered: jointly with ECON 568.

CS&SS 569 Visualizing Data (4) Explores techniques for visualizing social science data to complement graduate training methods. Emphasis on principles and perception of visualization, novel exploration and presentation of data and statistical models, and implementation of recommended techniques in statistics packages. Prerequisite: SOC 504, SOC 505, and SOC 506.

CS&SS 589 Multivariate Data Analysis for the Social Sciences (4, max. 8) *E. EROSHEVA* Multivariate analysis aims to summarize and describe patterns

among multiple observed characteristics. Explores theoretical introduction and practical skills to carry out multivariate analysis methods such as cluster analysis, principal components, factor analysis, and latent class analysis. Prerequisite: SOC 504, SOC 505, or SOC 506. Offered: jointly with SOC WL 589; A.

CS&SS 590 CSSS Seminar (1, max. 20) Credit/no-credit only.

CS&SS 592 Applied Longitudinal Data Analysis For Social Sciences (4) *E. Erosheva* Addresses statistical methodology for using longitudinal data to answer research questions about changes over time including exploratory analysis tools, and random coefficient, growth curve, multilevel and hierarchical models, and their extensions. Prerequisite: Successful completion of SOC 504, SOC 505, and SOC 506; and a solid knowledge of linear regression. Offered: jointly with SOC WL 592; A, odd years.

CS&SS 594 Special Topics in Social Science and Statistics (1-5, max. 30) Topics vary. Prerequisite: permission of instructor. Offered: AWSp.

CENTER FOR STUDIES IN DEMOGRAPHY AND ECOLOGY

CSDE 501 Population Studies Seminar Series (1, max. 18) CSDE affiliates and visitors present current research projects. Credit/no-credit only. Offered: AWSp.

CSDE 502 Population Studies Proseminar (1/2, max. 15) Professional training in demography and populations studies. Includes ethics in population research, human subjects review, proposal application and writing. CSDE faculty research specialization, and research preparation and presentation. Credit/no-credit only. Offered: ASp.

CSDE 513 Demography and Ecology (3) Theories and research on human fertility, mortality, mobility, migration, and urbanization in social/economic context. Comparative and historical materials on Europe, the United States, and the Third World. Offered: jointly with SOC 513.

CSDE 533 Research Methods in Demography (3) Basic measures and models used in demographic

research. Sources and quality of demographic data. Rate construction, standardization, the life table, stable population models, migration models, population estimation and projection, measures of concentration and dispersion, measures of family formation and dissolution. Offered: jointly with CS&SS 533/SOC 533.

CSDE 555 Population Metrics in Global Health (4)

Presents a conceptual framework in which to understand and assess the health of populations. Appropriate methodological tools and techniques from demography, epidemiology, and related disciplines are presented together in this broader context. Offered: Sp.

CSDE 595 Special Topics in Population Studies (1-5, max. 10)

Examination of current substantive and methodological topics in demography. Content varies according to recent developments in the field and interest of the instructor.

CENTER FOR THE HUMANITIES

HUM 101 Humanities First: Foundations (3) VLPA

Topics change yearly, but course is anchored in four themes at the foundation of the humanistic endeavor: language, objects, space, and time. Focuses on what Humanists do, how they do it, various techniques and use of evidence, primary goals, and public-facing results. Offered: A.

HUM 102 Humanities First: Campus Connections (2)

I&S A "laboratory seminar" that combines a core text with visits to campus partners to explore the work of humanists in the world. Students work on e-portfolio and the practice of public humanities communications. Recommended: HUM 101. Credit/no-credit only. Offered: W.

HUM 103 Humanities First: Community

Connections (2) I&S A "laboratory seminar" that combines a core text with visits to community partners in Seattle and beyond to explore the work of humanists in the world. Students work on e-portfolio and the practice of public humanities communications. Recommended: HUM 101 and HUM 102. Credit/no-credit only. Offered: Sp.

HUM 201 Introduction to Studies in the Humanities

(5) VLPA Introduction to fundamental concepts and

approaches to the study of the humanities. Topics covered drawn from literature, language, history, culture, civilization, and other central areas of the humanities.

HUM 205 Religion, Violence, and Peace: Patterns

Across Time and Tradition (5) I&S Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with NEAR E 285/RELIG 205; W.

HUM 498 Special Topics in the Humanities (1-6,

max. 15) VLPA/I&S Intensive research opportunity, for work on project of independent and/or original design in the cultural disciplines. Mentored by UW and visiting faculty in the arts, humanities, and qualitative social sciences, by arrangement only. Offered: S.

HUM 523 Seminar in Hypertext and Textual Studies

(5) Several views of hypertext conceptually explored as a basis for research and evaluation of selected hypertext works. Includes initiating the construction of a World Wide Web hypertext of resources for the study of oral, graphical, hand-written, and printed texts. Included in curriculum of Textual Studies program.

HUM 596 Humanities Research Seminar (1-5, max.

15) Explorations of current research in the humanities, most frequently with interdisciplinary emphasis. Offered by selected UW faculty and scholars-in-residence.

HUM 597 Special Topics in the Humanities (1-2,

max. 10) Credit/no-credit only.

HUM 600 Independent Study or Research (1-5, max.

10) Develops research ideas, practices, and their implication for applications in particular contexts not covered in standard course offerings. Supports students' specific educational goals. May be undertaken individually or in small investigative teams. Offered: AWSpS.

HUM 601 Internship (2-6, max. 12)

Internship with a local organization, agency, or company that provides a field-based, applied learning opportunity; aligns

with student's professional and scholarly development goals; benefits the organizations; and has academic merit. Engages with and reflects on cultural dimensions of work experience. Offered: AWSpS.

CHEMISTRY

CHEM 110 Preparation for General Chemistry (3/5)

NW Introduction to general chemistry with an emphasis on developing problem solving skills. Covers basic concepts of chemistry along with the mathematics required for quantitative problem solving. For students without high school chemistry or with limited mathematics background. Successful completion of CHEM 110 prepares students to enroll in CHEM 142. Prerequisite: assessment of skills by taking the General Chemistry Placement Exam. Offered: AWS.

CHEM 120 Principles of Chemistry I (5) NW, QSR

First course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Includes matter and energy, chemical nomenclature, chemical reactions, stoichiometry, modern atomic theory, chemical bonding. Laboratory. Only 5 credits can be counted toward graduation from the following: CHEM 120, CHEM 142, CHEM 145. Prerequisite: Assessment of skills by taking General Chemistry Placement Exam Offered: AS.

CHEM 142 General Chemistry (5) NW, QSR For science and engineering majors. Atomic nature of matter, quantum mechanics, ionic and covalent bonding, molecular geometry, stoichiometry, solution stoichiometry, kinetics, and gas laws. Includes laboratory. Cannot be taken for credit if credit received for CHEM 120. Prerequisite: either a minimum grade of 1.7 in CHEM 110, a passing score in the General Chemistry Placement exam, or a score of 1 or higher on Chemistry AP test. Offered: AWSpS.

CHEM 143 Accelerated General Chemistry (6) QSR

Chem 143 and Chem 153 cover the equivalent of one year of general Chemistry in 2 quarters. For science and engineering majors. Stoichiometry, gas laws, atomic structure, quantum mechanics, general bonding, kinetics, gas-phase equilibria, acid-base equilibria, applications of aqueous equilibria. No

more than 6 credits from the following may count toward graduation requirements: CHEM 142, CHEM 143, CHEM 145. Prerequisite: Either CHEM 110, or a passing score on the General Chemistry Placement Exam, or a score of 1 or higher on Chemistry AP exam. Offered: A.

CHEM 145 Honors General Chemistry (5) NW, QSR

CHEM 145 and CHEM 155 cover material in CHEM 142, CHEM 152, and CHEM 162. Includes laboratory. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 142, CHEM145 (5 credits) ; CHEM 145, CHEM 155, CHEM 162 (10 credits) . Prerequisite: either MATH 124 or MATH 134, either of which may be taken concurrently; score of 66% on HCHEMC placement test, score of 3, 4 or 5 on AP Chemistry exam, or IB score of 5, 6, or 7 on high level chemistry exam. Offered: A.

CHEM 152 General Chemistry (5) NW, QSR

Gas phase and aqueous equilibria, thermochemistry, thermodynamics, and electrochemistry. Includes laboratory. No more than 5 credits can be counted toward graduation from the following course group: CHEM 152, CHEM 155. Prerequisite: minimum grade of 1.7 in either CHEM 142, CHEM 143 or CHEM 145. Offered: AWSpS.

CHEM 153 Accelerated General Chemistry (6) NW

For science and engineering majors. Thermodynamics, electrochemistry, bonding, liquids, solid and solutions, transition metals. Prerequisite: 2.0 in CHEM 143. Offered: W.

CHEM 155 Honors General Chemistry (5) NW, QSR

Continuation of CHEM 145. Includes laboratory. Together CHEM 145 and CHEM 155 cover material in CHEM 142, CHEM 152, and CHEM 162. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 152 or CHEM 155 (5 credits) ; CHEM 145, CHEM 155, CHEM 162 (10 credits) . Prerequisite: minimum grade of 2.2 in CHEM 145. Offered: W.

CHEM 162 General Chemistry (5) NW, QSR

Molecular bonding theories, liquids, solids, solutions, and introduction to organic and transition metal chemistry. Includes laboratory. No more than 5 credits can be counted toward graduate from the following course group: CHEM 162, CHEM 165.

Prerequisite: minimum grade of 1.7 in CHEM 152.
Offered: AWSpS.

CHEM 165 Honors General Chemistry (5) NW, QSR

Introduction to systematic inorganic chemistry: representative elements, metals, and nonmetals. Includes coordination complexes, geochemistry, and metallurgy. Additional material on environmental applications of basic chemistry presented. Includes laboratory. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 162, CHEM 165 (5 credits) ; CHEM 165, CHEM 312 (5 credits) . Prerequisite: minimum grade of 2.2 in CHEM 155. Offered: Sp.

CHEM 190 Freshman Discovery Seminar in Chemistry (5) NW Introduces incoming freshman to research basics and scholarly inquiry skills used in the study of chemistry.

CHEM 192 Chemistry Achievement Workshop (2) Small learning community of students taking the same large lecture course. Explores effective study skills, learn to practice metacognition, and enhancing higher order problem solving in order to achieve a high level of success in CHEM 142. Co-requisite: CHEM 142. Credit/no-credit only. Offered: AWSp.

CHEM 196 Chemistry Frontiers (1) Alexandra Velian Exposes freshmen and new transfer undergraduate students to current topics of U.W. research in chemistry. Students interface with research groups. Includes a "big picture" description of the scientific goals and main questions of the highlighted group along with a discussion of experimental methods. Credit/no-credit only. Offered: AWSp.

CHEM 197 Science Outreach Training (1-2, max. 2) Training as a peer mentor for General Chemistry or for participation in science-related outreach activities to the community. Not applicable toward chemistry degree requirements. Credit/no-credit only.

CHEM 198 Tutorial Study (2, max. 6) Credit/no-credit only.

CHEM 199 Special Problems (1-6, max. 6) Research in chemistry. Credit/no-credit only. Offered: AWSpS.

CHEM 220 Principles of Chemistry II (5) NW Second course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Introduction to organic chemistry including organic compounds, functional groups, aromaticity, and stereochemistry. No more than 5 credits can be counted toward graduation from the following course group: CHEM 220, CHEM 223, CHEM 237, CHEM 335. Prerequisite: a minimum grade of 1.7 in either CHEM 120 or CHEM 142. Offered: W.

CHEM 221 Principles of Chemistry III (5) NW Third course in a three-quarter overview of general chemistry, organic chemistry, and biochemistry. Not for students majoring in biochemistry, chemistry, or engineering. Introduction to biochemistry including biomolecular structure, proteins, nucleic acids, biochemical cycles, and cellular energetics. No more than 5 credits can be counted toward graduation from the following course group: CHEM 221, CHEM 224, CHEM 239, CHEM 337. Prerequisite: a minimum grade of 1.7 in CHEM 220. Offered: Sp.

CHEM 223 Organic Chemistry - Short Program (4) NW First of a two-quarter lecture series in organic chemistry, for those who elect not to complete the CHEM 237, CHEM 238, CHEM 239 sequence. Introduction to structure, nomenclature, properties, and reactions of the main functional families of organic compounds. Stereochemistry and spectroscopy. No more than 5 credits can be counted toward graduation from the following course group: CHEM 220, CHEM 223, CHEM 237, CHEM 335. Prerequisite: a minimum grade of 1.7 in either CHEM 152, CHEM 153, or CHEM 155. Offered: AS.

CHEM 224 Organic Chemistry - Short Program (4) NW Continuation of CHEM 223. Structure, nomenclature, properties, and reactions of aldehydes, ketones, carboxylic acid derivatives, amines, carbohydrates, lipids, amino acids, peptides, proteins, and nucleic acids. No laboratory accompanies this course, but CHEM 241 laboratory may be taken concurrently. No more than 5 credits can be counted toward graduation from the following course group: CHEM 221, CHEM 224, CHEM 239, CHEM 337. Prerequisite: a minimum grade of 1.7 in CHEM 223. Offered: WS.

CHEM 237 Organic Chemistry (4) NW First course for students planning to take three quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of the main types of organic compounds. No organic laboratory accompanies this course. No more than 5 credits can be counted toward graduation from the following course group: CHEM 220, CHEM 223, CHEM 237, CHEM 335. Prerequisite: a minimum grade of 1.7 in either CHEM 153, CHEM 155, or CHEM 162. Offered: AWPSP.

CHEM 238 Organic Chemistry (4) NW Second course for students planning to take three quarters of organic chemistry. Further discussion of physical properties and transformations of organic molecules, especially aromatic and carbonyl compounds. No more than the number of credits indicated can be counted toward graduation from the following course groups: CHEM 238, CHEM 336 (4 credits) . Prerequisite: either 1.7 in CHEM 237, 1.7 in CHEM 335, or 1.7 in B CHEM 237. Offered: AWPSP.

CHEM 239 Organic Chemistry (4) NW Third course for students planning to take three quarters of organic chemistry. Polyfunctional compounds and natural products, lipids, carbohydrates, amino acids, proteins, and nucleic acids. Includes introduction to membranes, enzyme mechanisms, prosthetic groups, macromolecular conformations and supramolecular architecture. No more than 5 credits can be counted toward graduation from the following: CHEM 221, CHEM 224, CHEM 239, CHEM 337. Prerequisite: a minimum grade of 1.7 in either CHEM 238, CHEM 335, or B CHEM 238. Offered: AWPSP.

CHEM 241 Organic Chemistry Laboratory (3) NW Introduction to organic laboratory techniques. Preparation of representative compounds. Designed to be taken with CHEM 224 or CHEM 238. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 241, CHEM 346 (3 credits) . Prerequisite: minimum 1.7 grade in CHEM 223, CHEM 237, CHEM 335 or B CHEM 237; minimum grade of 1.7 in either CHEM 224, CHEM 238, CHEM 336, or B CHEM 238, any of which may be taken concurrently. Offered: AWPSP.

CHEM 242 Organic Chemistry Laboratory (3) NW Preparations and qualitative organic analysis. Designed to be taken with 239. No more than the

number of credits indicated can be counted toward graduation from the following course group: CHEM 242, CHEM 347 (3 credits) . Prerequisite: minimum 1.7 grade in either CHEM 241, CHEM 346, or B CHEM 241; minimum grade of 1.7 in either CHEM 224, CHEM 238, CHEM 336, or B CHEM 238; minimum grade of 1.7 in CHEM 224, or minimum grade of 1.7 in CHEM 239 , CHEM 337, or B CHEM 239 which may be taken concurrently. Offered: AWPSP.

CHEM 291 Study Abroad - Chemistry (1-15, max. 15) NW For student in the UW study abroad program. Content varies and is individually evaluated. Credit does not apply to major degree requirements without departmental approval.

CHEM 297 Science Outreach Participation (1/2, max. 6) Serve as an experienced peer mentor for general Chemistry or as an experienced outreach volunteer. Not applicable toward chemistry degree requirements. Prerequisite: CHEM 197 Credit/no-credit only.

CHEM 299 Special Problems and Report Writing (1-6, max. 6) Research in chemistry and/or study in the chemical literature. Requires writing a scientific report. Credit/no-credit only. Offered: AWPSP.

CHEM 312 Inorganic Chemistry (3) NW The periodic table: chemistry of representative and transition elements. Aqueous chemistry, solid state chemistry, and everyday aspects of inorganic chemistry emphasized. Not intended for students who have completed CHEM 165. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 165, CHEM 312 (5 credits) . Prerequisite: either CHEM 153, CHEM 155 or CHEM 162; and either CHEM 224, CHEM 238, CHEM 336, or B CHEM 238. Offered: AWS.

CHEM 317 Inorganic Chemistry Laboratory (4) NW Experimental exploration of the periodic table. Techniques of preparation and characterization of inorganic compounds. Handling of air-sensitive materials and gases. Prerequisite: either CHEM 165 or CHEM 312; and either CHEM 242, CHEM 347, or B CHEM 242. Offered: WSP.

CHEM 321 Quantitative Analysis (5) NW Introduction to chemical analysis, including gravimetric, volumetric, spectrophotometric, and

potentiometric analyses. Laboratory computer use included. Prerequisite: either CHEM 153, CHEM 155, or CHEM 162. Offered: AWSpS.

CHEM 335 Honors Organic Chemistry (4) NW For chemistry majors and otherwise qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Studies of biomolecules. No organic laboratory accompanies this course. No more than 5 credits can be counted toward graduation from the following course group: CHEM 220, CHEM 223, CHEM 237, CHEM 335. Prerequisite: either CHEM 155 or CHEM 162. Offered: A.

CHEM 336 Honors Organic Chemistry (4) NW For chemistry majors and otherwise qualified students planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Studies of biomolecules. No more than 4 credits can be counted toward graduation from the following course groups: CHEM 238, CHEM 336. Prerequisite: minimum grade of 2.2 in CHEM 335. Offered: W.

CHEM 337 Honors Organic Chemistry (4) NW Chem majors and others planning three or more quarters of organic chemistry. Structure, nomenclature, reactions, and synthesis of organic compounds. Theory and mechanism of organic reactions. Biomolecules. Introduction to membranes, enzyme mechanisms, prosthetic groups, macromolecular conformations, and supramolecular architecture. No more than 5 credits can be counted toward graduation from the following: CHEM 221, CHEM 224, CHEM 239, CHEM 337. Prerequisite: a minimum grade of 2.2 in CHEM 336. Offered: Sp.

CHEM 346 Organic Chemistry Honors Laboratory (3) NW To accompany CHEM 336. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 241, CHEM 346 (3 credits) . Prerequisite: 1.7 in CHEM 335; minimum 1.7 grade in CHEM 336, which may be taken concurrently. Offered: W.

CHEM 347 Organic and Qualitative Organic Honors Laboratory (3) NW Continuation of CHEM 346. To accompany CHEM 337. No more than the number of

credits indicated can be counted toward graduation from the following course group: CHEM 242, CHEM 347 (3 credits) . Prerequisite: minimum 1.7 grade in CHEM 336; minimum 2.2 grade in CHEM 346; minimum 1.7 grade in CHEM 337, which may be taken concurrently. Offered: Sp.

CHEM 397 Science Outreach Mentors (1-2, max. 6) Credit/no-credit only.

CHEM 399 Undergraduate Research (*, max. 12) Research in chemistry. Credit/no-credit only. Offered: AWSpS.

CHEM 410 Radiochemistry Laboratory (2) NW Introductory general service course for students planning further work in nuclear or tracer applications. Safety procedures, detection and measurement of nuclear radiation, radiochemical and tracer techniques. Prerequisite: CHEM 418, which may be taken concurrently.

CHEM 416 Transition Metals (3) NW Survey of selected key topics in the chemistry of the transition metals, including emphasis on the structure, bonding, and reactivity of major classes of compounds. Prerequisite: either CHEM 165 or CHEM 312; either CHEM 453, CHEM 455, or CHEM 475, which may be taken concurrently. Offered: A.

CHEM 417 Organometallic Chemistry (3) NW Chemistry of the metal-carbon bond for both main group and transition metals. Structure and reactivity with applications to organic synthesis and catalysis. Prerequisite: either CHEM 224, CHEM 239, CHEM 337, or B CHEM 239; and CHEM 312. Offered: W.

CHEM 418 Nuclear Chemistry (3) NW Natural radioactivity, nuclear systematics and reactions, radioactive decay processes, stellar nucleosynthesis, applications of radioactivity. Prerequisite: either CHEM 453, CHEM 455, or CHEM 475.

CHEM 419 Bioinorganic Chemistry (3) NW Description of transition metal-containing systems found in biology. Structural and electronic properties and reactivity of metalloproteins, metalloenzymes, and metal cofactors. Methods used to probe and model metal sites by spectroscopic and synthetic techniques. Prerequisite: either CHEM 224, CHEM 239, CHEM 337, or B CHEM 239; and CHEM 416. Offered: Sp, even years.

CHEM 422 Analytical Spectroscopy (3) NW

Qualitative and quantitative analysis of molecular species, using various optical spectroscopy techniques including absorption, fluorescence, Raman, and advanced nonlinear optical spectroscopy. Prerequisite: CHEM 321. Offered: W.

CHEM 425 Meso and Microfluidics in Chemical Analysis (3) NW Fluid dynamics and mass transport in meso and microfluidics. Prerequisite: CHEM 321 Offered: Sp.

CHEM 426 Instrumental Analysis (3) NW

Introduction to modern instrumental methods of chemical analysis, including chromatography, optical and mass spectroscopy, electrochemistry and flow injection analysis. Basic concepts of transducers, spectrometers, mass analysis, separation sciences, and computerized data acquisition and reduction. Includes laboratory. Prerequisite: CHEM 321. Offered: W.

CHEM 428 Biomolecular Analysis (3) NW Principles of identifying and quantifying biological molecules, including metabolites, proteins, and nucleic acids, using modern analysis techniques, including analytical spectroscopy, molecular recognition, mass spectrometry, and separations. Emphasis on bioinformatics as well as the role of chemical measurements in medical diagnostics and biomedical research. Includes laboratory. Prerequisite: either BIOC 405, BIOC 440, or CHEM 321 Offered: A.

CHEM 429 Chemical Separation Techniques (3) NW Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, electrophoresis, and field flow fractionation. Prerequisite: either CHEM 224, CHEM 239, CHEM 337, or B CHEM 239; and either CHEM 241, CHEM 321, CHEM 346, or B CHEM 241. Offered: A.

CHEM 430 Advanced Physical Organic Chemistry (3) NW Fundamental aspects of organic structures and transformations. Structure and basicity of carbanions, substitution reactions, elimination reactions, nucleophilic addition and addition/elimination reactions, condensation reactions, structure and rearrangements of carbocation's, electrophilic addition, electrophilic substitutions, and neighboring group efforts.

Prerequisite: either CHEM 239, CHEM 337, or B CHEM 239. Offered: A.

CHEM 431 Advanced Synthetic Organic Chemistry (3) NW

Synthetic organic chemistry. Discussion of practical methods for the synthesis of complex organic molecules with an emphasis on strategy and the control of stereochemistry. Prerequisite: CHEM 430. Offered: W.

CHEM 432 Advanced Bio-Organic Chemistry (3) NW

Chemical biology. Application of chemical methods to the study of biological processes that occur in cells. Prerequisite: CHEM 239, CHEM 337, or B CHEM 239; CHEM 242 or CHEM 347. Offered: Sp.

CHEM 434 Polymer Chemistry (3) Focuses on fundamental and applied aspects of polymer synthesis including classic methods and mechanisms for macromolecular synthesis and contemporary breakthroughs in the field. Prerequisite: CHEM 239, CHEM 337, or B CHEM 239. Offered: A.

CHEM 436 Chemical Biology (3) NW Mechanistic enzymology and chemical biology. Topics include protein structure and function, how enzymes work as catalysts, kinetic methods, functional assays, and applications to current research. Prerequisite: either CHEM 224, CHEM 239, CHEM 337, or B CHEM 239; recommended: either BIOC 405 or BIOC 440

CHEM 441 Data Science and Materials Informatics (3)

Introduction to data science approaches and their applications to materials science research. Basic skills in data mining, data processing, and machine learning for materials research topics using Python taught through case studies and other methodologies. Prerequisite: CSE 160 or CSE 163; recommended: proficiency in Python, achieved through coursework or independent study. Offered: jointly with MSE 477.

CHEM 442 Materials and Device Modeling (3)

Implementation of computational and data science methods in materials science discovery and device modeling to gain physical and statistical insights of materials design. First-principles methods, multiscale simulations, and continuum modeling will be introduced within the framework of active machine learning with application of both computational and data science methods to materials study.

Prerequisite: MSE 477/CHEM 441. Offered: jointly with MSE 478.

CHEM 443 Big Data for Materials Science (3)

Introduces the challenges and opportunities of the big data era for materials science and chemistry research. Students will gain basic knowledge and skills of data management using high performance computing, including automated data processing, batch processing, and cloud based computational tools that are suitable for materials science research. Prerequisite: MSE 477/CHEM 441. Offered: jointly with MSE 479.

CHEM 452 Physical Chemistry for Biochemists I (3)

NW Chemical thermodynamics emphasizing biochemical applications. No more than 3 credits can be counted toward graduation from the following: CHEM 452, CHEM 456. Prerequisite: CHEM 153, CHEM 155, or CHEM 162; MATH 126 or MATH 136; and PHYS 115 or PHYS 122. Offered: AWS.

CHEM 453 Physical Chemistry for Biochemists II (3)

NW Continuation of CHEM 452. Includes transport properties, enzyme kinetics, introduction to quantum mechanics, spectroscopy, and classical statistical mechanics. Prerequisite: either CHEM 452 or CHEM 456; either MATH 126 or MATH 135; either PHYS 116 or PHYS 123. Offered: WSp.

CHEM 454 Introduction to Biomolecular Spectroscopy (3)

NW Introduction to biomolecular spectroscopy. Covers optical and magnetic resonance time-domain spectroscopies, single-molecule methods, etc., with applications to the structure and dynamics of proteins, nucleic acids, biomembranes, and biomaterials. Prerequisite: CHEM 452 or CHEM 456; either CHEM 453 or CHEM 455 Offered: Sp.

CHEM 455 Physical Chemistry (3) **NW** Introduction to quantum chemistry and spectroscopy. Theory of quantum mechanics presented at an elementary level and applied to the electronic structure of atoms and molecules and to molecular spectra. Prerequisite: either CHEM 153, CHEM 155, or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123. Offered: ASp.

CHEM 456 Physical Chemistry (3) **NW** Chemical thermodynamics. Laws of thermodynamics presented with applications to phase equilibria,

chemical equilibria, and solutions. No more than the number of credits indicated can be counted toward graduation from the following course group: CHEM 452, CHEM 456 (3 credits) . Prerequisite: either CHEM 155 or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123. Offered: WS.

CHEM 457 Physical Chemistry (3) **NW** Introduction to statistical mechanics, kinetic theory, and chemical kinetics. Prerequisite: either CHEM 455 or CHEM 475; either CHEM 456 or CHEM E 326. Offered: Sp.

CHEM 458 Air Pollution Chemistry (4) **NW** Global atmosphere as a chemical system emphasizing physical factors and chemical processes that give rise to elevated surface ozone, particulate matter, and air toxics; international issues of air pollution transport and changing tropospheric background composition; and regulatory control strategies and challenges. Aimed at science and engineering majors. Offered: jointly with ATM S 458; A.

CHEM 460 Spectroscopic Molecular Identification (3) **NW** Basic theory of spectral techniques - infrared and ultraviolet/visible spectroscopy, NMR, and mass spectrometry - with emphasis on spectral interpretation skills needed for the elucidation of structure, conformation, and dynamics in organic and biological chemistry. Prerequisite: either CHEM 224, CHEM 239, CHEM 337, or B CHEM 239. Offered: A.

CHEM 461 Physical Chemistry Laboratory (3) **NW** Physical measurements in chemistry. Vacuum techniques, calorimetry, spectroscopic methods, electrical measurements. Prerequisite: either CHEM 453, or both CHEM 455 and CHEM 456, or both CHEM 456 and CHEM 475. Offered: ASpS.

CHEM 462 Techniques of Synthetic Organic Chemistry (2-3) **NW** Laboratory techniques of synthetic organic chemistry. Vacuum distillation, multistep synthesis, air sensitive reagents, photochemistry, chromatography, and separation techniques. Prerequisite: either CHEM 242, CHEM 347, or B CHEM 242; CHEM 460 which may be taken concurrently. Offered: A.

CHEM 463 Spectroscopic Techniques for Structural Identification (2) **NW** Laboratory techniques of spectroscopic analysis for structural determination

using UV, IR, NMR, mass spectroscopy. Prerequisite: CHEM 460. Offered: W.

CHEM 464 Computers in Data Acquisition and Analysis (3) NW Introduction to use of the computer in the chemistry laboratory. Principles of microcomputers and their use for such problems as data acquisition, noise reduction, and instrument control. Prerequisite: either CHEM 453, CHEM 455, or CHEM 475; MATH 136, or both MATH 307 and MATH 308. Offered: A.

CHEM 465 Computational Chemistry (3) NW Basics of molecular quantum chemistry (Hartree-Fock and density functional theory) ; numerical implementation using computers, including basics of programming and scientific computing; applications to problems in chemistry. Prerequisite: either CHEM 455 or CHEM 475 Offered: W.

CHEM 466 Energy Materials, Devices, and Systems (3) David S. Ginger Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Prerequisite: either PHYS 431, E E 421, MSE 311, MSE 312, MSE 313, MSE 351, MSE 352, CHEM E 456, CHEM 455, or CHEM 475, any of which may be taken concurrently. Offered: jointly with CHEM E 440/MSE 466; A.

CHEM 475 Honors Physical Chemistry (3) NW Introduction to quantum chemistry, spectroscopy. Theory of quantum mechanics applied more rigorously than in CHEM 455. Application of quantum mechanics to electronic structure of atoms and molecules. Computer software used to solve problems. Prerequisite: either CHEM 153, CHEM 155 or CHEM 162; either MATH 126 or MATH 136; either PHYS 116 or PHYS 123. Offered: A.

CHEM 484 Electronic and Optoelectronic Polymers (3) NW Covers the chemistry, physics, materials science, and applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers.

Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 453 or CHEM 455. Offered: jointly with MSE 484; ASp.

CHEM 485 Electronic Structure and Application of Materials (3) NW Introduction to electronic structure theory of solids from a chemical perspective, including band theory and the free electron model, with an emphasis in the second half of the quarter on modern trends in research in inorganic materials in the bulk and on the nanometer scale. Prerequisite: CHEM 455. Offered: W.

CHEM 486 Electronic Dynamics in Organic and Inorganic Materials (3) NW Energy and charge transfer; exciton migration and charge transport; photophysical dynamics in optoelectronic and kinetic processes in electrochemical energy conversion. Prerequisite: CHEM 455. Offered: Sp.

CHEM 491 Study Abroad - Advanced Chemistry (1-15, max. 15) NW For students in the UW study abroad program. Content varies and is individually evaluated. Credit does not apply to major degree requirements without departmental approval.

CHEM 499 Undergraduate Research and Report Writing (*, max. 12) Research in chemistry and/or study in the chemical literature. Credit/no-credit only. Offered: AWSpS.

CHEM 500 Grant Proposal and Scientific Writing (1) Introduces steps in compiling a successful grant proposal and writing scientific articles, personal statements, research summaries, and procuring recommendation letters, using the NSF graduate fellowship as a guide. Students gain experience in peer review processes as assessment of current scientific literature. Credit/no-credit only. Offered: A.

CHEM 501 Readings in Chemistry (1, max. 9) Individual meetings with faculty to discuss readings (journal articles, book chapters, proceedings) in the chemical sciences. Credit/no-credit only. Offered: AWSpS.

CHEM 508 Advanced Inorganic Chemistry (3, max. 9) Discussion of selected applications of physical techniques to the study of inorganic molecules.

Topics include group theory, magnetic resonance spectroscopy (NMR and ESR), vibrational spectroscopy (IR and Raman), electronic spectroscopy, magnetism, and electrochemistry. Offered: A.

CHEM 510 Current Problems in Inorganic Chemistry (3, max. 9) Primarily for doctoral candidates in inorganic chemistry. Current topics (e.g., bioinorganic, advanced organometallic, materials and solid state, advanced inorganic spectroscopy). See department for instructor and topics during any particular quarter. Offered: Sp.

CHEM 516 Transition Metals (3) Survey of selected key topics in the chemistry of the transition metals, including emphasis on the structure, bonding, and reactivity of major classes of compounds. Recommended: working knowledge of general chemistry and introductory inorganic concepts including Lewis structures, metal-ligand coordination, and oxidation state assignments. Offered: A.

CHEM 517 Organometallics (3) Chemistry of the metal-carbon bond for both main group and transition metals. Structure and reactivity with applications to organic synthesis and catalysis. Prerequisite: either CHEM 224, CHEM 239, or CHEM 337; CHEM 416 or equivalent background. Offered: W.

CHEM 520 Current Problems in Analytical Chemistry (3, max. 9) Primarily for doctoral candidates in analytical chemistry. Current topics (e.g., flow injection analysis, mass spectrometry, and advanced radiochemistry). See department for instructor and topics during any particular quarter. Offered: AWSp.

CHEM 521 Analytical Electrochemistry (3) Theory and practice of modern electrochemistry with emphasis on instrumentation and applications in chemical analysis.

CHEM 522 Atomic and Molecular Analytical Spectroscopy (3) Quantitative analysis of atomic and molecular species, using all forms of electromagnetic radiation, electrons, and gaseous ions.

CHEM 523 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes,

chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with ATM S 508/OCEAN 523.

CHEM 524 Analytical Mass Spectrometry (3) Theory and practice of mass spectrometry with emphasis on ionization methods, mass analyzers, gas-phase ion chemistry, and spectra interpretation. Recommended: basic knowledge of organic and physical chemistry, including thermodynamics and kinetics.

CHEM 525 Meso and Microfluidics in Chemical Analysis (3) Fluid dynamics and mass transport in meso and microfluidics. Offered: Sp.

CHEM 526 Instrumental Analysis (3) Introduction to both fundamental theory and instrument design of various analytical instruments. Focuses on four major categories of instrumental analysis methods: optical spectroscopy, chromatography, flow injection analysis, and electroanalytical chemistry. Beyond learning basic analytical principles and instrument design, students receive extensive laboratory training in all major analytical methods. Offered: W.

CHEM 528 Biomolecular Analysis (3) Principles of quantifying and identifying biological molecules, including metabolites, proteins, and nucleic acids, using modern analysis techniques, including analytical spectroscopy, molecular recognition, mass spectrometry, and separations. Emphasis on bioinformatics, the role of chemical measurements in medical diagnostics and biomedical research, and the primary literature. Includes laboratory. Offered: A.

CHEM 529 Chemical Separation Techniques (3) Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, electrophoresis, and field flow fractionation. Offered: A.

CHEM 530 Advanced Physical Organic Chemistry (3) Fundamental aspects of organic structures and transformations. Structure and basicity of carbanions, substitution reactions, elimination reactions, nucleophilic addition and addition/elimination reactions, condensation

reactions, structure and rearrangements of carbocation's, electrophilic addition, electrophilic substitutions, and neighboring group efforts. Prerequisite: either CHEM 239 or CHEM 337. Offered: A.

CHEM 531 Advanced Synthetic Organic Chemistry (3) Synthetic organic chemistry. Discussion of practical methods for the synthesis of complex organic molecules with an emphasis on strategy and the control of stereochemistry. Prerequisite: CHEM 530. Offered: W.

CHEM 532 Advanced Bio-Organic Chemistry (3) Chemical biology. Application of chemical methods to the study of biological processes that occur in cells. Prerequisite: CHEM 530 and CHEM 531. Offered: Sp.

CHEM 534 Polymer Chemistry (3) Focuses on fundamental and applied aspects of polymer synthesis including classic methods and mechanisms for macromolecular synthesis and contemporary breakthroughs in the field.

CHEM 536 Chemical Biology (3) Mechanistic enzymology and chemical biology. Topics include protein structure and function, how enzymes work as catalysts, kinetic methods, functional assays, and applications to current research. Prerequisite: either CHEM 224, CHEM 239, or CHEM 335; recommended: either BIOC 405 or BIOC 44 Offered: W.

CHEM 540 Current Problems in Organic Chemistry (1-3, max. 12)

CHEM 541 Data Science and Materials Informatics (3) Introduction to data science approaches and their applications to materials science research. Basic skills in data mining, data processing, and machine learning for materials research topics using Python taught through case studies and other methodologies. Prerequisite: either CHEM E 545/CHEM 545/MSE 545 (or equivalent) , CHEM E 546/CHEM 546/MSE 546 (or equivalent) , or proof of proficiency in Python. Offered: jointly with MSE 542.

CHEM 542 Materials and Device Modeling (3) Implementation of computational and data science methods in materials science discovery and device modeling to gain physical and statistical insights of materials design. First-principles methods, multiscale

simulations, and continuum modeling will be introduced within the framework of active machine learning with application of both computational and data science methods to materials study. Prerequisite: either MSE 477/CHEM 441, MSE 542/CHEM 541, CHEM E 545/CHEM 545/MSE 545, or CHEM E 546/CHEM 546/MSE 546 (or equivalents) . Offered: jointly with MSE 543.

CHEM 543 Big Data for Materials Science (3) Introduces the challenges and opportunities of the big data era for materials science and chemistry research. Students will gain basic knowledge and skills of data management using high performance computing, including automated data processing, batch processing, and cloud based computational tools that are suitable for materials science research. Prerequisite: either MSE 477/CHEM 441 or MSE 542/CHEM 541. Offered: jointly with MSE 544.

CHEM 545 Data Science Methods for Clean Energy Research (3) *Jim Pfaendtner* Survey of modern data science methods taught in the context of materials for clean energy (e.g., batteries and solar energy) . Covers data visualization, statistics, machine learning and data management. Instruction, homework and term project are implemented using Python. Offered: jointly with CHEM E 545/MSE 545; W.

CHEM 546 Software Engineering for Molecular Data Scientists (3) *Jim Pfaendtner* Introduces basic principles of scientific software development in the Python in the context of Molecular Data Science. The course covers command line tools, Python from the perspective of molecular data science methods, software development and collaboration principles, e.g. version control. Grades are based on homework and group projects. Offered: jointly with CHEM E 546/MSE 546; W.

CHEM 547 Data Science Capstone Project (3) *David A. C. Beck* Involves teams of graduate students from molecular, materials or clean energy focused disciplines working on Data Science oriented research and engineering projects solicited from internal and external partners. Employ modern team-based software engineering principles and cutting edge Data Science methods, including but not limited to machine learning, statistics, visualization and data management. Prerequisite: CHEM E 545 and CHEM E 546; recommended: prior exposure to data science fundamentals and software

development. Offered: jointly with CHEM E 547/MSE 547; Sp.

CHEM 550 Introduction to Quantum Chemistry (3)
Origins and basic postulates of quantum mechanics, solutions to single-particle problems, angular momentum and hydrogenic wave functions, matrix methods, perturbation theory, variational methods. Prerequisite: CHEM 455. Offered: A.

CHEM 551 Introduction to Quantum Chemistry (3)
Electronic structure of many-electron atoms and molecules, vibration and rotation levels of molecules, effects of particle exchange, angular momentum and group theory, spectroscopic selection rules. Prerequisite: CHEM 550. Offered: W.

CHEM 552 Statistical Mechanics (3) General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantum statistics, theory of imperfect gases, lattice statistics and simple cooperative phenomena, lattice dynamics and theory of solids, liquids, solutions, and polymers, time-dependent phenomena and mechanisms of interaction. Prerequisite: CHEM 455 and CHEM 456 (concurrent registration permitted) or equivalent. Offered: W.

CHEM 553 Statistical Mechanics (3) General theorems of statistical mechanics, relation of the equilibrium theory to classical thermodynamics, quantum statistics, theory of imperfect gases, lattice statistics and simple cooperative phenomena, lattice dynamics and theory of solids, liquids, solutions, and polymers, time-dependent phenomena and mechanisms of interaction. Prerequisite: CHEM 552. Offered: Sp.

CHEM 554 Introduction to Biomolecular Spectroscopy (3) Introduction to biomolecular spectroscopy. Covers optical and magnetic resonance time-domain spectroscopies, single-molecule methods, etc., with applications to the structure and dynamics of proteins, nucleic acids, biomembranes and biomaterials. Offered: Sp.

CHEM 560 Current Problems in Physical Chemistry (1-3, max. 12) Primarily for doctoral candidates in physical chemistry. A discussion of topics selected from active research fields. See department for instructor and the topic during any particular quarter.

CHEM 564 Organic Electronic and Photonic Materials/Polymers (3) Physical and material concepts determining properties of organic electronic and photonic materials. Discusses electronic structure, physico-chemical characterization, and device application. Includes introduction of electronic band structure of polymers, electrically conducting polymers; organic nonlinear optical electroluminescent materials; polymer optical fibers; low-photon absorption materials for 3-D microfabrication. Offered: jointly with MOLENG 530/MSE 560; W.

CHEM 565 Computational Chemistry (3) Basics of molecular quantum chemistry (Hartree-Fock and density functional theory); numerical implementation using computers, including basics of programming and scientific computing; applications to problems in chemistry. Offered: W.

CHEM 566 Energy Materials, Devices, and Systems (3) *D. Ginger Jr* Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Offered: jointly with CHEM E 540/MSE 566; A.

CHEM 567 Computers in Data Acquisition and Analysis (3) Interface computers to a variety of laboratory equipment such as Geiger Counter, pH titration, spectrophotometer, PID controlled magnetic induction device, or an acoustic tube. Students will individually interface the computer to the equipment, write the code to drive the experiment, and analyze or model the data. Utilizes LabView, Matlab, Octave Offered: A.

CHEM 571 Current Research Topics in Inorganic Chemistry (1, max. 18) Focused discussion of ongoing research occurring across the department in the area of Inorganic Chemistry Credit/no-credit only.

CHEM 573 Current Research Topics in Organic and Biological Chemistry (1, max. 18) Discussion of

ongoing research occurring in organic chemistry and chemical biology. Offered: AWSp.

CHEM 574 Current Research Topics in Spectroscopy (1) Ongoing research in the area of spectroscopy. Offered: AWSp.

CHEM 575 Current Research Topics in Theoretical and Computational Chemistry (1, max. 18) Focused discussion of ongoing research occurring across the department in the area of theoretical and computational chemistry. Offered: AWSp.

CHEM 578 Current Research Topics in Materials Chemistry (1, max. 18) Focused ongoing research in Materials Chemistry. Credit/no-credit only. Offered: AWSp.

CHEM 581 Preparation for Second-Year Exam (3-, max. 9) Preparation for examination. Open only to students accepted for doctoral work in chemistry, in their second year of study. Credit/no-credit only. Offered: AWSp.

CHEM 584 Electronic and Optoelectronic Polymers (3) Covers the chemistry, physics, materials science, and applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 453, CHEM 455, or equivalent background.

CHEM 585 Electronic Structure and Application of Materials (3) NW Introduction to electronic structure theory of solids from a chemical perspective, including band theory and the free electron model, with an emphasis in the second half of the quarter on modern trends in research in inorganic materials in the bulk and on the nanometer scale. Offered: W.

CHEM 586 Electronic Dynamics in Organic and Inorganic Materials (3) NW Energy and charge transfer; exciton migration and charge transport; photophysical dynamics in optoelectronic and kinetic processes in electrochemical energy conversion. . Recommended: Working knowledge of electromagnetism, calculus, differential equations, and linear algebra.

CHEM 587 Nanomaterials Chemistry and Engineering (3) V. Holmberg Rigorous overview of fundamental chemical and physical concepts important to nanomaterials science and engineering. Focus on luminescent, plasmonic, magnetic nanomaterials. Students will learn basic concepts prevalent in the nanomaterials literature, and develop rigorous mathematical understanding of fundamental principles that govern many of the advanced materials that are currently under development in the field. Prerequisite: CHEM 455, MATH 307, CHEM E 326; recommended: Classical physics, quantum mechanics, thermodynamics, and ordinary and partial differential equations Offered: jointly with CHEM E 535; Sp.

CHEM 590 Seminar in General Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 591 Seminar in Inorganic Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 592 Seminar in Analytical Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 593 Seminar in Organic Chemistry (1, max. 18) For chemistry graduate students only. Credit/no-credit only. Offered: AWSp.

CHEM 595 Seminar in Physical Chemistry (1, max. 18) Credit/no-credit only.

CHEM 597 Seminar in Molecular Engineering (1, max. 30) Weekly seminars on current topics in molecular Engineering. Credit/no-credit only. Offered: jointly with MOLENG 520; AWSp.

CHEM 600 Independent Study or Research (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

CHEM 700 Master's Thesis (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

CHEM 800 Doctoral Dissertation (*-) Prerequisite: permission of coordinator. Offered: AWSpS.

CINEMA AND MEDIA STUDIES

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CMS 240 Writing in Cinema and Media Studies (5, max. 15) C A critical approach to film and/or media texts and a workshop on writing papers in English. Topics vary. Offered: AWSpS.

CMS 270 Perspectives on Film: Introduction (5) VLPA Introduction to film form, style, and techniques. Examples from silent film and from contemporary film.

CMS 271 Perspectives on Film: Great Directors (5) VLPA Introduction to authorship in the cinema. The work of a major director or directors.

CMS 272 Perspectives on Film: Genre (5) VLPA Introduction to study of film and/or television genre. Literary, mythic, and historic aspects of film and/or television genre.

CMS 273 Perspectives on Television: Analysis (5) VLPA Provides an introduction to television styles and aesthetics, with particular attention to camerawork, narrative, acting, and sound.

CMS 274 Perspectives on Media: Critical Concepts (5) VLPA *S. Groening, J. Vallier* Provides an introduction to media studies, with particular attention to critical concepts including, but not limited to, audience studies, formal analysis, and ideological critique. Specific media analyzed varies.

CMS 275 Perspectives on Visual Culture: Sex, Race and Power (5) I&S/VLPA, DIV An introduction to the study of visual texts such as film, television, comics, or digital media. Focus on the representation of cultural differences including, but not limited to, sexuality, gender, ability, and race. Topics vary.

CMS 295 Study Abroad (1-5, max. 20) VLPA Equivalency for 200-level CMS courses taken on UW Study Abroad programs or direct exchanges.

CMS 297 Special Topics in Cinema and Media Studies (5, max. 10) VLPA Varied topics related to film and/or media. Offered: AWSpS.

CMS 301 Film and Media Studies: Analysis (5) VLPA Introduction to the analysis of film. Covers major aspects of cinematic form: mise en scene, framing and camera movement, editing, and sound and color. Considers how these elements are organized in traditional cinematic narrative and in alternative approaches.

CMS 302 Media Arts and Cultures (5) VLPA *Sudhir Mahadevan, Stephen F Groening, John Vallier* Examines cultural expressions and aesthetic formations across media forms, with an emphasis on electronic and digital media. Media arts analyzed vary, including but not limited to comics, cell-phones, mash-ups, games, electronic literature, video installations, photography, and soundscapes.

CMS 303 Genre Studies (5) VLPA Introduction to the history and significance of genre in film and/or television. May examine one or a selection of several genres, drawn from a list including, but not limited to, the western, melodrama, musical, thriller, sitcom, film noir, and documentary. Topics include form, ideology, authority, history, innovation, and parody.

CMS 304 Television Studies (5) VLPA Provides an overview of key issues in the study of television. Explores what television is, what television does, and how television shapes our fundamental assumptions about space, time, image, and sound.

CMS 310 History of Film: 1895-1929 (5) VLPA Film history from its beginnings in the 1890s through the golden era of silent film in the 1920s. Topics include the invention of major film techniques, the creation of Hollywood and the studios, and movements such as expressionism, constructivism, and surrealism.

CMS 311 History of Film: 1930-1959 (5) VLPA Film history from the introduction of sound through the late 1950s. Focuses mostly on the golden age of the Hollywood studios and on alternative developments after World War II in Italy (Neo-Realism), France (the New Wave), and Japan.

CMS 312 History of Film: 1960 - 1988 (5) VLPA Covers the vast changes in filmmaking since 1960. Topics include the continuing influence of the French New Wave, the New German Cinema of the 70s and the "New Hollywood" of the 70s, American independent film of the 80s, and the resurgence of Chinese filmmaking since 1980.

CMS 313 History of Film: 1989-Present (5) VLPA

Addresses the latest trends in international filmmaking typically with an emphasis on world cinema and issues of globalization and diaspora. Sometimes taught in conjunction with the Seattle International Film Festival.

CMS 314 History of Television (5) VLPA S.

GROENING Covers issues, problems, and themes in the history of television. Topic may include changes in television styles and representational forms, television's historical relationship with other media, transitions from broadcast to satellite through cable and digital distribution, and television's changing audiences.

CMS 315 History of New Media (5) VLPA S.

GROENING Study of new media histories and methodologies for research, with particular emphasis on new and emergent technologies such as the Internet and other digital forms. Specific media to be analyzed vary.

CMS 320 Cinema and Nation (3-5, max. 15) VLPA

Examines the cinema of a particular national, ethnic or cultural group, with films typically shown in the original language with subtitles. Topics reflect themes and trends in the national cinema being studied.

CMS 321 Oppositional Cinema/Media (5) VLPA, DIV

Approaches film and related media as socially and politically engaged practice, with focus on screen media produced or received in "opposition" to dominant cultural and entertainment industry norms. Topics vary.

CMS 322 Race, Representation, and Television (5)

VLPA, DIV *Stephen F Groening* Historical view of race and representation on television in the U.S. by examining a range of television programs across genres from the 1950s to the present day. Recommended: CMS 273 or CMS 274. Offered: W.

CMS 370 Basic Screenwriting (5) VLPA S. WONG

Students develop collaborative critical and creative skills; studying screenwriting manuals and techniques; adapt stories for screenplays; and/or write synopses, treatments, and first acts of their own screenplays.

CMS 395 Study Abroad (1-5, max. 20) VLPA

Equivalency for 300-level CMS courses taken on UW Study Abroad programs or direct exchanges.

CMS 397 Special Topics in Cinema and Media Studies (3-5, max. 10) VLPA/I&S

Varying topics relating to film in social contexts. Offered by resident or visiting faculty.

CMS 423 East European Film (5, max. 15)

VLPA *Crnkovic* Studies major East European film makers who left their countries at some point in their careers. Compares East European and Western production of those directors who worked partially in the West. Offered: jointly with SLAVIC 423.

CMS 470 Advanced Screenwriting (5) VLPA S.

WONG Students hone their understanding of screenwriting techniques; enhance their editing/critiquing skills; and develop their own screenplays, synopses; and treatments of various genres, including but not limited to silent, poetic, dramatic, and news-based scripts.

CMS 480 Senior Capstone (5) VLPA Capstone course in cinema and media studies. Topics vary.

CMS 490 Directed Study or Research (1-5, max. 10)

Individual study of topics in cinema and media studies by arrangement with the instructor and the Comparative Literature, Cinema, and Media Department advising office.

CMS 491 Internship (1-5, max. 12) Supervised experience in local businesses and other agencies. Open to upper-division cinema and media studies majors with approval of departmental internship supervisor.

CMS 497 Special Topics in Cinema and Media Studies (3-5, max. 10) VLPA Varying topics in cinema studies. Offered by resident or visiting faculty.

CMS 520 Methods and Issues in Cinema and Media Studies (5) Provides a basic grounding in the theory, history, and criticism of film and media studies, and introduces central debates, topics, and methods in the field.

CMS 525 Cinema and Media Studies Pedagogy (5, max. 10) Pedagogical approaches to cinema and

media studies. Introduces teaching tools, technologies and modes of practice. Offered: AWSp.

CMS 570 Media Lab (5, max. 30) Practical approaches to cinema and media studies. May include archival research, production of videographic or audiographic criticism, film programming, public scholarship, or hands-on work with media devices and technologies. Offered: AWSp.

CMS 571 National Frameworks (5, max. 30) Approaches to national, transnational, global, diasporic, and/or regional cinemas and media. Content varies.

CMS 572 Historiography (5, max. 30) Assessment of processes through which film and/or media histories are constructed. Incorporates methodologies for retrieving and analyzing primary materials relevant to course subject matter. Content varies. Offered: AWSp.

CMS 573 Aesthetics (5, max. 30) Inquiry into such areas as the sensory perception, cultural valuation, or close analysis of cinema and media. Formal, theoretical, and philosophical approaches. Content varies. Offered: AWSp.

CMS 590 Master of Arts Essay (5/10, max. 10) Research and writing project under the supervision of a faculty member. Offered: jointly with C LIT 590; AWSpS.

CMS 597 Special Topics in Cinema and Media Studies (3-5, max. 15) Varying topics in cinema and media studies. Offered by resident or visiting faculty.

CMS 599 Special Seminar or Conference (1-9, max. 30) Group seminars or individual conferences scheduled to meet special needs. Prerequisite: permission of graduate program adviser. Offered: jointly with C LIT 599.

CMS 600 Independent Study or Research (*-) Offered: jointly with C LIT 600.

CMS 800 Doctoral Dissertation (*-) Offered: jointly with C LIT 800.

COMPARATIVE LITERATURE

C LIT 200 Introduction to Literature (3/5) VLPA Reading, understanding, and enjoying literature from various countries, in different forms of expression (e.g., dramatic, lyric, narrative, rhetorical) and of representative periods. Emphasis on the comparative study of themes and motifs common to many literatures of the world.

C LIT 210 Literature and Science (5, max. 15) VLPA Introduces the rich and complex relationship between science and literature from the seventeenth century to the present day. Students examine selected literary, scientific, and philosophical texts, considering ways in which literature and science can be viewed as forms of imaginative activity.

C LIT 230 Introduction to Folklore Studies (5) VLPA/I&S *G. Smidchens* Folkloristics combines the methods and ideas of Literature Studies and Anthropology. Folktales (fairy tales), legends, jokes, songs, proverbs, customs and other forms of traditional culture are studied together with the living people and communities who perform and adapt them. Students learn the folklorist's methods of fieldwork (participant observation), ethnography, comparative analysis, and interpretation. Offered: jointly with SCAND 230; AWSpS.

C LIT 240 Writing in Comparative Literature (5, max. 15) C Comparative approach to literature and a workshop in writing comparative papers in English. Emphasis on cross-cultural comparison of literary works. Readings in English with an option to read selected texts in the original languages Offered: AWSp.

C LIT 250 Introduction to Comparative Literature: Literature and Culture (5, max. 15) VLPA/I&S Study of literature in its relation to culture. Focuses on literature as a cultural institution, directly related to the construction of individual identity and the dissemination and critique of values.

C LIT 251 Introduction to Comparative Literature: Themes (5) VLPA Reading and analyzing literature based upon rotating themes such as love, sex, and murder, haunted houses, and dreams and memory.

Selections drawn from European, English, and American literature, not limited to period and genre.

C LIT 252 Introduction to Comparative Literature: Genres (5) VLPA Reading and analyzing literature based upon rotating genres such as sci-fi, detective fiction, romance, love, poetry, and comedy. Draws from world literature.

C LIT 295 Comparative Literature Study Abroad (1-5) Equivalency for 200-level C LIT courses taken on UW Study Abroad programs or direct exchanges.

C LIT 300 Introduction to Comparative Literature: Forms, Genres, History (5) VLPA Provides an introduction to comparative literary study which examines how literary forms and genres shape our reading of texts; how these forms and genres change over time; and how literary forms and genres manifest themselves in different cultural traditions. Includes theoretical readings and substantial writing.

C LIT 318 Literature and the Holocaust (5) VLPA, DIV Examines fiction, poetry, memoir, diaries, monuments, film, and pop culture from several languages and cultural milieus, with emphases on English and Hebrew. Topics include survivor testimony, shaping of collective memory, the second generation, Holocaust education and children's literature, gender and the Holocaust, and fantasy and humor as responses to catastrophe. May not be taken for credit if credit earned in NEAR E 441. Offered: jointly with NEAR E 318.

C LIT 320 Studies in European Literature (5, max. 15) VLPA Examination of the development of European literature in a variety of genres and periods. Possible areas of study include literature from romantic fiction of early nineteenth century through great realist classics of second half of the century or from symbolism to expressionism and existentialism.

C LIT 321 Studies in Literature of the Americas (5, max. 15) VLPA Emphasizes connections between twentieth century literature of the United States and Canada and current literature of Latin America. Emphasizes that, despite obvious differences, much is shared in terms of culture and national sensibility across the two continents.

C LIT 322 Studies in Asian and Western Literatures (5, max. 15) VLPA Topics designated by individual instructors.

C LIT 323 Studies in the Literature of Emerging Nations (5, max. 15) VLPA, DIV Novels and short stories, from Africa, the Middle East, and South Asia. Discusses relationship of Western literary genres to an oral literary tradition, as well as issues like colonialism, gender relations, narrative technique, native and non-native languages.

C LIT 330 The European Fairy Tale (5) VLPA An introduction to folktales and literary tales from various traditions and periods. A discussion of their origin, special characteristics, dissemination, and relevance to the contemporary reader.

C LIT 331 Folk Narrative (5) VLPA Survey of various genres of folk narratives studied in performance contexts to reveal their socio-cultural functions in a variety of milieus. Theory and history of folk narrative study, taxonomy, genre classification, and interpretative approaches. Offered: jointly with SCAND 331.

C LIT 334 Immigrant and Ethnic Folklore (5) VLPA/I&S Survey of verbal, customary, and material folk traditions in ethnic context. Theories of ethnic folklore research applied to the traditions of American communities of Scandinavian, Baltic, or other European ancestry. Offered: jointly with SCAND 334.

C LIT 350 Themes in World Literature: Parents and Children (5) VLPA World literature, from the Renaissance to modern times, based upon the theme of "parents and children." Selections drawn from European, English, and American literature, not limited to period and genre. Focus upon the motive of generational conflict.

C LIT 352 Themes in World Literature: Death and Transfiguration (5) VLPA Theme of death, transfiguration, and new life in world literature. Selections from Tolstoy, D. H. Lawrence, Celine, E. M. Forster, and other major writers.

C LIT 357 Literature and Film (3-5, max. 10) VLPA The film as an art form, with particular reference to the literary dimension of film and to the interaction of literature with the other artistic media employed

in the form. Films are shown as an integral part of the course. Content varies.

C LIT 360 Topics in Ancient and Medieval Literature (5) VLPA Explores topics in literature and cultures of the ancient and medieval worlds across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 361 Topics in Early Modern Literature (5) VLPA Explores topics in literature and cultures of the early modern world (approximately 1400-1800) across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 362 Topics in Modern Literature (5) VLPA Explores topics in literature and cultures of the modern world (approximately 1800-present) across national and regional cultures, such as particular movements, authors, genres, themes, or problems.

C LIT 371 Literature and the Visual Arts (5) VLPA Focuses on specific theoretical problems. Examines the relationship between text and image in a variety of art forms including poetry, novels, paintings, photography, essays, comic strips, film, and advertisement. Readings, in English, from a wide variety of national literatures.

C LIT 375 Images of Women in Literature (5, max. 15) VLPA, DIV Comparative study of the ways women's image, social role, and psychology have been portrayed by writers of various nationalities and literary periods. Selection of theme varies from quarter to quarter. Works are read in English translation.

C LIT 395 Comparative Literature Study Abroad (1-5) Equivalency for 300-level C LIT courses taken on UW Study Abroad programs or direct exchanges.

C LIT 396 Special Studies in Comparative Literature (3-5, max. 10) VLPA Offered by visitors or resident faculty. Content varies.

C LIT 400 Introduction to Theory and Criticism (5) VLPA A selection of major theoretical statements in the history of literary theory and criticism, with texts drawn from such fields as literary studies, aesthetic theory, film studies, philosophy, and cultural studies.

C LIT 410 Studies in Literary History (5, max. 15) VLPA Introduction to a major figure or movement associated with the development of literary history. Through the study of one aspect of literary history students gain a thorough understanding of a particular point of view, while exploring the breadth of contemporary approaches to literature.

C LIT 421 Studies in Connections: Literature and Other Disciplines (5, max. 15) VLPA Examines the links between literature and other disciplines or art forms. Literature and history, literature and philosophy, literature and music, literature and the visual arts are all appropriate topics. Selection of focus depends on instructor.

C LIT 422 Studies in Genre (5, max. 15) VLPA Major genres of world literature: poetry, fiction, drama. Readings in English from a wide selection of national literatures.

C LIT 424 The Epic Tradition (5) VLPA *Clauss, Levaniouk* Ancient and medieval epic and heroic poetry of Europe in English: the Iliad, Odyssey, and Aeneid; the Roland or a comparable work from the medieval oral tradition; pre-Greek forerunners, other Greco-Roman literary epics, and later medieval and Renaissance developments and adaptations of the genre. Choice of reading material varies according to instructor's preference. Offered: jointly with CLAS 424.

C LIT 430 Readings in Folklore (5) VLPA Exploration of theoretical and methodological issues in folklore studies through independent reading of journal articles published during the last five years. Offered: jointly with SCAND 430.

C LIT 431 The Northern European Ballad (5) VLPA Integrative study of the Northern European Ballad, with an emphasis on texts, performance, context, history, theory, genre classification, and interpretive approaches. Offered: jointly with SCAND 431.

C LIT 432 Technology and Culture in the Making of Contemporary Empires (5) I&S *Benitez, Rodriguez-Silva* Explores the struggles that shaped organization of the U.S. empire at the turn of the twentieth century, focusing on how empire's material, cultural, and ideological boundaries were drawn. Topics include race, gender, and class as colonial formations; technologies of imperial governance

such as public health, citizenship and territory; and popular culture. Offered: jointly with JSIS D 432.

C LIT 441 Literature and the Holocaust (5) VLPA

C LIT 474 Scandinavian Auteurs (5, max. 10) VLPA *Nestingen* Studies the body of work of Scandinavia's auteur filmmakers. Introduces the theory and history of auteur cinema, with special attention to Scandinavian filmmakers' contribution. Offered: jointly with SCAND 470; AWSp.

C LIT 490 Directed Study or Research (1-5, max. 10) Individual study of topics in comparative literature by arrangement with the instructor and the Comparative Literature office.

C LIT 491 Internship (1-5, max. 5) Supervised experience in local businesses and other agencies. Open to upper-division comparative literature and cinema studies majors.

C LIT 493 Comparative Literature Honors Seminar (5, max. 15) VLPA Special topics in comparative literature. Required of Honors students in comparative literature.

C LIT 495 Honors Thesis (5) VLPA Preparation of an Honors thesis under the direction and supervision of a faculty member.

C LIT 496 Special Studies in Comparative Literature (3-5, max. 15) VLPA Offered occasionally by visitors or resident faculty. Content varies.

C LIT 500 The Theory of Literature I: The Literary Text (5, max. 15) An investigation into the nature of literature in contrast to other forms of writing and into essential features of literature such as genres, imagery, modes of communication, and structure.

C LIT 501 The Theory of Literature II: History of Literature (5, max. 15) An exploration of topics of literary history such as periods, traditions, the writing of literary history, and literary history in contrast to other histories.

C LIT 502 The Theory of Literature III: Special Topics (5, max. 15) Offerings vary to cover topics such as individual theorists, theoretical movements, or the intersection of literary theory with other disciplines

or arts (psychoanalysis, structuralism, ethics, aesthetics) .

C LIT 507 History of Literary Criticism and Theory I (5, max. 15) A general introduction to the major issues in the history of criticism followed by the study of the classical theorists, including Plato, Aristotle, Longinus, and the major medieval critics. Offered: jointly with ENGL 507.

C LIT 508 History of Literary Criticism and Theory II (5, max. 15) Literary criticism and theory from the Middle Ages and the Renaissance through the eighteenth century to, but not including, Kant. Offered: jointly with ENGL 508.

C LIT 509 History of Literary Criticism and Theory III (5, max. 15) Literary criticism and theory from Kant's Critique of Judgment to the mid-twentieth century and the work of Northrop Frye. Offered: jointly with ENGL 509.

C LIT 510 History of Literary Criticism and Theory IV (5, max. 15) A study of the major issues in literary criticism and theory since about 1965. Offered: jointly with ENGL 510.

C LIT 511 Literary Translation (5, max. 15) Lectures on principles of translating literary works into readable English. Students present and comment on translations made by them and write seminar papers on problems of translation in theory and practice.

C LIT 516 Colloquium in Criticism (5, max. 15) Recent trends in literary criticism, taught by representatives from various literature departments, covering critical trends such as structuralism, poststructuralism, hermeneutics, reception theory, and sociological approaches to literature.

C LIT 530 Cultural Criticism and Ideology Critique I (5, max. 15) A study of the main attempts to come to an understanding of the humanities and the nature of historical interpretation in a cultural context.

C LIT 535 Cultural Criticism and Ideology Critique II (5, max. 15) Offerings vary to cover individual theorists and particular manifestations of cultural criticism and ideology critique.

C LIT 545 Medieval Studies (3/5, max. 15) Literature, intellectual history, and sociology of the Middle Ages, 500-1200. Topics may include "renaissance" of the twelfth century; the educational ideal; rise of universities; philosophical concepts.

C LIT 546 Studies in Renaissance and Baroque (3-5, max. 10) Aspects of Western European literature during the Renaissance and Baroque period. Course content varies.

C LIT 547 Studies in Eighteenth-Century Literature (3-5, max. 10) Examination of various trends in eighteenth-century literature including the Enlightenment, Rationalism, Pre-Romanticism, and Neo-Classicism. Course content varies with instructor.

C LIT 548 Studies in Nineteenth-Century Literature (3-5, max. 10) Examination of various trends in nineteenth century literature including Romanticism, Realism, Naturalism, and Symbolism.

C LIT 549 Twentieth-Century Literature (3-5, max. 10) Selected movements, schools, and trends of significance in twentieth-century literature of Europe and Americas. Symbolism, surrealism, dada, expressionism, neorealism, existentialism, nouveau roman, and absurd may be considered. Texts in English, French, and German figure most prominently, but Spanish, Italian, Russian, and other materials may be examined. Content and emphasis vary.

C LIT 551 Textual Theory (5) Provides an introduction to the intellectual foundations of textual studies; historical background in disciplines of philology and textual criticism, theories of textuality from formalism and New Criticism to poststructuralism, and media-specific analysis; current and emerging concerns in the history of the book, media studies, globally comparative philologies, and digital humanities. Offered: jointly with ENGL 501.

C LIT 552 Manuscript Studies (5) An examination of the theoretical and methodological issues attending the study of written texts including literacy, circulation, production, and reception in Premodern genetics, and archival research methods. Offered: jointly with ENGL 502.

C LIT 553 Studies in Print Culture and Publication (5) An examination of the theoretical and methodological issues attending the study of printed texts; training in bibliography and the history of the book from Gutenberg's hand press to the machine and periodical presses of the nineteenth and twentieth centuries; and contemporary book art. Offered: jointly with ENGL 503.

C LIT 554 Digital Literary and Textual Studies (5) An examination of digital textuality from the rise and fall of "hypertext" to contemporary convergence and transmediation in hybrid visual-verbal genres; computer games, digital video, and e-poetry. Coverage of practical issues surrounding digital scholarship and the digital humanities. Offered: jointly with ENGL 504.

C LIT 555 Capstone in Textual and Digital Studies (1) Capstone in Textual and Digital Studies. Prerequisite: ENGL 501/C LIT 551; recommended: Must have completed a sequence of three courses, beginning with an Introduction to Textual Theory course (ENG 501/C LIT 551) and followed by one core elective and one open elective related to Textual and Digital Studies. Credit/no-credit only. Offered: jointly with ENGL 558.

C LIT 570 The Novel: Theory and Practice (3-5, max. 15) Study of the novel as a genre, examining two or more novels of varying national literatures. Course content varies.

C LIT 571 The Lyric: Theory and Practice (3-5, max. 15) Examination of central questions in the study of the lyric genre as approached from an international point of view. Course content varies.

C LIT 573 The Drama: Theory and Practice (3-5, max. 15) Examination of various aspects of the drama as a major literary genre, as approached from international and multilingual points of view. Course content varies.

C LIT 574 Scandinavian Auteurs (5, max. 10) VLPA *Nestingen* Seminar on auteur filmmakers in Scandinavian cinema, studying specific auteurs' bodies of work, theories of auteur cinema, and the history of auteurism in Scandinavian cinema. Offered: jointly with SCAND 570; AWSp.

C LIT 576 Seminar in East-West Literary Relations (3-5, max. 15) Comparative investigation of literary topics requiring the study of both Eastern and Western documents. Explores parallels and contradictions between the two, in concepts, ideas, and specific topics. A comparative paper on a chosen topic with qualified conclusions is required. Emphasis varies. Prerequisite: at least one East Asian language.

C LIT 590 Master of Arts Essay (5/10, max. 10) Research and writing project under the supervision of a faculty member. Offered: jointly with CMS 590; AWSpS.

C LIT 596 Special Studies in Comparative Literature (3-5, max. 15) Offered occasionally by visiting or resident faculty. Course content varies.

C LIT 599 Special Seminar or Conference (1-9, max. 30) Group seminars or individual conferences scheduled to meet special needs. Prerequisite: permission of graduate program adviser. Offered: jointly with CMS 599.

C LIT 600 Independent Study or Research (*-) Offered: jointly with CMS 600.

C LIT 700 Master's Thesis (*-)

C LIT 800 Doctoral Dissertation (*-) Offered: jointly with CMS 800.

CLASSICS

CLASSICAL ARCHAEOLOGY

CL AR 340 Pre-Classical Art and Archaeology (3) VLPA K. Topper Survey of the art and the other material remains of the civilizations in the Aegean from the Neolithic Age to the end of the Bronze Age, with special emphasis on Minoan Crete and the Mycenaean kingdoms of mainland Greece, illustrated by slides. The history, techniques, and results of significant excavations are examined. Offered: jointly with ART H 340.

CL AR 341 Greek Art and Archaeology (3) VLPA S. Levin-Richardson, K. Topper Survey of the material remains and the developing styles in sculpture, vase painting, architecture, and the minor arts from the

geometric to the Hellenistic periods, illustrated by slides. Principal sites and monuments, as well as techniques and methods of excavation, are examined in an attempt to reconstruct the material culture of antiquity. Offered: jointly with ART H 341.

CL AR 342 Roman Art and Archaeology (3) VLPA Kathryn R. Topper Roman architecture and art, with emphasis on the innovations of the Romans; illustrated by slides. Offered: jointly with ART H 342.

CL AR 343 Hellenistic Art and Archaeology (3) VLPA K. Topper Survey of the art of Greece and the eastern Mediterranean from the time of Alexander the Great to the Roman conquest. Principal sites with their sculpture, painting, mosaics, and minor arts examined in lectures illustrated with slides. Offered: jointly with ART H 343.

CL AR 347 Pompeii: A Time Capsule of Ancient Life (5) VLPA/I&S, DIV S. Levin-Richardson Explores the power differential between men and women, slaves and masters, and citizens and foreigners in the cultural melting pot of ancient Pompeii, which was preserved by a volcanic eruption in 79 CE. Graffiti, skeletal remains, everyday objects, humble and world-class art and monuments will be analyzed. Offered: jointly with ART H 347; AWSp.

CL AR 442 Greek Painting (3) VLPA K. Topper Study of painted decoration on Greek vases, with emphasis on stylistic developments and cultural and historical influences. Painting on other media also examined as evidence allows. Offered: jointly with ART H 442.

CL AR 443 Roman Painting (3) VLPA S. Levin-Richardson, K. Topper Study of surviving painting from the Roman world, with emphasis on wall paintings from Pompeii and Herculaneum. Principal topics for discussion: the four styles of Pompeian painting the dependence of Roman painters on Greek prototypes, and the significance of various kinds of painting as domestic decoration. Offered: jointly with ART H 443.

CL AR 444 Greek and Roman Sculpture (3) VLPA K. Topper History and development of Greek sculpture and sculptors, their Roman copyists, and Roman portraits and sarcophagi. Emphasis on Greek sculpture of the fifth century BC. Offered: jointly with ART H 444.

CL AR 446 Greek Architecture (3) VLPA K. Topper
Detailed study of Greek architecture from its beginnings, with special emphasis on the Periclean building program in fifth-century Athens. Offered: jointly with ART H 446.

CL AR 447 The Archaeology of Early Italy (3) VLPA S. Levin-Richardson, K. Topper
Study of the principal archaeological sites of early Italy, including Etruria, Sicily, southern Italy, and archaic Rome up to the Republican period. Attention given to the material remains and their relationship to the Etruscan, ancient Sicilian, and early Roman civilizations. Offered: jointly with ART H 447.

CL AR 448 The Archaeology of Italy (3) VLPA S. Levin-Richardson, K. Topper
Study of the principal archaeological sites in Italy with special emphasis on ancient Rome. Sites include the Alban hills, Ostia, Pompeii, Herculaneum, Tarquinia, Paestum, Tivoli, and Praeneste. Attention given to the relationship between material remains and their purpose in ancient life. Illustrated by slides. Offered: jointly with ART H 448.

CL AR 461 Gender and Sexuality in Classical Art and Archeology (3/5) I&S/VLPA, DIV S. Levin-Richardson, K. Topper
Examines gender and sexuality in the visual and archaeological records of Greece and Rome, with a focus on topics such as the body, clothing, the gaze, homoeroticism, sexual labor, gendered spaces, and transgressive genders and sexualities. Recommended: previous coursework in Greek and/or Roman art at the 200- or 300-level is encouraged. Offered: jointly with ART H 461; AWSp.

CL AR 513 Athenian Topography (5) K. TOPPER
Detailed consideration of the topography and monuments of ancient Athens from the beginning through the Roman period.

CL AR 541 Seminar in Greek and Roman Art (5) S. Levin-Richardson, K. Topper
In-depth study of selected topics and problems of the art of ancient Greece and Rome. Offered: jointly with ART H 541.

CLASSICAL LINGUISTICS

CL LI 501 Comparative Phonology of Greek and Latin (5) O. LEVANIOUK
Phonological developments

of Greek and Latin from Indo-European to the classical periods of both languages.

CL LI 503 History of the Greek Language (5) O. LEVANIOUK
Morphological and syntactical development of the Greek language from Homer through the New Testament; the development of prose and poetic style.

CL LI 505 History of the Latin Language (5) O. LEVANIOUK
Morphological and syntactical development of the Latin language; the development of Latin as a literary language.

CL LI 506 Italic Dialects (5) O. LEVANIOUK
Principal remains of the non-Latin languages and dialects of ancient Italy.

CL LI 508 Greek Dialects (5) O. LEVANIOUK
The non-Attic dialects of ancient Greek, based on a study of inscriptions and the literary remains.

CLASSICS

CLAS 101 Latin and Greek in Current Use (2) VLPA
Designed to improve and increase English vocabulary through a study of the Latin and Greek elements in English, with emphasis on words in current literary and scientific use. No auditors. Knowledge of Latin or Greek is not required. Offered: AWSpS.

CLAS 102 Grammar and Syntax through Latin (3) VLPA
Improve familiarity with basic grammar, syntax, logic through study of mechanics of the Latin language. For Educational Opportunity Program students only. No auditors. Knowledge of Latin or Greek not required.

CLAS 122 Gateway to the Ancient Greco-Roman World (5) VLPA/I&S, DIV Catherine M Connors
Introduction to Greek and Roman ways of understanding and shaping the world. Art, architecture, literature, science, and religion are used to examine ancient ideas about the relationships between man and woman, free person and slave, native and foreigner, civilization and the natural world, mortal and divine. Offered: AWSpS.

CLAS 205 Bioscientific Vocabulary Building From Latin and Greek (3) VLPA
Designed to help the student master the scientific vocabulary of his or her

particular field by a study of the Latin and Greek roots that are used to create the majority of scientific terms. No auditors. Knowledge of Latin or Greek is not required. Offered: AWSpS.

CLAS 210 Greek and Roman Classics in English (5) VLPA *Blondell, Clauss, Connors, Gowing, Hinds, Hollmann, Kamen, Levaniouk, Levin-Richardson, Stroup, Topper* Introduction to classical literature through a study of the major Greek and Latin authors in modern translation. Offered: AWSp.

CLAS 231 Race, Identity, and the Ancient Mediterranean World (5) I&S, DIV *M. Green, K. Topper* Explores ancient authors' perceptions of others (foreigners, "barbarians," people on the margins of their known-worlds, slaves, etc.) alongside current scholarship on ancient perceptions of race and identity. Also examines how different groups/nations in nineteenth/twenty-first centuries used their views of Greek and Roman societies to make modern claims about race, white privileges, and power. Offered: jointly with HSTAM 231.

CLAS 239 Greece: From Ancient to Modern (5) VLPA/I&S *A. HOLLMANN, N. KLAPAKI* How are Ancient and Modern Greece connected to each other? Learn about great moments in Ancient Greek culture (tyranny and democracy, tragedy and comedy, athletics and art) and the complex ways Modern Greece has drawn on this heritage by exploring ancient and modern texts and images. Offered: jointly with JSIS A 239.

CLAS 314 Science, Technology, Engineering, and Mathematics in the Ancient World (5) I&S/VLPA *J. Clauss, S. Stroup* Examines science, technology, engineering, mathematics, and medicine in the cultures of Greece and Rome, from the late Bronze Age to early Roman Empire.

CLAS 320 Society and Status in Greece and Rome (5) VLPA/I&S, DIV *D. KAMEN* Examines the societies of ancient Greece and Rome, with a special focus on status, class, and gender. The diversity of human experience is explored through the study of men, women, children, the elderly, slaves, housing, dress, food, sexuality, medicine, death, religion, theater, politics, law, economics, travel, warfare, art, and athletics. Offered: A.

CLAS 324 Greek and Roman Athletics (5) I&S, DIV Surveys Greek athletics and Roman gladiatorial events; the place of athletic and violent spectacle in ancient politics, economy, art, and literature; the role of marginalized populations (especially women, slaves, POWs, and ethnic minorities) in these events, with focus on the ongoing marginalization and disposability of female athletes and athletes of Color on campus and in the community.

CLAS 326 Women in Antiquity (5) VLPA/I&S, DIV *Connors, Levaniouk* A broad survey of primary sources in medicine, law, philosophy, religious ritual, myth, history, and ethnography, informed by perspectives from literature, art, and archaeology. Provides students the tools to analyze the social roles of women in ancient Greece and Rome.

CLAS 328 Sex, Gender, and Representation in Greek and Roman Literature (3) VLPA/I&S, DIV *Hinds, Levin-Richardson, Stroup* Affirmation and inversion of gender roles in Greek and Roman literature, myths of male and female heroism; marginalization of female consciousness; interaction of gender, status, and sexual preference in love poetry. Readings from epic, drama, historiography, romance, and lyric.

CLAS 329 Greek and Roman Slavery (5) I&S/VLPA, DIV Examines slavery in ancient Greece and Rome, investigating chattel slavery and serfdom, the slave supply and slave numbers, the economic role of slavery, the legal status and treatment of slaves, the resistance of slaves, the freeing of slaves, and ideologies of and attitudes toward slavery. Offered: AWSp.

CLAS 330 The Age of Augustus (5) VLPA/I&S *Gowing* Detailed study of the history and culture of the reign of Augustus, the first Roman emperor (31 BC-AD 14) . Includes readings in Augustan authors such as Vergil, Ovid, and Horace as well as the study of Augustan art and architecture. Offered: jointly with HSTAM 330.

CLAS 335 The Age of Nero (5) VLPA/I&S *C. Connors, A. Gowing, S. Levin-Richardson, S. Stroup* Detailed study of the history and culture of the reign of the Roman Emperor Nero (AD 54-68) . Includes readings in the historian Tacitus' account of Nero, as well as in authors such as Petronius, Lucan, and Seneca, and consideration of the artistic and architectural

achievements of the period. Recommended: HSTAM 111, HSTAM 302, HSTAM 312, or HSTAM 313; CLAS 122, CLAS 320, CLAS 329, or CLAS 330 Offered: jointly with HSTAM 335; AWSpS.

CLAS 345 Modern Ways To Write About The Ancient World (5) VLPA C. *Connors* Development of expertise in expository and persuasive writing through study of Ancient Greek and Roman literature and culture. Recommended: a strong interest in ancient Greece and Rome is recommended. Offered: Sp.

CLAS 360 Jews, Greeks, and Romans in the Ancient World (5) VLPA *Stroup* Examines the interactions between populations of Jews, Greeks, and Romans in the ancient Mediterranean from the late Bronze Age through the early Talmudic period, informed by perspectives from literature (religious and secular), art, and archaeology. Offered: jointly with JEW ST 360.

CLAS 399 Study Abroad: Classics (3-15, max. 20) VLPA For participants in Classics overseas study programs. Specific course content determined by assigned faculty member. Credit not applicable to majors in the Classics Department without approval.

CLAS 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

CLAS 410 The Classical Tradition (3-5) VLPA C. *Connors, S. Hinds* Study of the Classical Tradition, including the reception of ancient Greek and Roman texts, objects, and ideas within the history of Western literature, art, thought, and scholarly disciplines. Exploration of its interrelationship with the ethos of the various ages in which significant developments occurred. Offered: AWSp.

CLAS 420 Freedom in Ancient Rome and the Modern World (3/5) VLPA/I&S, DIV A. *Gowing* Examination of the concept of 'freedom' in Ancient Rome, from its founding in the eighth century BC to the fourth century AD. Special attention to comparing the Roman perspective with some

modern views of 'freedom', including (but not limited to) the United States from its founding to the present day. Recommended: HSTAM 111, 302, 312, or 313; CLAS 122, 320, or 329 Offered: jointly with HSTAM 420; AWSpS.

CLAS 422 Intellectual History of Classical Greece (5) VLPA/I&S *Blondell* Uses Plato's Republic as a core text to explore a range of issues of ancient and contemporary interest, such as justice, political theory, education, gender, and the nature of the soul. Besides the Republic and other works of Plato, readings are taken from Homer, Hesiod, the dramatists, and other authors. Taught in English.

CLAS 423 Gender and Heroism in Ancient Greek Thought (5) I&S/VLPA, DIV R. *Blondell* Examines gender and heroism as mutually constitutive categories in Greek thought, and ways in which they work to uphold or subvert power structures among men and women in their various statuses under patriarchy. Topics will include the multiple conceptions of male and female heroism (mythic, epic, tragic, comic, philosophical, religious) and the ways they are endorsed or critiqued in a variety of literary and philosophical texts. Recommended: Previous coursework in Classics at the 200- or 300-level Offered: AWSp.

CLAS 424 The Epic Tradition (5) VLPA *Clauss, Levaniouk* Ancient and medieval epic and heroic poetry of Europe in English: the Iliad, Odyssey, and Aeneid; the Roland or a comparable work from the medieval oral tradition; pre-Greek forerunners, other Greco-Roman literary epics, and later medieval and Renaissance developments and adaptations of the genre. Choice of reading material varies according to instructor's preference. Offered: jointly with C LIT 424.

CLAS 427 Greek and Roman Tragedy in English (5) VLPA *Stroup* Study of the development of Greek and Roman tragedy, with extensive readings in representative plays of Aeschylus, Sophocles, Euripides, and Seneca.

CLAS 428 Greek and Roman Comedy in English (5) VLPA *Stroup* Readings from the comedies of Aristophanes, Plautus, and Terence.

CLAS 430 Greek and Roman Mythology (3/5) VLPA
Principal myths found in classical and later literature.
Offered: AWSp.

CLAS 432 Classical Mythology in Film (3/5)
VLPA *Clauss* Comparison and discussion of classical myths and modern films inspired by them. Promotes access to the reading of classical mythology. Analyzes significant differences between ancient literary and modern cinematographic representations of the myth.

CLAS 435 The Ancient Novel (3) VLPA *Connors*
Reading and discussion of the principal Greek and Roman novels, the earliest European prose fiction, with attention to earlier literature and to imperial culture.

CLAS 445 Greek and Roman Religion (5)
VLPA/I&S *Hollmann, Levaniouk* Religion in the social life of the Greeks and Romans, with emphasis placed on their public rituals and festivals. Attention is given to the priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Offered: jointly with RELIG 445.

CLAS 490 Supervised Study (1-6, max. 18) Individual study in classical topics by arrangement.

CLAS 495 Senior Essay (1-3, max. 4) VLPA Usually written in conjunction with another course in the final year of study in the major.

CLAS 496 Special Topics (2-5, max. 15) VLPA Offered occasionally by visitors or resident faculty.

CLAS 510 Interdisciplinary Seminar in Classics (3-5, max. 25) Advanced work on Greek and Latin studies in English translation. Offered: AWSpS.

CLAS 520 Seminar (5, max. 45) Advanced comparative work on Greek and Latin materials studied in both original languages.

CLAS 525 Proseminar (5) Introduces graduate students to the chief subfields, together with their various methodologies and resources, of the broad discipline of classical studies.

CLAS 540 Topics in Greek and Latin Literary History (5, max. 25) Reading of a range of Greek and Latin texts by various authors.

CLAS 700 Master's Thesis (*-)

CLAS 800 Doctoral Dissertation (*-)

GREEK

GREEK 101 Introductory Greek (5) VLPA An intensive study of grammar, with reading and writing of simple Attic prose. First in a sequence of three. Offered: A.

GREEK 102 Introductory Greek (5) VLPA An intensive study of grammar, with reading and writing of simple Attic prose. Second in a sequence of three. Prerequisite: GREEK 101. Offered: W.

GREEK 103 Introductory Greek (5) VLPA Reading of selections from classical Greek literature. Third in a sequence of three. Prerequisite: GREEK 102 or GREEK 300. Offered: Sp.

GREEK 300 Introductory Greek, Accelerated (5) VLPA Intensive introduction to Attic Greek. Not accepted as upper-division credit toward a major in Greek or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if GREEK 101 already taken. Offered: WS.

GREEK 301 Greek Language, Accelerated (5) VLPA Intensive introduction to Attic Greek. Not accepted as upper-division credit toward a major in Greek or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if GREEK 101 already taken. Prerequisite: GREEK 300. Offered: SpS.

GREEK 304 Introductory Readings in Greek Literature (5, max. 15) VLPA Introduction to reading Greek literature in prose and poetry from various Greek authors; grammar review. Recommended: either GREEK 103 or GREEK 301. Intended to be taken prior to GREEK 305 or more advanced classes. Offered: S.

GREEK 305 Attic Prose (5) VLPA Translation of selections from Attic prose; elementary exercises in Attic prose composition. Intended as first in a

sequence of three. Recommended: one year of college-level Ancient Greek or equivalent. Offered: A.

GREEK 306 Attic Prose (5) VLPA Translation of selections from Attic prose; elementary exercises in Attic prose composition. Intended as second in a sequence of three. Recommended: one year of college-level Ancient Greek or equivalent. Offered: W.

GREEK 307 Homer (5) VLPA Translation of selections from the Iliad or the Odyssey; Attic prose composition, metrics. Recommended: one year of college level Ancient Greek or equivalent. Offered: Sp.

GREEK 308 Introduction to Koine Greek Texts (3) VLPA Williams Reading and discussion of selected religious and philosophical texts from Koine Greek.

GREEK 404 Advanced Readings in Greek Literature (5, max. 15) VLPA Advanced readings in Greek literature in prose and poetry from various Greek authors; grammar review. Recommended: either GREEK 103, GREEK 301, or GREEK 307. Intended to be taken prior to more advanced classes. Offered: S.

GREEK 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

GREEK 413 The Pre-Socratic Philosophers (3) VLPA Blondell

GREEK 414 Plato (3) VLPA Blondell

GREEK 415 Aristotle (3) VLPA Blondell

GREEK 422 Herodotus and the Persian Wars (3) VLPA Hollmann, Kamen, Levaniouk, Topper

GREEK 424 Thucydides and the Peloponnesian War (3) VLPA Gowing, Kamen

GREEK 426 Attic Orators (3) VLPA Kamen

GREEK 428 Imperial Greek Literature (3-5, max. 15) VLPA Clauss, Gowing, Hollmann Readings in imperial Greek prose and poetry from the first century CE onward, including Dio Chrysostom, Appian, Plutarch, Aelius Aristides, Lucian, Athenaeus, and New Testament Koine.

GREEK 442 Greek Drama (3) VLPA Blondell, Levaniouk

GREEK 443 Greek Drama (3) VLPA Blondell, Levaniouk

GREEK 444 Greek Drama (3) VLPA Blondell, Levaniouk

GREEK 449 Greek Epic (3) VLPA Levaniouk

GREEK 451 Lyric Poetry (3) VLPA Blondell, Levaniouk

GREEK 453 Pindar: The Epinician Odes (3) VLPA Levaniouk

GREEK 461 Early Greek Literature (3-5, max. 15) VLPA Readings and discussion of selected authors of the early Greek period.

GREEK 462 Literature of Classical Athens (3-5, max. 15) VLPA Readings and discussion of selected authors of classical Athens.

GREEK 463 Hellenistic Greek Literature (3-5, max. 15) VLPA Clauss Readings and discussion of selected authors of the Hellenistic Age.

GREEK 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates.

GREEK 500 Grammar and Composition (5) Hollmann Translation of passages from English to Greek for the purpose of acquiring advanced knowledge of the grammar and the style of the classical tongue.

GREEK 501 Homer (5) Levaniouk Readings from the Iliad or the Odyssey.

GREEK 503 Aristophanes (5) Kamen Select comedies.

GREEK 504 Plato (5) *Blondell* The Republic or other dialogues.

GREEK 506 Aristotle (5) *Blondell* Politics or Ethics.

GREEK 508 Lysias and Demosthenes (5) *Kamen*
Select speeches, oratorical theory, historical questions.

GREEK 510 Greek Historians (5, max. 10) *Hollmann, Kamen*
Selections from Herodotus, Thucydides, or Xenophon.

GREEK 512 Greek Tragedy (5, max. 10) *Blondell, Levaniouk*
Aeschylus, Sophocles, and/or Euripides.

GREEK 515 Greek Epigraphy (5) *Kamen*
Selected inscriptions from various Greek states and sanctuaries and evidence they provide for religious and social practices, literature, and political history. Classification and editing of inscriptions, and epigraphical techniques.

GREEK 520 Seminar (5, max. 45)

GREEK 540 Topics in Greek Literary History (5, max. 25)
Reading of a range of Greek texts by various authors.

GREEK 590 Supervised Study (*, max. 18)
Prerequisite: permission of Graduate Program Coordinator.

GREEK 600 Independent Study or Research (*-)

LATIN

LATIN 101 Introductory Latin (5) VLPA An intensive study of grammar, with reading and writing of simple Latin prose. First in a sequence of three. Offered: A.

LATIN 102 Introductory Latin (5) VLPA An intensive study of grammar, with reading and writing of simple Latin prose. Second in a sequence of three. Prerequisite: LATIN 101. Offered: W.

LATIN 103 Introductory Latin (5) VLPA Reading of selections from classical Latin literature. Third in a

sequence of three. Prerequisite: LATIN 102 or LATIN 300. Offered: Sp.

LATIN 300 Introductory Latin, Accelerated (5) VLPA
Intensive introduction to classical Latin. Not accepted as upper-division credit toward a major in Latin or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if LATIN 101 already taken. Offered: WS.

LATIN 301 Introductory Latin, Accelerated (5) VLPA
Intensive introduction to classical Latin. Not accepted as upper-division credit toward a major in Latin or classics. Does not satisfy foreign language proficiency requirement. Cannot be taken for credit if LATIN 101 already taken. Prerequisite: LATIN 300. Offered: SpS.

LATIN 304 Introductory Readings in Latin Literature (5, max. 15) VLPA
Introduction to reading Latin literature in prose and poetry from various Latin authors; grammar review. Recommended: either LATIN 103 or LATIN 301. Intended to be taken prior to LATIN 305 or more advanced classes. Offered: S.

LATIN 305 Introduction to Latin Literature (5) VLPA
Readings in prose and poetry from various Latin authors; elementary exercises in Latin prose composition. Intended as first in a sequence of three. Recommended: one year of college-level Latin or equivalent. Offered: A.

LATIN 306 Cicero and Ovid (5) VLPA
Readings from the orations of Cicero and the poetry of Ovid; elementary exercises in Latin prose composition. Intended as second in a sequence of three. Recommended: one year of college-level Latin or equivalent. Offered: W.

LATIN 307 Vergil (5) VLPA
Selections from the first six books of the Aeneid; elementary exercises in Latin prose composition or metrics. Recommended: one year of college level Latin or equivalent. Offered: Sp.

LATIN 401 Medieval Latin Literature to 1200 (3) VLPA *Hinds*
Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or Renaissance Latin texts in their research.

LATIN 402 Later Medieval and Renaissance Latin Literature (3) VLPA *Hinds* Texts read in Latin; cultural and historical contexts discussed. Presupposes year and a half of Latin or equivalent. Informal individual guidance available to members of class handling medieval or Renaissance Latin texts in their research.

LATIN 404 Advanced Readings in Latin Literature (5, max. 15) VLPA Advanced readings in Latin literature in prose and poetry from various Latin authors; grammar review. Recommended: either LATIN 103 or LATIN 301. Intended to be taken prior to more advanced classes at the 400 level. Offered: S.

LATIN 405 Undergraduate Seminar in Classics (5, max. 15) Seminar on a broadly defined topic in classics. Includes reading in Latin or Greek as appropriate for individual students. Additional readings of works in English translation and works of scholarship chosen to give undergraduate majors familiarity with research methods and perspective on the discipline.

LATIN 412 Lucretius (3) VLPA *Blondell, Clauss*

LATIN 414 Seneca (3) VLPA *Blondell, Gowing, Stroup*

LATIN 422 Livy (3) VLPA *Clauss, Gowing, Stroup*

LATIN 423 Cicero and Sallust (3) VLPA *Clauss, Gowing, Stroup*

LATIN 424 Tacitus (3) VLPA *Clauss, Gowing, Stroup*

LATIN 447 Roman Lyric (3) VLPA *Clauss, Connors, Hinds*

LATIN 449 Roman Elegy (3) VLPA *Connors, Hinds*

LATIN 451 Roman Satire (3) VLPA *Connors, Gowing, Stroup*

LATIN 457 Roman Drama (3) VLPA *Connors*

LATIN 458 Roman Epic (3) VLPA *Clauss, Connors, Hinds*

LATIN 461 Latin Literature of the Republic (3-5, max. 15) VLPA Readings and discussion of selected authors from the era of the Roman Republic.

LATIN 462 Latin Literature of the Augustan Age (3-5, max. 15) VLPA Readings and discussion of selected authors from the Augustan era.

LATIN 463 Latin Literature of the Empire (3-5, max. 15) VLPA Readings and discussion of selected authors from the Roman Empire.

LATIN 465 Roman Topography and Monuments (5, max. 10) VLPA *Clauss, Gowing, Levin-Richardson, Stroup, Topper* Study of the material remains of ancient Rome from the archaic period through the imperial age. Reading of source materials and inscriptions in Latin. Conducted in Rome. Offered: Sp.

LATIN 475 Improvement of Teaching: Latin (5) VLPA Offered: jointly with EDC&I 438.

LATIN 490 Supervised Study (*, max. 18) Special work in literary and philosophical texts for graduates and undergraduates.

LATIN 500 Grammar and Composition (5) *Clauss, Gowing, Hinds, Stroup* Translation of passages from English to Latin for the purpose of acquiring advanced knowledge of the grammar and style of the classical tongue.

LATIN 501 Vergil (5) *Clauss, Hinds* The Aeneid.

LATIN 502 Horace (5) *Clauss* Odes or Epistles.

LATIN 503 Plautus and Terence: Early Republican Literature (5) *Connors, Stroup* Plautus and Terence.

LATIN 504 Philosophy at Rome (5) *Blondell, Stroup* Selected philosophical works of Cicero and other sources for Hellenistic and Roman philosophy.

LATIN 506 Cicero (5) *Gowing, Stroup* Select speeches, with attention to rhetorical theory and/or letters.

LATIN 508 Silver Latin Literature (5) *Connors, Hinds* Selections from Martial, Lucan, and Petronius.

LATIN 510 Roman Historians (5, max. 10) *Clauss, Gowing* Caesar, Livy, and Tacitus.

LATIN 512 Augustan Poetry (5, max. 15) *Clauss, Connors, Hinds.*

LATIN 520 Seminar (5, max. 45)

LATIN 540 Topics in Latin Literary History (5, max. 25) Reading of a range of Latin texts by various authors. Offered: AWPSP.

LATIN 565 Seminar in Rome (5, max. 10) *Clauss, Gowing, Levin-Richardson, Stroup, Topper* Study of selected topics and authors in Latin literature. Conducted in Rome.

LATIN 590 Supervised Study (*, max. 18)
Prerequisite: permission of Graduate Program Coordinator.

LATIN 600 Independent Study or Research (*-)

COMMUNICATION

COMMUNICATION

COM 200 Introduction to Communication (5)
VLPA/I&S Introduces theories and research in communication. Explores the myriad ways scholars approach fundamental issues of contemporary human communication. Focuses on theories and research of communication (e.g. relational, group, political, cultural, and international) . Acts as a gateway to knowledge about the communication discipline.

COM 202 Introduction to Communication II (5)
VLPA/I&S Introduces students to four core principles that undergird the study and practice of communication - communication literacy, research inquiry, theories and concepts, and community engagement. Principles discussed and developed in the context of social interaction, rhetoric and critical studies, and communication and culture.

COM 210 Introductory Communication Topics (5, max. 10) Introduction to a specified area of communication scholarship.

COM 220 Introduction to Public Speaking (5)
I&S/VLPA Designed to increase competence in public speaking and the critique of public speaking.

Emphasizes choice and organization of material, sound reasoning, audience analysis, and delivery.

COM 231 Introduction to Rhetoric (5) **VLPA/I&S**

Introduces students to the over two thousand year old discipline of rhetoric. Through contemporary examples of texts and images from politics and popular culture, students will explore concepts such as: the public, identity, persuasion, difference, and ethics.

COM 233 Introduction to Language and Society (5)

VLPA, DIV *Evans, Wassink* Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with ANTH 233/LING 233; A.

COM 234 Public Debate (5) **VLPA/I&S** Examines public debate in a democracy by developing a rhetorical perspective of public argument and skills to evaluate debates critically. Develops an understanding of rhetoric, values, audiences, tests of reasoning, and sources of information. Sharpens critical skills and applies them to contemporary controversies in the public sphere.

COM 238 Rhetoric and Popular Culture (5) **VLPA**

Explores the rhetorical dimensions of popular culture (e.g., film, television, music, advertising, and video games) and their important, albeit often tacit, political and social implications. Themes include the ways popular culture shapes civic life, the influence of popular culture on identity, and the relationship between commerce and culture.

COM 270 Interpersonal Communication (5)

VLPA/I&S Emphasizes analyzing and understanding communication variables affecting human relationships, such as person perception, feedback, idea development, nonverbal cues. Focus on informal communication settings.

COM 289 Communication Power and Difference (5)

I&S, DIV Explores how communication - from face-to-face to mass media messages - reinforces or challenges conceptions of power, privilege, and difference along racial, ethnic, gender, sexual, class, ability, religion, and other important lines. Examines

how communication practices, particularly media, shape inequality as well as our understanding of ourselves and the world.

COM 292 Study Abroad: Communication I (1-10, max. 15) Communication courses taken through a UW approved study abroad program. Content varies and must be individually evaluated. Recommended: COM 200.

COM 294 Multimedia Skills Workshop (1-3, max. 5) Hands-on workshops addressing specific multimedia and/or journalism applications and skills. Topics vary. Credit/no-credit only.

COM 300 Basic Concepts of New Media (5)
VLPA/I&S Provides a comprehensive examination of the effects of new, digital media on interpersonal communication, media industries, and media culture. Emphasis on economic, social, political, and aesthetic implications. Provides limited experience with computer-based media. No prior technical computer experience assumed.

COM 301 Navigating Information Networks for Mass Media (5) I&S Builds familiarity with computer-mediated information networks. Introduces and compares network search engines, agents, browsing/viewing tools and retrieval/transfer software for use by reporters and other media workers. Instruction and practice with searching/acquiring information, its analysis and interpretation, illustration, and write-up. No prior computer or network experience assumed.

COM 302 The Cultural Impact of Information Technology (5) VLPA/I&S Utilizing approaches from the history of technology, cultural studies, and literary theory, seeks to analyze the cultural and social impact of information technology. Considers how information technologies impact our relationships with others, our concept(s) of self, and the structure of the communities to which we belong. Offered: jointly with CHID 370.

COM 303 Social Effects of Technology and Social Media (5) I&S Examines the impact of information/communication technology and social media on individuals and society. Adopts a variety of theoretical, empirical, and popular understandings to assess how technology may bring about social change. Recommended: COM 300.

COM 304 The Press and Politics in the United States (5) I&S Journalists' role in elections and public policy. Relationship between news coverage and political campaigns. Study and analysis of local political newswriting, reporting, and response by local and state political figures. Extensive off-campus experience included. Offered: jointly with POL S 304.

COM 305 The Politics of Mass Communication in America (5) I&S Role of mass audiences in politics from the standpoint of the communication strategies used to shape their political involvement. Topics include: social structure and political participation, political propaganda and persuasion, the political uses of public opinion, and the mass media and politics. Offered: jointly with POL S 305.

COM 306 Media, Society, and Political Identity (5) I&S Explores how society and culture are both represented in and shaped by communication technologies and media content. Media include film, advertising, news, entertainment television, talk shows, and the Internet. Explores how media represent and affect individual identity, values, and political engagement. Offered: jointly with POL S 306.

COM 318 The Creative Advantage (5) I&S *Nancy K. Rivenburgh* Draws on research related to cognition, communication, and creativity to train students in the design and application of problem-solving approaches to complex community and organizational challenges. Emphasizes the benefits of diversity and collaboration in the design of innovative solutions.

COM 320 Advanced Public Speaking (5) VLPA/I&S Practice in preparation and presentation of a variety of types of public speeches based on study of their structure and form; emphasis on organization and delivery. Prerequisite: COM 220.

COM 321 Communications in International Relations (5) I&S Looks at communications in relations between international groups and states. Examines the range of functions and roles communication media play in international affairs, global issues, and intergroup relations. Also examines the strategic use of communications by various groups. Offered: jointly with POL S 330.

COM 322 Global Communication (5) I&S

Introduction to the history, purpose, channels, content, technologies, policy, and regulation of international communications systems. Issues covered include disparities in media development between post-industrial and developing nations, imbalances in international news and information flow, and the emergence of global communications. Offered: jointly with POL S 329.

COM 325 Communication, Cities, and Sustainability (5) I&S *Nancy K. Rivenburgh*

Explores the varied ways in which communication and creativity can improve the sustainability and livability of cities. Students employ an array of fieldwork techniques to observe and analyze the complex, urban communication environment in which they live.

COM 329 Rhetoric of Social and Political

Movements (5) VLPA/I&S Inquiry into the rhetoric of social and political movements; emphasis on investigation of persuasive discourse; examination of the nonverbal symbols of persuasion.

COM 330 Rhetoric of Science (5)

VLPA/I&S *Ceccarelli* Examines how scientists use rhetoric to communicate with each other and with various publics, and how nonscientists use rhetoric to argue about science and its effects in the public sphere.

COM 332 Classical Rhetorical Theory (5) VLPA

Investigates how rhetoric has been theorized and taught since antiquity. Focuses on key thinkers and texts in the rhetorical tradition. Students learn to describe rhetorical theories of key thinkers, explain how rhetoric was understood and practiced in different historical societies, and explain how beliefs about rhetoric have changed over time.

COM 333 Contemporary Rhetorical Theory (5) VLPA

Introduces major Western theories about the relationship between humans and their symbol systems. Emphasizes themes that have preoccupied 20th and 21st Century thinkers on the subject of rhetoric: the public, identity, ethics, difference, the "masses", and persuasion.

COM 334 Essentials of Argument (5) I&S/VLPA

Argument as a technique in the investigation of social problems; evidence, proof, refutation, persuasion; training in argumentative speaking.

COM 336 Speech Consulting (1, max. 5) Matt

McGarrity Practicum for UW Speaking center. Enrolled students consult three hours a week in the Center. Credit/no-credit only.

COM 339 The Business of Media in the Digital Age

(5) I&S Examines the production of media within changing social, technological, and economic contexts. Emphasizes how new technologies can change the market for media goods and media experiences and the ways in which mediated production pervades contemporary economic life.

COM 340 History of Mass Communication (5) I&S

History and development of communication from prehistoric times; rise of mass media; political and economic context of newspapers, radio, film, and television.

COM 343 Effects of Mass Communication (5) I&S

Effects of mass communication on individuals and society. Relevant theories applied to research evidence, addressing such topics as effects of stereotypes, violent and sexual imagery, and persuasive messages on our knowledge, attitudes, and behaviors.

COM 351 Interviewing Principles and Practices (5)

VLPA/I&S Interviewing principles and practices, with emphasis on information gathering, selection, and persuasive interviews. Purposes and types of interviews, structure of interviews, and influence of communication patterns on interview outcomes.

COM 359 Writing for Mass Media (5) I&S

Training in gathering information through interviews and observation and from written record and other public sources. Practice in organizing and writing this information for presentation in a mass medium such as a newspaper, newsletter, or magazine.

COM 360 Foundations of Journalism and Public

Interest Communication (5) I&S Introduction to multimedia content-creation for journalists and public-interest communicators serving the public, nonprofits and other community entities.

COM 361 Advanced Journalism and Public Interest

Communication (4) I&S Advanced multimedia content-creation for journalists and public-interest communicators serving the public, nonprofits and other community entities Prerequisite: COM 360.

COM 362 Community Journalism and Public Interest Communication: News Lab (5) I&S Content creation for community clients and partners. Prerequisite: COM 361.

COM 364 Media Responsibility in a Diverse Society (5) Examines important cultural roles of journalists and media makers in a society rooted in systems of privilege. Students examine their own values and identities, interrogate media conventions, and develop a deeper understanding of how organizational decisions and social systems affect media representations. Prerequisite: COM 361.

COM 370 Family Communication (5) I&S Survey of current theories and research on family communication. Questions about what it means to be a "family." Major theories that guide family communication. Looks at the course of family life, family structures, types, and processes. Recommended: COM 270.

COM 373 Communication in Small Groups (5) VLPA/I&S Discussion as an everyday community activity, with emphasis on the informal cooperative decision-making methods of committee, conference, and roundtable groups.

COM 374 Perspectives on Language (5) VLPA/I&S Study of language and meaning, and survey of several influential modern approaches, including the semantic, general semantic, behavioral, and analytic philosophical. Relates theories of language and meaning to the study of speech communication.

COM 375 Communication Ethics (5) VLPA/I&S Ethical problems in interpersonal and public speech communication. Alternative ways of evaluating and responding to moral problems in a variety of communication situations.

COM 376 Nonverbal Communication (5) VLPA/I&S Reviews the nature of nonverbal communication as part of the human message system. Discusses research on the types of cues that are part of the nonverbal system, reviews some communicative functions allowed by nonverbal cues (e.g., emotional expressions, relational messages, deception, coordination, or interaction) , and ties nonverbal communication to language.

COM 377 Organizational Communication (5) VLPA/I&S *K. Foot* Surveys organizational communication theories, models, and processes. Students learn to apply these in organizational communication exercises, analyze cases, and practice communication and leadership strategies for effective organizing.

COM 378 Social Approaches to Interpersonal Communication (5) I&S *V. Manusov* Investigates interpersonal and relational concepts through a social lens. As students talk about important concepts/processes in the study of personal interaction, they will be looking at them as products and enactments of values and beliefs. They look at the challenges in interpersonal relating and interacting as well as at ways in which these challenges can be negotiated more successfully. Prerequisite: COM 270

COM 381 Content Analysis (5) Introduces content analysis, a research method used in the discipline of communication. Students work in groups to design and execute a content analysis.

COM 382 Social Scientific Approaches to Communication Research (5) I&S Comprehensive introduction to research methods employed in basic and applied communication research, including sample surveys, content analysis, experimentation, and elementary statistics.

COM 383 Qualitative Communication Research Methods (5) I&S Introduces students to a range of qualitative research methods for analyzing communication. Students design and execute a qualitative communication research project.

COM 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender, race, and sexuality. Offered: jointly with AES 389/GWSS 389.

COM 392 Study Abroad: Communication II (1-10, max. 15) Communication courses taken through a UW approved study abroad program. Content varies and must be individually evaluated. Recommended: COM 200.

COM 395 Communication Internship (1/2, max. 5) Faculty-supervised study of communication principles in internship contexts. Readings to aid

students in observations of communication concepts combined with individualized reading structured around topics of interest for each student. Credit/no-credit only.

COM 403 Dark Sides of Digital Media (5) I&S

Addresses the "dark sides" of digital media - and ways to mitigate them - in these realms: intrapersonal, interpersonal/relational, work/organizational, economic, political/military, environmental, and health. Students produce and analyze texts and images critiquing digital media, and policies and practices aimed at mitigating detrimental uses/outcomes.

COM 407 Communication Technology and Politics (5) I&S

Employs some core concepts of political communication and theories of democracy to examine the emerging role of information and communication technologies in candidate and issue campaigning; online voting; protest and advocacy movements; law-making and electronic governance in the United States and internationally. Offered: jointly with POL S 451.

COM 411 Political Communication Seminar (5, max. 10) I&S Contemporary topics studying how communication affects citizen engagement with public life. Offered: jointly with POL S 454.

COM 414 Mass Media and Public Opinion (5) I&S

Examines the foundations of the idea of public opinion in a democratic environment and the role of mass communication in the organization, implementation, and control of that opinion. Considers these relationships from the perspectives of societal elites, media, and citizens. Offered: jointly with POL S 452.

COM 418 Communication and the Environment (5) I&S

Examines how communication about the environment influences beliefs, values, and treatment of the natural world. Topics include new coverage of the environment; media strategies and rhetoric used by activists, government agencies, and industry to address environmental issues; representations of the environment in popular culture; and/or political argumentation about environmental policy. Offered: jointly with ENVIR 418.

COM 420 Comparative Media Systems (5) I&S

Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with JSIS B 419/POL S 468.

COM 423 Communication and Social Change (5) I&S

Examines both theory and application involved in using communications media as a tool for addressing political, social, and economic development issues. Utilizes a case study approach to look at localized applications of traditional and new communications tools in the pursuit of sustainable development.

COM 426 International Media Images (5) I&S

Ways in which media construct images of international peoples and events. Develops a set of critical tools for assessing media portrayals of international affairs and cultures.

COM 428 The Media and Peace (5) I&S

Investigates the complex relationships among the media, journalistic practice, and our understanding and pursuit of peace. Offered: jointly with JSIS B 428.

COM 431 Rhetorical Criticism (5) VLPA/I&S

Study of approaches to rhetorical inquiry that aid in the description, analysis, interpretation, and evaluation of discourse. Applies various critical models to a chosen artifact.

COM 434 Argumentation Theory (5) I&S/VLPA**COM 435 Historic American Public Address (5) VLPA/I&S**

Rhetorical criticism of historical public speeches, essays, and declarations. Includes readings of public texts in their historical and political context to increase understanding of those texts, their rhetorical construction, and the culture from which they arose. Covers the beginnings of the nation to the middle of the twentieth century.

COM 436 Contemporary American Public Address (5) VLPA/I&S

Rhetorical criticism of contemporary public messages. Includes reading of public texts in their context to increase understanding of those texts, their rhetorical construction, and the culture from which they arose. Covers mid-twentieth century to the present.

COM 440 Mass Media Law (5) I&S Survey of laws and regulations that affect the print and broadcast media. Includes material on First Amendment, libel, invasion of privacy, freedom of information, copyright, obscenity, advertising and broadcast regulation, and matters relating to press coverage of the judicial system. Offered: jointly with POL S 461.

COM 442 History of Media Technology and Regulation (5) I&S Impact of pre-1980s media technologies - printing, telecommunications, broadcasting, photography, and more - on individuals and institutions, especially government, business, and the mass media. How laws and policies have changed to govern new media forms.

COM 443 Indigenous Films, Sovereign Visions (5) VLPA/I&S, DIV *D. HART, L. ROSS* Explores fiction, documentary, experimental film, and digital media by indigenous artists from around the world. Focuses on personal, political, and cultural expression. Issues include media and sovereignty movements, political economy, language revitalization, the politics of decolonization, and indigenous aesthetics. Offered: jointly with AIS 443.

COM 444 Public Relations and Society (5) I&S Overview of issues, strategies, and role of public relations professionals in various areas of American society, including media relations, government relations, community affairs, and consumer relations.

COM 445 Journalism and Literature (5) VLPA/I&S Explores the relationship between journalism and fiction writing in the United States. Examines writers who began their careers as journalists and forged a fiction-writing philosophy related to what they learned in journalism. Readings in fiction and journalism.

COM 452 Crisis Communications (5) I&S Study of the functions of communications professionals during crises. Covers public relations professionals as advocates for organizations and companies in crisis and the news media as advocates of the mass public. Discussion of cases.

COM 456 Networked Journalism (5) I&S *Adrienne Marie Russell* Transformation from mass-mediated journalism to networked journalism, with emphasis

on experiments in new-style news and the changing relationship between journalists and public.

COM 457 Journalism Portfolio (1) I&S Students assemble an online portfolio of academic, professional, and creative work. The portfolio project serves as vehicle for students to engage in self-assessment about their professional and academic growth and to assist them in career planning. May not be repeated if a grade of 0.7 earned. Prerequisite: COM 362.

COM 458 Reporting Global Issues (5, max. 10) I&S, DIV Practicum in the journalism that examines or localizes international trends or international developments in one or more of the following subject areas: health, medicine, science, politics, environment, culture, demographics, or business. Focus of course varies by term. Prerequisite: COM 360.

COM 459 Narrative Journalism (5) VLPA/I&S Introduces the rigorous reporting and literary writing techniques of narrative journalism. Concentrates on producing nonfiction narrative articles for publication. Offered: jointly with CHID 459.

COM 460 Special Reporting Topics (4, max. 8) I&S Topics vary. Prerequisite: COM 360.

COM 461 Data Reporting (5) I&S Introduction to reporting with data. Includes locating data, requesting data sets, analyzing data and telling visual written stories from data. Students examine ethical and technical challenges these tools present to media and society. Prerequisite: COM 360.

COM 463 Copy Editing for Media (5) I&S Focus on editing copy in a variety of media contexts, covering grammar, style, headlines, use of photos and captions, social media, online and mobile presentation, and editing relationships in a team. Prerequisite: COM 360.

COM 464 Writing with Voice (5) VLPA Focuses on point-of-view writing that challenges assumptions of the omniscient voice and pushes traditional journalist boundaries. Students are encouraged to experiment with transparency and authenticity in their tone and - through a series of written assignments - explore points of intersection between

their own experiences and larger issues.

Prerequisite: COM 360.

COM 465 State Government Communication (12)

I&S Participation in the state legislative session winter quarter. Students work as reporters for news outlets or are embedded in communication teams in state agencies. Students receive a stipend and live in Olympia. Application required. Offered: W.

COM 468 Media Ethics (5) I&S Explores ethical issues and ethical decision-making as they pertain to journalistic and media practices.

COM 470 Discourse: Analyzing Talk and Texts (5)

VLPA/I&S, DIV A critical and practical introduction to contemporary theories/methods in discourse analysis: how verbal communication (together with visual communication) is used in conversational talk and mediated texts to construct identities and relationships; and how power and ideology are reproduced through these everyday social interactions. Offered: jointly with LING 470.

COM 471 Persuasion (5) VLPA/I&S Analysis of the ways in which beliefs, values, attitudes, and behavior are deliberately influenced through communication.

COM 472 Empirical Approaches to Interpersonal Communication (5) I&S

Examination of theories and research on the development and deterioration of interpersonal relationships. Emphasis on the nature of interpersonal interaction, the role of language and nonverbal communication in relationships, functional and dysfunctional interaction patterns, and the dynamics of interpersonal networks.

COM 474 Communication, Conflict, and Cooperation (5) VLPA/I&S Role of communication in resolving informal conflicts and in facilitating interpersonal and intergroup cooperation. Review of empirical literature. In-class simulations and exercises.

COM 478 Intercultural Communication (5) I&S

Investigates intercultural communication theory and its application for varying levels of human interaction: interpersonal, intergroup, and international.

COM 482 Interpersonal Media (5) I&S Examines the relationships and groups formed through digital social media. Focuses on how people manage interactions and identities, develop interpersonal relationships, engage in collaboration and conflict, and develop communities in online environments. Involves both the study and use of network-based computer-mediated systems.

COM 483 Communication Approaches to the Study of War (5) I&S/VLPA

COM 484 Cultural Codes in Communication (5)

VLPA/I&S Social and cultural codes in interpersonal communication, with special reference to contemporary American subcultural groups and their communication patterns.

COM 485 Fieldwork in Communication Studies (5)

VLPA/I&S Theory and practice of participant observation, intensive interviewing, and discourse analysis in the study of communicative practices. Prerequisite: COM 484.

COM 486 Communication and Culture in Rome: Study Abroad (12) VLPA/I&S

Explores the historical and contemporary connections between Rome culture and communication. Through intensive fieldwork abroad, students acquire skills of observation and understanding that can be applied to navigate intercultural experiences and reflect on their influence on various interactions.

COM 487 Representing Latinidad: Chicanxs and Latinxs in the Media (5) DIV

Carmen Gonzalez, Andrea Otanez Class focuses on a critical analysis of dominant/indie media texts to understand how Chicanxs, specifically, and Latinxs, generally, have been represented and represent themselves in mass media through time. As we examine representations, we will ask what representations have stayed the same, changed and why it matters to cultural critics and media scholars.

COM 488 Race, Gender, and Power in Asian

American Media (5) I&S, DIV Examines the cultural, political, and social facets of Asian American media since 1915 within such key issues as racial and sexist stereotypes, white privilege and hegemony, identity, and agency and empowerment. Informed by critical theories of race and ethnicity.

COM 489 Black Cultural Studies (5) I&S Examines how images of blackness have been (re) constructed through identity formation and entrenched inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black queer studies, black power, and black hybridities. Offered: jointly with AES 489/GWSS 489.

COM 490 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV Joeseeph Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with AES 490/GWSS 486.

COM 492 Study Abroad: Communication III (1-10, max. 15) Communication courses taken through a UW approved study abroad program. Content varies and must be individually evaluated. Recommended: COM 200.

COM 494 Careers in Communication (1) Helps students prepare for careers in communication. Focuses on identification of key skills, creating an effective resume, articulating interests and experience, doing informational interviews, and creating a professional-style web profile and website. Credit/no-credit only.

COM 495 Special Topics in Communication (2-5, max. 15) Lecture, seminar, and/or team study. Topics vary.

COM 496 Honors Seminar (5) VLPA/I&S Preparation for researching and writing senior honors thesis.

COM 497 Honors Thesis (1-15, max. 15) VLPA/I&S Researching and writing honors thesis.

COM 498 Independent Research (1-5, max. 10) Work on research projects designed and conducted by undergraduate students.

COM 499 Directed Research (1-5, max. 10) Work on research projects designed by faculty members.

COM 500 Communication Theory Development (5) Covers the philosophy behind theory development, discusses the basic components of theories, and

reviews significant theoretical contributions in communication from social scientific and humanistic traditions. Introduces students to the process of conceptualization and theory design through reading and discussion of relevant bodies of communication scholarship.

COM 501 Methods of Inquiry (5) Overviews some of the most important methods of inquiry used to investigate communication phenomena. Includes textual criticism, content analysis, ethnography, experimentation, survey research, and historical approaches. Explores the utility of different methods for investigating research topics, defining and measuring concepts, reading texts, and investigating theories.

COM 502 Communication Scholarship and Public Life (5) Examines potential connections between communication scholarship and government, markets, civil society, and the general public.

COM 511 Content Analysis (5) Content analysis as a technique for making inferences from texts. Includes quantitative, qualitative, and computer-assisted approaches to analysis.

COM 512 Critical, Social, and Practice-Based Approaches (5) Explores approaches to communication research developed from understandings of human communication as inherently social, grounded in tool-mediated action, and interwoven with power relations. Covers a range of theories that are associated with these approaches, and the implications of these theories for methods of data collection and analysis.

COM 513 Fieldwork Research Methods (5-, max. 10) Methods of fieldwork research in communication studies, with emphasis on participant observation, ethnography, and discourse analysis.

COM 514 Critical Discourse Analysis (5) VLPA Introduction to systematic analysis of linguistic and visual discourse in face-to-face and mediated talk and texts; critical examination of the reproduction of power, control, and ideology through linguistic and related semiotic practices of everyday life.

COM 515 Rhetorical Criticism (5) History and method of rhetorical criticism. Application of critical standards to various rhetorical artifacts.

COM 517 Survey Research (5) Faculty-directed project in survey research in which basic principles of survey design, including sampling, observation, measurement, data analysis, and data interpretation, are all applied. Prerequisite: elementary statistics or permission of instructor.

COM 518 Cultural Studies Methods (5) Explores the history and methods of cultural studies. Introduces major debates in the field. Applies cultural studies methods to various artifacts.

COM 519 Visual Cultural Studies Methods (5) Explores the history and methods of visual culture. Introduces major debates in the field. Applies visual cultural studies methods to various artifacts.

COM 520 Statistical Methods in Communication (5) Reviews the steps taken in social scientific research on communication, with emphasis on the conceptualization, operationalization, and analysis of quantifiable variables. Highlights understanding of computer application of univariate and bivariate statistics, focusing on both parametric and nonparametric tests.

COM 521 Advanced Statistical Methods in Communication (4) Discusses complexities in quantitative research on communication. Focus on multivariate data design and analysis, including multiple and logistic regression, ANOVA and MANOVA, and factor analysis. Prerequisite: COM 520.

COM 527 Global Communication Research Methods (5) Methodological issues particular to the design or analysis of research that deals with data from different countries, cultures, or sub-cultures. Prerequisite: COM 501 or equivalent.

COM 528 Designing Internet Research (5) Focuses on designing Internet research, assessing the adaptation of proven methods to Internet tools and environments, and developing new methods in view of particular capacities and characteristics of Internet applications. Legal and ethical aspects of Internet research receive ongoing consideration.

COM 529 Research Strategy and Business Practice (5) Empowers students to resolve business debates with empirical findings. Students learn to match research method to question, design valid

instruments of data collection, use software to test significance of differences, construct graphs following principles of infosthetics, and ensure persuasiveness of data by defending against common research criticisms.

COM 530 Philosophical Issues in Rhetorical and Communication Theory (5) Survey of selected philosophical controversies among speech communication theorists, and analysis of one philosopher's approach to communication. Topics include paradigm descriptions of communication, rhetoric and knowledge, linguistic analysis and communication, hermeneutics and dialogue.

COM 531 Rhetoric in Society (5) Selected works of major rhetorical theorists such as Aristotle, Cicero, Augustine, Campbell, Whately, Perelman, and Burke. Examines how rhetorical themes are responsive to and symptomatic of societal conditions and values.

COM 532 Classical Rhetoric (5) Development of the classical tradition in rhetorical theory, criticism, and pedagogy from the sophists to Augustine; analysis of the contributions of major figures and works to that tradition.

COM 534 Studies in Contemporary Rhetoric (5) Critical analysis of theories of twentieth-century rhetoric.

COM 538 Theories of Communication Technologies (5) *B. Hill, K. Pearce* Provides a theoretical foundation for study in the area of communication technology by examining different theories of the social, political, and cultural implications of technological change. Takes a broad view of theories of communication innovations, tools, and technologies. Offered: A.

COM 539 Theories of Technology and Society (5) Provides an theoretical foundation for study in the area of communication technology and society by examining different contemporary theories of the social, political, and cultural implications of technological change. Takes a broad view of theories of communication innovations, tools, and technologies - including historical, critical, and comparative approaches.

COM 540 The Rhetoric of Science (5) Examines selected topics in the rhetoric of science,

underscoring the interplay of language, situation, culture, and prior tradition in the quest for exact knowledge of the natural world. Scrutinizes scientific communication in intradisciplinary, interdisciplinary, and extradisciplinary contexts.

COM 548 Economics of Digital Communication (5)

Critically examines the impact of the Internet and digital technologies on the economy. Focus includes third world countries as well as the United States and other industrialized countries.

COM 551 Political Communication (5)

Surveys classic works and new directions in political communication, including functionalist, structuralist, constructivist, network, and comparative approaches, reflecting a range of methods. Examines political organizing, electoral and legislative processes, civic (dis) engagement, media and politics, public deliberation and opinion formation, political identity and discourse. Offered: jointly with POL S 551.

COM 552 Social Construction of News (5)

Examines social, political, economic, technological, and cultural influences on the news. Identifies constraints on journalists and explores how those constraints shape the news and information that journalists and media organizations produce.

COM 553 Public Opinion and Communication (5)

Conceptual and methodological approaches to public opinion and communication as historical and behavioral phenomena. United States and international perspectives.

COM 562 International Communication Systems (5)

International communications and contemporary issues that affect the functioning of global communication systems. Interdisciplinary focus.

COM 563 Black Cultural Studies (5)

Takes a critical approach to studying media representations of blackness. Drawing upon traditions in African studies and cultural studies, students engage through theory and practice by presenting on academic works, historicizing events, and unpacking cultural texts.

COM 564 Media, Myth, and Ritual (5)

Examines the way media operate in a secular society with many of the characteristics that traditionally have been imputed to spirituality and religion. Analyzes media's

mythological and ritualistic function in society by taking an interdisciplinary approach informed by religious studies, cultural studies, journalism, and communication theory.

COM 565 Mass Media Structure (5)

Research on the structural aspects of mass communication.

COM 567 Gender, Race, and Communication (5)

Analysis of the role of media in the construction of reality, production processes, and their influence on media representation of women and people of color. Offered: jointly with GWSS 589.

COM 568 Mobile Communication and Digital Media (5)

Explores impact of mobile technology on social, political, civic, and business spheres. Strategizes how to make "mobile" an integrated part of a broader media strategy.

COM 569 Communication Strategies in Virtual Worlds and Games (5)

Analyzes potential configurations made possible by interactivity and simulation in virtual worlds and games. Explores applications of this communication medium to education, literacy, and business.

COM 570 Organizational Communication (5)

Examination of social scientific theory and research on communication in organizations. Topics include quantitative and qualitative approaches to process of organizational communication, function and structure of macro networks, superior-subordinate relationships, and the role of communication in organizational change, development, and effectiveness.

COM 571 Theories of Technology and Society (5)

Provides a theoretical foundation for study in the area of communication technology and society by examining different contemporary theories of the social, political, and cultural implications of technological change. Takes a broad view of theories of communication innovations, tools, and technologies - including historical, critical, and comparative approaches.

COM 576 Interpersonal Communication (5)

Social scientific research and theory on the role of communication in developing and maintaining interpersonal relationships. Nature of interpersonal communication, relationship change processes,

interpersonal control through communication, and personal communication networks.

COM 577 Communication in Small Groups (5)

Reviews major small group communication theories and the history of research on small groups. Topics include structuration, democratic decision making, symbolic convergence, and the influence of personality, gender, and ethnicity on group communication. Involves students in original research projects on communication in small group settings.

COM 578 Intercultural Communications (5)

Manusov, Rivenburgh Focuses on the nature of communication between different cultures, including the processes as they occur on sojourns, immigration, negotiations, and conversations across national boundaries. Specific topics include identity formation and expression, intercultural relationships, stereotyping, prejudice, and group affiliation.

COM 580 Nonverbal Communication (5) Reviews primary theories and research on nonverbal communication. Focus on developmental and social aspects of nonverbal cues, including review of communicative functions served by nonverbal channels. Topics include paralinguistic systems, relational messages, deception, acquisition of cue use, and emotional expression. Emphasizes research methods and influences of culture and context.

COM 581 Social Production and Distribution of Digital Content (5) Explores theoretical and applied analysis of "user-generated" digital and distribution, as well as their economic cultural impact. Examines specific issues related to monetization and messaging, particularly in storytelling, advertising, campaigning, advocacy, and entertainment.

COM 583 Multimedia Storytelling (5, max. 15) Uses videos, photos, audio, and text to communicate through narratives that can be accessed by a worldwide audience via social media distribution.

COM 584 Ways of Speaking (5) Theory and literature of the ethnography of communication, with special emphasis on the descriptive-comparative approach to culturally patterned styles of communicative conduct. Offered: jointly with ANTH 584.

COM 587 Business Fundamentals in Digital Communications (5) Focuses on business fundamentals within digital communications. Covers marketing and sales; finance and accounting (including ROI) ; and implementation. Students apply what they learn by building a business plan to gain understanding of the underlying issues facing business to develop relevant strategies and tactics in order to leverage the opportunities and challenges that digital media presents.

COM 589 Ethics and Policy Positions for Communicating Across Local and Global Networks (5) Examines the legal, social, political, and policy environments of digital media laws, policies, and ethics around the world. Offers a comparative perspective, which prepares digital media managers to expand into other markets outside their home bases.

COM 590 Selected Readings (1-5, max. 10) Selected readings assigned by faculty.

COM 591 Independent Research (1-5, max. 10) Research projects designed and led by students with faculty supervision.

COM 592 Directed Research (1-5, max. 10) Student participation in faculty-directed research projects.

COM 593 Communication Internship (1-5, max. 15) Provides students an opportunity to connect their scholarship with communities outside academia by engaging in a project that uses communication theory to inform practical work.

COM 594 Professional Proseminar (1, max. 6) Helps students develop a range of professional competencies. Focuses on a particular topic such as computer-assisted research, technology in the classroom, obtaining funding for research, writing for academic publication, career choices after graduate school, and ethics in research and teaching.

COM 596 Communication Pedagogy (1, max. 3) Development of effective teaching and professional skills. Emphasizes interactive teaching, leading discussions, lecturing, planning courses, evaluating resource materials, grading and evaluation, teaching philosophies, and effective classroom management and communications. Required of all graduate

students who accept teaching assistantships.
Credit/no-credit only.

COM 597 Special Topics in Communication (3-5, max. 35)

COM 600 Independent Study or Research Project (*-) Prerequisite: permission of Supervisory Committee chairperson. Credit/no-credit only.

COM 700 Master's Thesis (*-)

COM 800 Doctoral Dissertation (*-)

COMMUNICATION LEADERSHIP

COMMLD 501 Leadership and Communities (2) Considers leadership scholarship, models of communication, and connecting to communities and networks in new forms of outreach and meaningful engagement. Credit/no-credit only. Offered: A.

COMMLD 502 Narratives and Networks (3) Key discussions on communication and organizational narratives facilitated by digital media and emerging technologies. Explores methods of creating powerful communication networked tools for organizations. Students create their own communication projects. Credit/no-credit only. Offered: Sp.

COMMLD 503 Communication and Leadership Practicum (1-5, max. 10) Students apply theoretical knowledge acquired in the communication leadership program to solve the challenges of real-life organizations. Students also engage with and understand the uses of course concepts in contemporary professional practice. Recommended: COMMLD 501. Offered: Sp.

COMMLD 510 Topics in Content Strategy and User Experience (1-5, max. 15) Focuses on a variety of topics in content strategy and UX. Specific topics vary. Offered: AWSpS.

COMMLD 511 Introduction to User Centered Design (5) Focuses on applied user-centered design methodologies, with the center of the course user research. Students analyze existing interfaces across desktop and mobile platforms and review tools and theories that guide user experience designers in their practice.

COMMLD 512 User Research and UX Strategies (5) Design, implementation, and evaluation of user interfaces from a usability perspective. Students will have portfolio-ready and end-to-end work examples to demonstrate they can understand basic principles of user interface design, implementation, and evaluation and design and conduct usability studies.

COMMLD 513 Content Marketing (5) Approach and implementation of marketing programs that create impactful campaigns and adaptable content for a variety of channels and platforms. Focus on building brand storytelling, effective messaging, and models for optimizing and measuring digital marketing. Offered: WSp.

COMMLD 514 Multi-Platform Content Strategy (5) Examines the framework of social media applications. Introduces terminology, history, and evolution of website development and content management systems; elements of effective website design; and project management techniques needed to organize digital assets, allocate resources, and meet deadlines. Students gain a solid understanding of legacy and emerging technologies.

COMMLD 515 Advanced User Design (5) Focuses on the advanced design, implementation, and evaluation of user interfaces from a usability perspective. Includes user-design research strategies and various methods for evaluating user interfaces. Practices skills with broader application to address the solve usability issues through user research and applying human computer interface conventions.

COMMLD 516 Advanced Content Strategy: Creation, Curation, and Optimization (5) Covers writing for the web and search engine optimization techniques. Explores the integration of social hooks, APIs, and introductory web programming. Students work to produce or redesign a website, complete with content plan, audience analysis and assumptions, and promotion plan.

COMMLD 517 The Psychology of User Experience (5) Psychological constrictions of attention, perception, memory, disposition, motivation, and social influence that determine whether customers are receptive to their digital innovations. Includes psychological theory, digital innovations, understanding the human context of digital ventures, and ethical differences between alignment

and meeting needs vs. exploitation and unsustainable design approaches. Offered: AWSpS.

COMMLD 520 Topics in Marketing (1-5, max. 15)

Focuses on a variety of topics that explores professional marketing practices. Specific topics vary. Offered: AWSpS.

COMMLD 521 Digital Media Branding and Marketing (5)

B. Marr Critically examines the role of advertising, marketing, and other promotional efforts in establishing the branding of digital media companies. By using communication theory to analyze successful cases of established and start-up digital media companies, participants identify practicable and effective strategies for brand building and enhancement. Offered: W.

COMMLD 522 The Future of Marketing (5)

Robert Salkowitz Technologies shaping marketing, advertising, media, public relations, and communications in the two-to-10 year horizon. Examines marketing through consumer brand marketing (B2C), business to business marketing (B2B), non-profit or non-governmental organization marketing/PR, and small business. Offered: A.

COMMLD 523 Foundations of Branding (5) Brings brand squarely into focus with particular emphasis on its role in creating and engaging communities, triggering passionate evangelism, and driving loyalty across key audiences. Delves into the evolving role of brand as traditional marketing techniques fall by the wayside in the era of savvy consumers and constant communications.

COMMLD 524 Copywriting Fundamentals for Marketing (3)

Carol Schiller Effective and well-tested methods used by professional storytellers to outsell and outrun the constantly changing market. Using a combination of readings, case studies and practical writing assignments students learn the art and science of creating top-performing marketing text.

COMMLD 525 Brand Values and Creativity (5)

Introduces corporate brand values in marketing communications. Includes considering deeply how emotion, story, and marketing message function in a project that resonates with the consumer while also reinforcing a company's belief system. Offered: AWSpS.

COMMLD 526 Analytics for Brands: Measuring Marketing Effectiveness (5)

Fundamentals of digital marketing analytics and analytics tools. Focuses on managed channel (Facebook, Twitter, YouTube, etc.) success metrics and KPI tracking, conversation themes, influencer identification, data insights, and listening and monitoring topics. Offered: AWSpS.

COMMLD 528 Programming and Data Science for Communicators (5)

Basic programming and data science tools give students skills to find, access, and synthesize data into information that can be analyzed and acted on. Introduces software to collect and process data to produce numbers, hypothesis tests, tables, and graphical visualizations that answer real questions.

COMMLD 530 Topics in Storytelling (1-5, max. 15)

Focuses on a variety of topics that explores storytelling. Specific topics vary. Offered: AWSpS.

COMMLD 531 Foundations of Video Storytelling (5)

Introduces capture and editing skills to create and distribute video stories. Students study point of view, audience targeting, success criteria, methodology, voice, and production standards.

COMMLD 532 Advanced Video Storytelling (5)

Enables students to create high-value video work with a human-driven focus. Students conceive of, shoot, and edit a short, character-driven film in partnership with a client, consider deeply how story functions, and navigate relational challenges such as building trust with subjects, managing clients, and crafting a compelling narrative from real-life material. Recommended: basic knowledge of technical aspects of video production and editing; previous foundational COMMLD storytelling class or equivalent technical experience. Offered: W.

COMMLD 533 Storytelling for Emergent Platforms (5)

Introduces tools necessary to create immersive (Virtual Reality/Augmented Reality) experiences and web stories. Emerging models paired with the study of technical aspects of story creation and implementation of media production tools and platforms.

COMMLD 534 Visual Storytelling (5)

Robert Salkowitz Provides a solid understanding of the medium of sequential art and visual narrative (aka "comics"), and the practical ability to incorporate

visual storytelling into traditional, digital, and transmedia projects in a variety of entertainment, business, education, social, and journalistic scenarios. Offered: Sp.

COMMLD 535 Foundations of Audio Storytelling (5)

J. Partnow Emphasizes the potential audio storytelling has for broad reach, powerful impact, and building mindset-shifting community around content. Traces its evolution from terrestrial radio to podcasts that educate, entertain, and inspire action. Consideration given to core characteristics of strong storytelling, observed through an auditory filter. Students experiment with designing their own short audio pieces. Offered: W.

COMMLD 536 Intensive Video Storytelling (3) How online media affects storytelling, with emphasis on video. Includes hands-on practice in producing online video stories. Offered: AWSpS.

COMMLD 537 Principles of Storytelling for Organizations, Business, and Movements (5) L.

Kessler Focuses on the art and craft of nonfiction storytelling to communicate ideas and emotion, build relationships and community, promote change, and inspire action. Explores, investigates, and discusses the elements of narrative and looks at examples of nonfiction storytelling across media. Students learn to "think story," to pinpoint, pitch, and gather material for the production of original, compelling, and persuasive content. Offered: W.

COMMLD 540 Topics in Organizational and Professional Communication (1-5, max. 15) Focuses on a variety of topics on organizational and professional communication. Specific topics vary. Offered: AWSpS.

COMMLD 541 Crisis Communication (5) Addresses how the tools of communication influence crisis communication strategies. Identifies key communication issues that must be addressed during an organizational crisis. Examines implementation strategies to engage traditional and social media; digital networks; federal, state, and local lawmakers; external and internal stakeholders; and consumers or constituents. Offered: WS.

COMMLD 542 Distributed and Diverse Teams (5) Students build leadership and communication

effectiveness by working in distributed teams at the global, national, or local levels. Offered: Sp.

COMMLD 543 Leadership Approaches to Equity Initiatives in Organizations (5) Builds skills for learning across difference as organizational change-makers for diversity, equity, and inclusion. Students learn collaboratively to explore interconnections among dimensions of intersectional identities. They also practice self-awareness and expand understanding of the roles of individuals, groups, organizations, and societal structures in making real system change. Offered: WS.

COMMLD 550 Topics in Ethics and Law (1-5, max. 15) Focuses on a variety of topics on law and ethics. Specific topics vary. Offered: AWSpS.

COMMLD 551 The Law and Ethics of Community Building (5) Considers and juxtaposes the legal and ethical realities of community building through a cross-sector approach. Understanding how law and ethics impact how organizations communicate to clients, customers, and constituencies.

COMMLD 558 Law and Policy (5) Examines the existing frameworks that govern how organizations and end users approach free expression, intellectual property, privacy, security, and advertising. Provides students with practical guidance for applying these frameworks to news, entertainment, social media, and digital media environments.

COMMLD 559 Law, Data, and Privacy (5) Explores issues associated with data usage, data collection, sharing user information, and licensing. Focuses on privacy laws, how regulators are approaching advertisers' use of personal information, how organizations attempt to keep data secure, and how intellectual property rights protect data and databases.

COMMLD 560 Topics in Communication and Culture (1-5, max. 15) Focuses on a variety of topics on communication and culture. Specific topics vary. Offered: AWSpS.

COMMLD 561 Qualitative Research in Communities and Organizations (5) *Gerry F Philipsen, Lisa Coutu* Discerning the unique cultural foundations of organizations and communities, based on member interaction and motivation. Students study cultural

values, rules, and symbols as vital resources for promoting successful collaboration within and across groups. Offered: W.

COMMLD 562 Communication for Advocacy (5) B. *Tausch Lapora* Focused on "integrated advocacy," a strategy of communicating advocacy efforts through multiple channels, students will develop an integrated advocacy campaign working for a client. Real-life challenges and needs of clients allow students to apply the integrated advocacy model, build stories around goals and solutions, come up with tactics, and create a campaign to ignite change. Offered: W.

COMMLD 570 Topics in Community and Leadership (1-5, max. 15) Focuses on a variety of topics on community and leadership. Specific topics vary. Offered: AWSpS.

COMMLD 571 Communicating Ideas (5) *Ekin Yasin* How ideas produced by thought leaders in different fields are structured, and what makes these ideas resonate - or not resonate - with audiences. Types of communication techniques thought leaders develop that result in the impact of their ideas in public discussion. Offered: A.

COMMLD 572 Innovation Communities (5) *Benjamin Mako Hill* Techniques firms use to harness the surge of innovation by introducing a "democratized" or "user-centric" innovation paradigm, including how user communities bolster their ability to innovate through specific technological tools and innovative social routines. Examples of how to use communities effectively, both as sources of inspiration and as collaborators.

COMMLD 573 Listening and Leadership (1-5, max. 5) Key listening behaviors as a core leadership attribute. Includes texts related to leadership, overview of eight styles of listening, and interview audio programs. Offered: AWSpS.

COMMLD 580 Topics in Emergent Technologies (1-5, max. 15) Focuses on a variety of topics on emergent technologies. Specific topics vary. Offered: AWSpS.

COMMLD 591 Independent Research (1-5, max. 10) Research projects designed and led by students with

faculty supervision. Credit/no-credit only. Offered: AWSpS.

COMMLD 593 Communication Internship (1-5, max. 15) Provides students an opportunity to connect their scholarship with communities outside academia by engaging in a project that uses communication theory to inform practical work. Credit/no-credit only. Offered: AWSpS.

COMMLD 600 Independent Study or Research (1-10) Intensive independent research project exploring a specific topic in communication leadership. Requires a committee, formal proposal, and public presentation of results. Prerequisite: Completion of a minimum of 50% of degree course work. Credit/no-credit only.

COMPARATIVE HISTORY OF IDEAS

CHID 101 Introduction to the Comparative History of Ideas (2) Provides a methodological, curricular, and intellectual introduction to comparative history of ideas. Teaches the importance of interdisciplinary inquiry in research and provides models for how to formulate, undertake, and present interdisciplinary research projects. Offered: AWSp.

CHID 110 The Question of Human Nature (5) **VLPA/I&S** Considers the relationship between the individual and his/her culture. Traces the evolution of the notion of human nature in Europe and the United States and compares this tradition with representations of the human being from other cultural traditions.

CHID 120 Yoga: Past and Present (5) **VLPA/I&S, DIV** Studies yoga and its history, practice, literature, and politics. From the ancient past to modern yoga, studies essential texts and ideas, as well as the effects of class, religion, gender, nationalism, development, Marxism, colonialism, and physical culture on yoga. Offered: jointly with RELIG 120; A.

CHID 205 Method, Imagination, and Inquiry (5) **VLPA** Examines ideas of method and imagination in a variety of texts, in literature, philosophy, and science. Particularly concerned with intellectual backgrounds and methods of inquiry that have shaped modern Western literature. Offered: jointly with ENGL 205.

CHID 206 Violence and Contemporary Thought (5) I&S, DIV Nicolaas P. Barr Modern and contemporary ideas about violence and their emergence as intellectual responses to historical events. Topics may include histories of physical violence, such as slavery, colonialism, or the Holocaust, as well as structural forms of violence. Offered: jointly with JEW ST 206; A.

CHID 207 Introduction to Intellectual History (5) I&S Ideas in historical context. Comparative and developmental analysis of Western conceptions of "community," from Plato to Freud. Offered: jointly with HSTCMP 207.

CHID 210 The Idea of the University: Ways of Learning, Exploring, and Knowing (5) I&S Considers different ways of learning, exploring, and knowing in the context of the historical development, social context, and impact of universities in general and of the University of Washington in particular. Includes reflective workshops on choosing areas of study (majors) in collaboration with Undergraduate Advising.

CHID 222 BioFutures (5) I&S/NW Explores key legal, ethical, cultural, scientific, and commercial aspects of the rapidly changing world of biotechnology and bioinformatics. Specifically asks how new discoveries in biology encourage us to rethink issues of ownership, communication, geography, identity, and artistic practice.

CHID 230 Introduction to Disability Studies (5) I&S, DIV J. WOIAK Introduces the field of disability studies. Focuses on the theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in the framing of disability. Offered: jointly with DIS ST 230/LSJ 230.

CHID 235 Representations of Disability in Popular Culture (5) I&S, DIV Social construction of 'disability' reflected in and shaped by popular culture. Examples from sports coverage, film, television, fashion, and art both by and about disabled people. Ways in which disability representations in the media reify, problematize, and/or challenge marginalization of this social status. Offered: jointly with DIS ST 235/SOC 235.

CHID 250 Special Topics: Introduction to the History of Ideas (5, max. 15) I&S Examines a different subject or problem from a comparative framework. Satisfies the Gateways major/minor requirement. Offered: AWSp.

CHID 260 Re-Thinking Diversity (5) I&S, DIV Bushnell Considers the notion of diversity from many scholarly perspectives and from personal engagements. Critically engages historical thinking about diversity and examines contemporary issues such as racism, sexism, and the cultural politics of difference.

CHID 270 Special Topics (5, max. 15) I&S Each special topics course examines a different subject or problem from a comparative framework.

CHID 280 Indigenous Encounters: Politics, Culture, and Representation in Latin America (5) I&S, DIV Garcia Explores the contemporary cultural and political transformations advanced by indigenous groups and their advocates in Latin America. Examines the concept of indigeneity, the cultural politics of indigenous mobilization, and the effects of international development policies on indigenous communities. Offered: jointly with JSIS A 280.

CHID 298 Pre-Departure Seminars (2) I&S Prepares students to participate in CHID international programs. Prerequisite: students must be accepted to an international program prior to registration. Credit/no-credit only. Offered: AWSpS.

CHID 309 Marx and the Marxian Tradition in Western Thought: The Foundations of Modern Cultural Criticism I (5) I&S Critically examines the formation of modern Western culture, politics, and society through an historical analysis of the work of Karl Marx and the thinkers, artists, and activists who assimilated and transformed Marxian concepts from the late nineteenth century to the present. Offered: jointly with HSTCMP 309.

CHID 314 The Psychoanalytic Revolution in Historical Perspective (5) I&S Genesis and evolution of Freudian theory in context of the crisis of liberal-bourgeois culture in central Europe and parallel developments in philosophy, literature, and social theory. Emergence and division of the psychoanalytic movement. Transformation of psychoanalysis in British, French, and especially

American cultural traditions. Offered: jointly with HSTCMP 314.

CHID 319 Nietzsche and the Nietzschean Legacy in Western Thought: Foundations of Modern Cultural Critique II (5) I&S Critically examines the formation of modern Western politics, society, and cultures through a historical analysis of the thought of Friedrich Nietzsche and the thinkers, artists, and activists who assimilated and transformed the Nietzschean perspective during the twentieth century. Offered: jointly with HSTCMP 319.

CHID 332 Disability and Society (5, max. 15) I&S Concentrates on contemporary issues in disability studies, focusing on the thematic frameworks of rights, identities, values, and science/medicine. Offered: jointly with DIS ST 332/LSJ 332.

CHID 335 Sex, Gender, and Disability (5) I&S, DIV Examines ways that disability, sex, and gender are connected as socially constructed categories. Topics include the ways in which the sexuality of people with disabilities is experienced and represented, the intersection of disability and gender inequality, and how the field of disability studies relates to and can transform other theoretical approaches to gender and sex. Offered: jointly with DIS ST 335/GWSS 335.

CHID 337 Social Construction of Madness and Mental Health in the United States (5) I&S The construct of "mental health" and mental "un-health" from a sociological perspective. How categories such as mental illness, intellectual and developmental disability, cognitive impairment, and Mad Studies developed in the United States. Offered: jointly with DIS ST 337/SOC 337.

CHID 350 Women in Law and Literature (5) I&S/VLPA, DIV Representations of women in American law and literature. Considers how women's political status and social roles have influenced legal and literary accounts of their behavior. Examines how legal cases and issues involving women are represented in literary texts and also how law can influence literary expression. Offered: jointly with GWSS 350.

CHID 370 The Cultural Impact of Information Technology (5) VLPA/I&S Utilizing approaches from the history of technology, cultural studies, and literary theory, seeks to analyze the cultural and

social impact of information technology. Considers how information technologies impact our relationships with others, our concept(s) of self, and the structure of the communities to which we belong. Offered: jointly with COM 302.

CHID 380 Theories In the Study of Religion (5) I&S C. *NOVETZKE, J. WELLMAN* Provides a variety of approaches to the study of religion centered on examining the relationship between religion and modernity in the tradition of post-enlightenment, Euro-American scholarship. Examines theories of religion across disciplines: history, anthropology, sociology, Marxism, feminism, postmodernism, political theology, and Freudian psycho-analytical theory. Offered: jointly with RELIG 380.

CHID 390 Colloquium in the History of Ideas (5) I&S *Phillip S Thurtle* Investigates the theoretical and practical problems of interpretation and knowledge production in a topic chosen by the instructor. Primarily for majors. Prerequisite: CHID 101.

CHID 395 Interdisciplinary Praxis Lab (5) Phillip S Thurtle, MariaElena Garcia, Caroline C Simpson As preparation for senior thesis work, introduces the importance of reflection combined with research methods in the form of a research praxis. Prerequisite: CHID 390. Offered: ASP.

CHID 399 Internship (5, max. 10) Off-campus engagement with a local, national, or international organization, in an apprenticeship or internship capacity. Supervised by on-site field supervisor and Comparative History of Ideas faculty member.

CHID 417 Enter the Dragon: Seminar on World Cultures through the Asian Martial Arts (5) I&S *Novetzke* Examines how the martial arts have preserved religious, cultural, and philosophical aspects of the world areas of their origin, as well as the new cultures and international communities that have adopted and reinvented their practices and philosophies, including India, China, Japan, Korea, Brazil, and Euro-America. Offered: jointly with JSIS B 417.

CHID 419 Disability in the Arts (5) I&S/VLPA, DIV Examines how the expressive capacities of the arts capture, complicate, and transform the experience of disability. Recommended: DIS ST 230, LSJ 230, or CHID 230. Offered: jointly with DIS ST 419.

CHID 430 Topics in Disability Studies (1-5, max. 15)

I&S Theoretical, critical, analytical, or comparative examination of an issue or issues in Disability Studies. Topics vary. Prerequisite: either DIS ST/CHID/LSJ 230, DIS ST 332, DIS ST 433, or DIS ST 434. Offered: jointly with DIS ST 430/LSJ 430.

CHID 433 Disability Law, Policy, and the Community

(5) I&S, DIV Addresses the history of legal rights of disabled people, U. S. disability policy, and the role of community activism and other forces in policy development and systems change. Introduces the existing social service system that affects disabled people. Offered: jointly with DIS ST 433/LSJ 433.

CHID 434 Civil and Human Rights Law for Disabled

People (5) I&S, DIV *Brown* Expands knowledge of civil and human rights for disabled people. Examines the American perspective (ADA) as well as various international models including the United Nations' International Human Rights treaties as they relate to disabled people. Offered: jointly with DIS ST 434/LSJ 434; A.

CHID 437 Crime, Law, and Mental Illness (5) I&S,

DIV Explores experiences of those with mental illness in the criminal justice system and involuntary civil commitment system. Emphasis on societal responses including the emergence of therapeutic courts and specialized police training. Examines how courts, legislature, and communities balance public safety and civil liberties. Offered: jointly with DIS ST 437/LSJ 437.

CHID 442 Roma Eterna (5) VLPA/I&S Explores the historical layers of meaning in the artifacts and monuments of Rome to reflect on its transformation over time as a symbol of the human aspiration for both temporal order and spiritual and aesthetic transcendence. Specific periods considered for reading and daily site visits include Ancient Rome; Imperial Rome; Medieval Rome, Renaissance Rome; Baroque Rome; Romanticism, The Grand Tour and the Risorgimento; and Fascist Rome.

CHID 444 Eye and Mind (5) VLPA/I&S/NW P.

THURTL Investigates life as an emergent phenomenon across the disciplines of biophilosophy, art, art history, literary criticism, and information studies with an emphasis on interdisciplinary methods. Addresses key issues in phenomenology,

social theory, contemporary bioart, and complexity studies.

CHID 459 Narrative Journalism (5) VLPA/I&S

Introduces the rigorous reporting and literary writing techniques of narrative journalism. Concentrates on producing nonfiction narrative articles for publication. Offered: jointly with COM 459.

CHID 461 Democracy and Development in Central and Eastern Europe: Study Abroad (5) I&S

Smith Examines the relationship between democratization, economic development, and social transformation in Central and Eastern Europe. Offered on CHID study abroad programs in Central and Eastern Europe. Offered: ASpS.

CHID 470 CHID Study Abroad (1-5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 471 Europe Study Abroad (5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 472 Latin America Study Abroad (5, max. 15)

I&S For participants in study-abroad program. Specific course content varies.

CHID 473 Africa Study Abroad (5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 474 Asia Study Abroad (5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 475 East Asia Study Abroad (5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 476 South Pacific Study Abroad (5, max. 15)

I&S For participants in study-abroad program. Specific course content varies.

CHID 477 Middle East Study Abroad (5, max. 15) I&S

For participants in study-abroad program. Specific course content varies.

CHID 480 Special Topics: Advanced Study of the History of Ideas (5, max. 15) I&S

Examines a

different subject or problem from a comparative framework with an interdisciplinary perspective. Satisfies the Gateways major/minor requirement. Offered: AWSp.

CHID 484 Colonial Encounters (5) I&S History of European colonialism from the 1750s to the present, with an emphasis on British and French colonial encounters. Offered: jointly with HSTCMP 484.

CHID 485 Comparative Colonialism (5) I&S, DIV *Vicente L. Rafael* Explores the historic roots and practices of colonialism throughout the world, focusing on the roles of nationalism, cosmopolitanism, and imperial domination. Treats colonialism as a world event whose effects continue to be felt and whose power needs to be addressed. Offered: jointly with HSTCMP 485.

CHID 487 Culture, Politics, and Violence in Latin America (5) I&S, DIV *Garcia* Examines notions of "otherness" and the power to label as central to understanding inequality, human rights, and social struggle. Uses academic texts, films, documentaries, historical fiction, plays, and testimonials to interrogate the complexities of violence and social justice in Latin America, one of the most unequal regions in the world. Offered: jointly with JSIS A 485.

CHID 488 Encountering Animals: Ethics, Culture, and Politics (5) I&S, DIV *Garcia* Explores some ethical, political, and cultural questions regarding non-human animals and invites student to engage in debates about companion animals, the industrial food complex, zoos, and links between race, class, gender, sexuality, and species.

CHID 490 Research Seminar (5) VLPA/I&S Intensive readings in specific topic. Students complete individual research projects. Satisfies the CHID senior thesis requirement for students who declared the CHID major prior to Summer 2014. Prerequisite: CHID 390.

CHID 491 Senior Thesis (5-) I&S Critical and methodological issues. Required of candidates for an Honors degree. Prerequisite: CHID 390.

CHID 492 Senior Thesis (-5-) I&S Critical and methodological issues. Required of candidates for an Honors degree.

CHID 493 Senior Thesis (-5) I&S Research and writing of thesis under supervision of a faculty member. Required of candidates for an Honors degree.

CHID 495 Close Readings in Theory (1-5, max. 15) I&S Close readings of a specific work, author, artist, or body of work.

CHID 496 Focus Groups (1-2, max. 4) Credit/no-credit only.

CHID 497 Peer Facilitators (5, max. 20)

CHID 498 Special Colloquia (1-5, max. 20) I&S Each colloquium examines a different subject or problem from a comparative framework.

CHID 499 Undergraduate Independent Study or Research (1-5, max. 10) Supervised independent study for students who wish to pursue topics not available in regular course offerings.

DANCE

DANCE 100 Understanding Dance (5) VLPA

Introduces the aesthetics and creative processes in dance and choreography. Pays attention to how dance is practiced in social arenas, popular entertainment, and concert settings. Includes independent field trips to local dance settings. Offered: AWSp.

DANCE 101 Dance and the American Experience (5) VLPA

Investigates shared, conflicting, and shifting notions of the "American experience" as expressed in 20/21st century American dance. Investigates real, imagined, and idealized portrayals of the American experience as enacted on the concert stage, in film, and on television. Engages students in critical discourse on issues of identity in American society. Offered: AWSpS.

DANCE 102 Introduction to Contemporary Modern Dance (2-3, max. 6) VLPA

Introduces contemporary approaches to Western modern concert dance. Primarily studio-based course. Includes attendance at outside events. Offered: AWSpS.

DANCE 103 Introduction to Ballet (2-5, max. 10) VLPA

Introduces ballet as a movement art form.

Studio course focusing on movement skill acquisition. Includes attendance at outside events.

DANCE 104 Beginning Contemporary Modern Technique (2/3, max. 20) VLPA Beginning-level technique. Development of basic contemporary modern dance movement. Prerequisite: DANCE 102. Offered: A.

DANCE 105 Beginning Contemporary Modern Technique (2/3, max. 20) VLPA Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 102, DANCE 104, or DANCE 106. Offered: W.

DANCE 106 Beginning Contemporary Modern Technique (2/3, max. 20) VLPA Beginning-level technique. Development of basic modern dance movement and terminology. Prerequisite: either DANCE 102, DANCE 104, or DANCE 105. Offered: Sp.

DANCE 107 Beginning Ballet (2/3, max. 20) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: DANCE 103. Offered: A.

DANCE 108 Beginning Ballet (2/3, max. 20) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: either DANCE 103, DANCE 107, or DANCE 109. Offered: W.

DANCE 109 Beginning Ballet (2/3, max. 20) VLPA Beginning-level technique. Development of basic ballet technique and terminology. Prerequisite: DANCE 108. Offered: Sp.

DANCE 110 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique.

DANCE 111 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique. Prerequisite: one of DANCE 103, DANCE 110, or DANCE 112. Offered: W.

DANCE 112 Jazz Technique I (1-4, max. 8) VLPA Introduction to jazz technique. Prerequisite: one of DANCE 103, DANCE 110, or DANCE 111. Offered: Sp.

DANCE 125 Beginning Tap (2-3, max. 12) VLPA Introduction to tap technique. Prerequisite: DANCE 110, or DANCE 111, or DANCE 112. Offered: AWSp.

DANCE 156 Introduction to Dance (4, max. 8) VLPA Introductory studio experience in several dance forms. May include (alphabetical order) ballet, composition, contemporary ballet, improvisation, modern, street and club dance styles, as well as other forms. Offered: S.

DANCE 166 Dance Composition I (5) VLPA Introduction to the principles of dance composition through improvisation.

DANCE 201 Intermediate Contemporary Ballet Technique (2/3, max. 20) VLPA Intermediate level. Expansion of ballet vocabulary. Refinement of movement skills and musicality. Prerequisite: DANCE 109. Offered: A.

DANCE 202 Intermediate Contemporary Ballet (2/3, max. 20) VLPA Intermediate level. Expansion of ballet vocabulary. Refinement of movement skills and musicality. Prerequisite: DANCE 201. Offered: W.

DANCE 203 Intermediate Contemporary Ballet (2/3, max. 20) VLPA Intermediate level. Expansion of ballet vocabulary. Refinement of movement skills and musicality. Prerequisite: DANCE 202. Offered: Sp.

DANCE 204 Intermediate Contemporary Modern Technique (2/3, max. 20) VLPA Intermediate level technique. Continued development of all beginning areas and expansion of movement vocabulary and dynamic range. Prerequisite: either DANCE 104, DANCE 105, DANCE 106, DANCE 205, or DANCE 206. Offered: A.

DANCE 205 Intermediate Contemporary Modern Technique (2/3, max. 20) VLPA Intermediate level technique. Continued development of all beginning areas and expansion of movement vocabulary and dynamic range. Prerequisite: either DANCE 104, DANCE 105, DANCE 106, DANCE 204, or DANCE 206. Offered: W.

DANCE 206 Intermediate Contemporary Modern Technique (2/3, max. 20) VLPA Intermediate level technique. Continued development of all beginning areas and expansion of movement vocabulary and dynamic range. Prerequisite: either DANCE 104, DANCE 105, DANCE 106, DANCE 204 or DANCE 205. Offered: Sp.

DANCE 210 Jazz Technique II (1-4, max. 8) VLPA
Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 112, DANCE 210, DANCE 211, or DANCE 212. Offered: A.

DANCE 211 Jazz Technique II (1-4, max. 8) VLPA
Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 210, DANCE 211, or DANCE 212. Offered: W.

DANCE 212 Jazz Technique II (1-4, max. 8) VLPA
Intermediate-level jazz technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 210, DANCE 211, or DANCE 212. Offered: Sp.

DANCE 225 Tap Technique II (2-3, max. 12) VLPA
Intermediate-level tap technique. Continued development of beginning areas. Expansion of movement vocabulary. Prerequisite: DANCE 125. Offered: AWSp.

DANCE 230 Alternative Movement Studies (1-3, max. 9) VLPA Introduction to an alternative approach to movement study. Topics vary and may include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 231 Folk-Social Dance Forms (1-3, max. 12) VLPA Studio course in folk dance and social dance forms. Topics vary, and may include salsa, ballroom, or swing. Prerequisite: one year of previous dance experience.

DANCE 232 Intermediate Alternative Movement Studies (1-3, max. 9) VLPA Study of an alternative approach to movement at the intermediate level. Topics vary and may include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 233 Advanced Alternative Movement Studies (1-3, max. 9) VLPA Study of an alternative approach to movement at the advanced level. Topics vary and may include pilates, yoga, Feldenkrais, or other somatic practices.

DANCE 234 World Dance and Culture (3/5, max. 11) VLPA/I&S Presents selected dance idioms as they relate to ethnicity in their performance, aesthetics,

and history. Topics vary. May have studio component.

DANCE 235 Integrated Dance: Training and Composition (1-3, max. 9) VLPA/I&S Investigates and explores ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses composition and movement technique utilized by integrated dance. May culminate in performance in faculty dance concert.

DANCE 236 Salsa and Latin Dance (2-3, max. 12) VLPA Juliet McMains Offers instruction in salsa and other Latin dances, including meringue, bachata, and cha cha cha. Students learn both solo (shine) steps and partnered turns. Primarily focuses on studio practice. Includes some reading and writing assignments and an outing to a salsa club.

DANCE 237 Ballroom Dance (2-3, max. 12) VLPA J. MCMAINS Provides instruction in ballroom dances (e.g. waltz, foxtrot, rumba, quickstep, samba, cha cha) . Focuses on American style social dancing with particular attention to techniques for leading and following. Primarily focuses on studio practice. Includes reading and writing assignments, historical/cultural significance of ballroom dance, and an outing to social ballroom dance.

DANCE 238 Swing Dance (2-3, max. 12) VLPA J. MCMAINS Provides instruction in swing dancing. Includes: East Coast Swing, Charleston, Lindy Hop, Balboa, and West Coast Swing. Primarily focuses on studio practice. Uses reading, writing, and other assignments to contextualize the history and social significance of the dances.

DANCE 239 Tango (2-3, max. 12) VLPA J. MCMAINS Provides instruction in tango dancing. Focuses on milogeuro and salon style Argentine tango. Introduces tango Nuevo, tango vals, and milonga. Primarily focuses on studio practice. Includes some reading and writing assignments, introduction to tango dance and music history, and an outing for social dancing.

DANCE 240 Street and Club Dances (2-3, max. 6) I&S/VLPA Studio and lecture/discussion about dances that originated and continue to evolve from Hip Hop culture. Addresses the aesthetic, social, and cultural differences between styles rooted in

clubbing/battling/cyphering/sessioning. Exposes students to legacy of the forms. Offered: A.

DANCE 241 Intermediate Folk and Social Dance Forms (2/3, max. 12) VLPA Studio course in folk dance and social dance forms at the intermediate level of instruction. Topics include salsa and Latin dance, ballroom, tango, or swing dance. Prerequisite: either DANCE 231, DANCE 236, DANCE 237, DANCE 238, or DANCE 239.

DANCE 242 Music in Relation to Dance (3) VLPA Moore Provides students with music skills necessary to the areas of dance pedagogy, performance, choreography, dance analysis/criticism, and production. Includes an introduction to music theory, compositional and rhythmic analysis, music for dance class, and training on music/sound editing equipment. Offered: W.

DANCE 245 Dance Improvisation (2-3, max. 12) VLPA Introduction to Dance Improvisation as a movement practice, a performance technique, and a tool for making choreography. Primary focus on attention and presence as essential components for the improvising artist. Offered: AWSp.

DANCE 250 Cross-Cultural Dance Studies (1-5, max. 8) VLPA/I&S, DIV J. MCMAINS Offers a cross-cultural examination of theatrical, social, and sacred dance forms from different Afro-diasporic, Latin, Asian, American, and European cultures. Students compare how racial, ethnic, national, and gender identity are expressed and contested through specific dance practices. Offered: AW.

DANCE 251 The Creative Process (5) VLPA Salk Explores the creative process of some of the major artists of the last century, with a particular emphasis on dance. Hones critical thinking, analytical skills, and research-based writing. Studio exploration, lectures, and discussions covering approaches to artistic creation, critical thinking, and research. Offered: Sp.

DANCE 266 Dance Composition II (3-5, max. 10) VLPA Dance composition in relation to music. Emphasis on solos and small groups. Prerequisite: DANCE 166. Offered: W.

DANCE 270 Dance Performance Activities (1-3, max. 12) VLPA Bracilano May include performance or

choreography in Dance-program produced concerts under faculty supervision. Credit/no-credit only.

DANCE 271 Dance Production Crew (1-3, max. 12) VLPA Supervised dance crew experience in dance program produced concerts. Credit/no-credit only.

DANCE 275 Diaspora Negra: Afro-Latinx Dance Traditions (3/5, max. 10) I&S/VLPA, DIV Explores dance traditions among various Afro-Latinx cultures, the history, politics and the role of performance in imagining, constructing and projecting identities. Through dance practice, readings and discussions students will investigate participatory vs. presentational performance and dance as a tool for activism within the larger social, political, and cultural contexts in which these traditions emerged, are practiced and continue to evolve. Recommended: at least one quarter of dance technique, or three months of community-based dance classes.

DANCE 280 African Dance Techniques (2-3, max. 18) VLPA Studio instruction in traditional and contemporary dance techniques of Africa and the African diaspora.

DANCE 285 African Dance and Culture (3-5, max. 10) I&S/VLPA, DIV Integrated studio and academic study in specific African dance techniques including the sociohistorical context of their development, dissemination, and current practice.

DANCE 286 Special Topics in Street and Club Dances (2-3, max. 18) VLPA Street Styles, is an umbrella term that is currently used to describe dance forms such as Breaking, Popping, Strutting, Flexin', Tutting, and Locking. Club dance styles are Hip Hop party dances, House, Vogue, and Waacking. Instructors for this course bring one or more dance styles to you in this movement-based technique class. Recommended: One quarter of dance or equivalent dance experience. Offered: AWSpS.

DANCE 287 Capoeira (2-3, max. 9) VLPA Practice-based instruction in the Afro-Brazilian art of capoeira, including movement, music, culture, history.

DANCE 290 Forces and Figures in American Jazz Dance (3) VLPA/I&S Addresses multi-cultural influences that American vernacular dance and

music contributed to the development and presentation of musical theatre, dance, film and stage traditions in American popular entertainment. Examines how the trajectories of the African Diaspora impacted developments in these distinct arenas of the American entertainment industry.

DANCE 295 Creativity as Research: Experimentation and Play (5) VLPA Examines creative research in the arts and the natural overlap with research in other fields. Individual and collaborative projects explore research through the lens of digital art, dance, science, and theater. Offered: jointly with DRAMA 285/DXARTS 295; A.

DANCE 301 Advanced Contemporary Ballet (2/3, max. 20) VLPA Advanced level. Performative skills; alignment and mechanics; phrasing and expressivity. Prerequisite: DANCE 203. Offered: A.

DANCE 302 Advanced Contemporary Ballet (2/3, max. 20) VLPA Advanced level. Performative skills; alignment and mechanics; phrasing and expressivity. Prerequisite: DANCE 301. Offered: W.

DANCE 303 Advanced Contemporary Ballet (2/3, max. 20) VLPA Advanced level. Performative skills; alignment and mechanics; phrasing and expressivity. Prerequisite: DANCE 302. Offered: Sp.

DANCE 304 Advanced Contemporary Modern Technique (2/3, max. 20) VLPA Advanced level technique. Expansion of movement vocabulary and performance skills. Prerequisite: either DANCE 204, DANCE 205, DANCE 206, DANCE 305, or DANCE 306. Offered: A.

DANCE 305 Advanced Contemporary Modern Technique (2/3, max. 20) VLPA Advanced level technique. Expansion of movement vocabulary and performance skills. Prerequisite: either DANCE 204, DANCE 205, DANCE 206, DANCE 304, or DANCE 306. Offered: W.

DANCE 306 Advanced Contemporary Modern Technique (2/3, max. 20) VLPA Advanced level technique. Expansion of movement vocabulary and performance skills. Prerequisite: either DANCE 204, DANCE 205, DANCE 206, DANCE 304, or DANCE 305. Offered: Sp.

DANCE 310 Jazz Technique III (2-3, max. 9) VLPA Advanced-level jazz technique. Styles vary. Prerequisite: DANCE 212. Offered: A.

DANCE 311 Jazz Technique III (2-3, max. 9) VLPA Advanced-level jazz technique. Investigation of jazz styles such as Afro-Caribbean, Luigi, and musical theatre. Prerequisite: DANCE 310. Offered: W.

DANCE 312 Jazz Technique III (2-3, max. 9) VLPA Advanced-level jazz technique. Investigation of jazz styles such as Afro-Caribbean, Luigi, and musical theatre. Prerequisite: either DANCE 310 or DANCE 311. Offered: Sp.

DANCE 324 Partnering Techniques (1-2, max. 6) VLPA Studio course in partnering techniques used in social dance and contemporary dance practices, or classical dance. Prerequisite: intermediate level technique.

DANCE 335 Integrated Dance: History, Methodology, and Praxis (3, max. 9) I&S/VLPA Investigates and practices ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses the history, background, and varying practices of integrated dance.

DANCE 336 Salsa and Latin Dance Techniques II (2-3, max. 9) VLPA *Juliet McMains* Studio course focusing on increasing salsa dance technique and vocabulary for students at the advanced beginning/intermediate level. Students also study history, music, and culture of Afro-Caribbean dance. Prerequisite: DANCE 236; recommended: DANCE 236 or at least 30 hours of salsa instruction and practice.

DANCE 339 Tango II (2-3, max. 12) VLPA *Juliet McMains* Studio instruction in Argentine tango at the advanced-beginning and intermediate levels. Focuses on refining technical skills in leading and following as well as mastering intermediate vocabulary, including giros, sacadas, ganchos, and boleos. Education in tango music and history may also be included. Prerequisite: DANCE 239. Offered: W.

DANCE 344 Topics in Dance History (3-5, max. 10) VLPA/I&S Covers topics in Western theatre dance history from Renaissance court dance through the

twentieth century. Examines developments and stylistic trends in ballet and modern dance in cultural/historical/political context. Includes assigned readings and primary source materials. In-depth analysis of dances on video guides a discussion of form, content, interpretation, and critical reception.

DANCE 345 Contemporary Dance History (3-5) VLPA/I&S J. *SALK* Examines the development of social and performance-based dance from the beginning of the 20th century to the present with particular emphasis on major international stylistic trends, cultural influences, and principal artists and their work.

DANCE 350 Dance/Performance Ethnography (3) VLPA/I&S J. *MCMAINS* Explores theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses primarily on dance. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance arts. Offered: jointly with ANTH 349.

DANCE 354 Laban Movement Analysis (5) VLPA Introduction to the movement theories of Rudolph Laban and his proteges. Coursework includes effort/shape, space harmony, and an introduction to Labanotation. May include collaboration with other disciplines. Prerequisite: DANCE 166.

DANCE 366 Dance Composition III (3-5, max. 10) VLPA Dance composition in relation to production, including elements of technology. Emphasis on larger group works. Prerequisite: DANCE 166. Offered: Sp.

DANCE 371 Choreographic Workshop (2-5, max. 12) VLPA Performing experience for students in pieces choreographed by faculty members and guest choreographers.

DANCE 380 Intermediate African Dance Techniques (2/3, max. 12) VLPA Studio instruction in traditional and contemporary dance techniques of Africa and the African diaspora. Prerequisite: DANCE 280 or DANCE 285; recommended: at least 3 months of regular African dance classes/practice.

DANCE 410 Chamber Dance Production (3, max. 18) VLPA H. *WILEY* Focuses on the restaging, rehearsal, and performance of significant choreography from the modern dance canon. Readings, viewings, and oral history provide context for works being staged. Culminates in a professional public performance. Credit/no-credit only. Offered: S.

DANCE 414 Dance Research Symposium (1) VLPA J. *MCMAINS* Introduces students to contemporary dance research through lecture series featuring invited guest speakers. Credit/no-credit only.

DANCE 415 Research Methods I (3) VLPA J. *MCMAINS* Surveys theoretical modes of inquiry in current dance scholarship. Offered: Sp.

DANCE 416 Research Methods II (3) VLPA Focuses on designing an original research project, conducting research, and writing a scholarly paper suitable for presentation at an undergraduate research conference. Practice in conference presentation. Prerequisite: DANCE 415. Offered: A.

DANCE 417 Dance Honors Thesis (*, max. 12) VLPA Involves supervised independent research on a specific topic related to a student honors project involving research, writing, performing and/or creative work. Students work with a faculty mentor to design their specific honors thesis work through this course on their way to completing a significant research project in Dance. Offered: AWSp.

DANCE 420 Dance Aesthetics (3) VLPA/I&S *Woody* Philosophical investigation of the expressive elements of dance. Reading and discussion of the concepts of beauty, style, and aesthetic theory.

DANCE 450 Dance Internship (1-6, max. 6) VLPA Supervised internship experiences at pre-approved off-site location in the performing arts/non-for profit arts sectors. Credit/no-credit only. Offered: AWSpS.

DANCE 480 Career Explorations for Dance Majors (3) VLPA H. *Wiley* Dance majors will explore their strengths and interests in real world career options. Includes guest professionals, cover letter and resume development, grant writing and job shadowing. Offered: W.

DANCE 490 Special Studies in Dance (1-5, max. 12)
VLPA Special studies designed to address contemporary and historical concerns in the field of dance.

DANCE 493 Anatomy for Dance (3-5) VLPA/NW H.
WILEY Anatomy of the musculoskeletal system and its applications in dance movement. Offered: A.

DANCE 494 Dance Teaching Methodologies (3-5)
VLPA Jennifer Salk Introduction to dance pedagogy, including educational theory, motor learning, and biomechanical principles and music as it relates to the teaching of dance. Prerequisite: DANCE 242; and DANCE 493, which may be taken concurrently. Offered: W.

DANCE 499 Undergraduate Independent Study (*, max. 10)

DANCE 510 Chamber Dance Production (4, max. 18)
H. Wiley Focuses on the restaging, rehearsal, and performance of significant choreography from the modern dance canon. Readings, viewings, and oral history provide context for works being staged. Culminates in a professional public performance. Credit/no-credit only. Offered: S.

DANCE 514 Dance Research Symposium (1)
McMains Introduces students to contemporary dance research through lecture series featuring invited guest speaker. Credit/no-credit only.

DANCE 515 Dance Research Methods (3) McMains
 Survey of theoretical modes of inquiry in current dance scholarship. Offered: Sp.

DANCE 516 Research Methods II (3) McMains
 Focuses on designing an original research project, conducting research, and writing a scholarly paper suitable for publication in a juried journal or conference presentation. Practice in conference presentation. Offered: S.

DANCE 519 Influential Learning Theories in Dance Practice (2) Readings, discussion, observation, and writing relating to influential learning theories as they pertain to dance.

DANCE 520 Dance in Higher Education (3) Wiley
 Discussion, writing, and observation of dance in higher education. Offered: A.

DANCE 521 Dance Administration (3) Cooper
 Readings and discussion relating to dance administration in college and professional settings. Topics include: curricular development, university governance, development of curriculum vitae and teaching portfolio, preparation for tenure and promotion, and current issues related to dance as a performing art within the university structure.

DANCE 530 Graduate Dance Composition (2, max. 6) Addresses creative process, directing, and critical analysis in dance composition. Alternate years: focus on interdisciplinary collaborative projects. Offered: A.

DANCE 531 MFA Concert Production (3, max. 9)
 Public performance of MFA choreography. On alternate years this is a collaborative concert between MFA choreographers and artists working in another discipline. Offered: Sp.

DANCE 536 Integrated Dance: History, Methodology, and Praxis (3, max. 9) VLPA/I&S Koch
 Investigates and practices ways of teaching and creating dance suitable for diverse participants with a broad range of physical and conceptual abilities. Addresses the history, background and varying practices of integrated dance.

DANCE 544 Topics in Dance History (3-5, max. 10)
Cooper Covers topics in Western theatre dance history from Renaissance court dance through the twentieth century. Examines developments and stylistic trends in ballet and modern dance in cultural/historical/political context. Includes assigned readings and primary source materials. In-depth analysis of dances guides a discussion of form, content, interpretation, and critical reception.

DANCE 545 Contemporary Dance History (3-5) Salk
 Examines the development of social and performance-based dance from the beginning of the twentieth century to the present with particular emphasis on major international stylistic trends, cultural influences, and principal artists and their work.

DANCE 550 Dance Performance Ethnography (3)

McMains Theoretical and practical experience in dance and performance ethnography, ethnology, and oral history. Introduces theories and methods of ethnographic fieldwork, ethnographic writing, and ethnologic analysis. Focuses on dance methods and theories. Also discusses methods and theories applicable to other physical practices such as music, theatre, sports, and performance art. Offered: jointly with ANTH 549; W.

DANCE 570 Dance Production Seminar (3)

Surveys the process of dance production from audition to performance. Managing design, technology, and personnel to support the creative process from conceptual stages to production. Offered: S.

DANCE 580 Dance Teaching and Mentorship (1, max. 2) Mentorship and guidance for pre-doctoral lecturers. Prepares students for a permanent university faculty position. Offered: S.

DANCE 590 Dance Teaching Methodologies (3-5)

Salk Introduction to dance pedagogy with an emphasis on motor learning skills and biomechanics. Practical teaching experience. Offered: W.

DANCE 595 Master's Project (3) Project in area of interest developed in consultation with faculty adviser and supported by elective courses. Full faculty approval of proposed project by end of first year. Formal presentation, appropriate to project's content, presented to full faculty during second year. Project culminates in the teaching of an undergraduate dance course.

DANCE 600 Independent Study or Research (*-)

DIGITAL ARTS AND EXPERIMENTAL MEDIA

DXARTS 198 Digital Arts Seminar (1-5, max. 10)

VLPA Topics vary and are announced during the preceding quarter. Taught by UW faculty and visiting artists, engineers, scientists, and humanities scholars.

DXARTS 200 Digital Art and New Media: History, Theory, and Practice (5) VLPA *Afroditi Psarra* Investigates and illuminates Digital Art and New

Media from a creative, theoretical, and historical perspective. Towards an exploration and discovery of the future of art, examines the paradigm shifts implicit in the inception and expansion of media art, as well as the dynamic core ideas that underscore digital art practices in the early twenty-first century. Offered: AWSpS.

DXARTS 295 Creativity as Research:

Experimentation and Play (5) VLPA Examines creative research in the arts and the natural overlap with research in other fields. Individual and collaborative projects explore research through the lens of digital art, dance, science, and theater. Offered: jointly with DANCE 295/DRAMA 285; A.

DXARTS 430 Algorithmic Processes in the Arts (5)

VLPA Basics of computer programming and algorithmic thinking in digital arts. Emphasis on experimental art forms where building of custom software is integral to realizing an artistic vision.

DXARTS 450 Digital Video Foundations (5) VLPA

An introduction to experimental video art. Provides a theoretical and practical foundation for creating video for installation, performance, or screen. Students attend lectures and complete assignments to create original video works. Workshops include hands-on introductions to digital video production: cameras, lenses, sound, lighting, motion control, and non-linear editing.

DXARTS 451 Experiments in Video Art I (5) VLPA

Introduces real-time video software for the creation of immersive installations, multimedia performance, and video art. Workshops demonstrate advanced compositing, multi-channel video, time delay, and live-image processing. Students explore the intersections of experimental video and contemporary art through individual projects, discussions, and critiques.

DXARTS 452 Experiments in Video Art II (5) VLPA

Students work on individual projects while exploring such research topics as robotic camera motion, computer vision, interactivity, and video integration with physical I/O systems. Prerequisite: DXARTS 451. Offered: W.

DXARTS 460 Digital Sound (5) VLPA Foundations of digital sound for digital arts applications. Project-based course focused on creating experimental

sound compositions. Overview of the history of electronic music and analysis of important works from its canon. Acoustics, psychoacoustics and digital sound theory. Digital signal processing and recording techniques. Multi-track, recording, editing, mixing, and mastering using Digital Audio Workstations (DAW) . Offered: Sp.

DXARTS 461 Digital Sound Synthesis (5) VLPA

Introduction to software sound synthesis techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes acoustics and psychoacoustics; virtual synthesizers; wavetable synthesis; additive synthesis; ring, amplitude, and frequency modulation synthesis; granular synthesis; and noise and subtractive synthesis. Offered: jointly with MUSIC 401; A.

DXARTS 462 Digital Sound Processing (5) VLPA

Introduction to digital sound processing techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes digital effects; delay lines; introduction to digital filtering; FIR and IIR filters; reverberation; virtual-room acoustics and sound location; time-domain transformation of sound; and granulation and time stretching. Prerequisite: DXARTS 461/MUSIC 401. Offered: jointly with MUSIC 402; W.

DXARTS 463 Advanced Digital Sound Synthesis and Processing (5) VLPA

Advanced sound processing and synthesis techniques. Includes sound time warping; analysis-synthesis techniques; linear predictive coding; the phase vocoder; frequency-domain sound transformations; introduction to physical modeling. Prerequisite: DXARTS 462/MUSIC 402. Offered: jointly with MUSIC 403; Sp.

DXARTS 470 Sensing and Control Systems for Digital Arts (5) VLPA

Covers basic electronics for integrating sensors and actuators into art installations and performance. Includes real-time systems programming and design using simple software tools for controlling video and audio as well as hardware tools for data I/O to control electromechanical and sensing devices.

DXARTS 471 Mechatronic Art, Design, and Fabrication I (5) VLPA

Part one of three-quarter

studio sequence exploring mechatronic art systems. Includes mechanics, electronics, software, advanced fabrication methods and real-time audio/video processing. Offered: A.

DXARTS 472 Mechatronic Art, Design, and Fabrication II (5) VLPA

Part two of three-quarter studio sequence exploring mechatronic art systems. Includes mechanics, electronics, software, advanced fabrication methods and real-time audio/video processing. Prerequisite: DXARTS 471. Offered: W.

DXARTS 490 Special Topics in Digital Arts and Experimental Media (3-5, max. 15)

Taught by UW faculty and visiting artists, engineers, scientists, and humanities scholars.

DXARTS 491 Senior Thesis I (5-) VLPA

Introductory course of the senior thesis sequence. Includes weekly seminars, selection of a thesis topic, and contract with an appropriate faculty adviser. Majors and senior standing only. Offered: A.

DXARTS 492 Senior Thesis II (-5-) VLPA

Second course of the senior thesis sequence. Majors and senior standing only. Prerequisite: DXARTS 491. Offered: W.

DXARTS 495 DXARTS Production Studio (3-15, max. 30) VLPA

Intensive, large-scale, collaborative, experimental media-based art projects. Examples include major interactive art installations, cinematic works, live computer music performances, and mechatronic or telematic collaborations. Topic vary.

DXARTS 499 Undergraduate Research (1-5, max. 12)

Supervised independent work on projects and research. Offered: AWSpS.

DXARTS 500 Research Studio (3, max. 30)

Covers recent advances and current trends in digital arts and experimental media research. Students discuss and demonstrate their own ongoing research and creative projects. In-depth examination of new artwork and research by pioneering figures in the field. Prerequisite: DXARTS graduate student.

DXARTS 505 Research Techniques in Digital Arts (3)

Digital arts research resources; structuring and strategizing research as part of artistic development; standards for writing and publishing; ethics and

approach to technology transfer, and issues such as patenting. Prerequisite: DXARTS doctoral student.

DXARTS 517 Psychology of Audio and Visual Perception in the Arts (5) Processes behind sound and image perception, with emphasis on cognition and practical applications for artists. Includes cross-modal theory and synaesthesia. Prerequisite: DXARTS graduate student.

DXARTS 528 Real-Time Digital Image Processing (5) Theory, aesthetics, and practice of real-time video manipulation/performance systems. Theory and high-level programming of image synthesis and processing.

DXARTS 552 Advanced Topics in Digital Video (5) Covers recent advances and current trends in digital video research. May include in-depth examination of new artwork and research by faculty, students, and visiting professionals. Prerequisite: DXARTS 450; and either DXARTS 451 or DXARTS 452.

DXARTS 565 Spectral Modeling of Sound (5) Theory and practice of sound modeling in the spectral domain. Custom-designed software for spectral modeling and re-synthesis. Implementation of software tools for spectral analysis, transformation, and synthesis. Emphasizes the development of new software tools and the production of experimental sound compositions. Prerequisite: DXARTS 463.

DXARTS 567 Sound in Space (5) Theory and practice of spatial sound. Spatial hearing mechanisms. Stereo microphone techniques. 3D sound field capture and reconstruction using first and high order ambisonics. VBAP, WFS, and other advanced sound spatialization techniques. Introduction to aural architecture and spatial audio composition with emphasis on the production of experimental sound pieces and installations. Prerequisite: DXARTS 463.

DXARTS 569 Real-time Digital Sound Processing (5) Introduction to real-time digital sound processing techniques. Includes: foundation of real-time systems; integration; reactive environments in performance and installation work; interfaces; communication protocols (MIDI, TCP); feature detection; pitch tracking; transient detection; time-domain processing techniques; frequency-domain processing techniques; algorithmic processes. Prerequisite: DXARTS 463.

DXARTS 571 Telematic Art I (5) Focuses on the production of artworks that make use of real-time information networks. Topics include Internet art, database-driven art, and telematic installation art. Prerequisite: either DXARTS 470, DXARTS 473, or permission of instructor.

DXARTS 598 Advanced Topics in Digital Arts and Experimental Media (3-5, max. 21) Covers recent advances and current trends in digital arts and experimental media research. Various topics may include in-depth examination of new art work and research by faculty, students, and visiting professors.

DXARTS 600 Independent Study or Research ([1-9]-) Credit/no-credit only.

DXARTS 800 Doctoral Dissertation (*-) At least 27 hours of dissertation credit is required for the award of a Ph.D. in Digital Arts and Experimental Media. No more than 10 credits may be taken in any quarter, except summer. Credit/no-credit only.

DISABILITY STUDIES

DIS ST 230 Introduction to Disability Studies (5) I&S, DIV J. WOIAK Introduces the field of disability studies. Focuses on the theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in the framing of disability. Offered: jointly with CHID 230/LSJ 230.

DIS ST 235 Representations of Disability in Popular Culture (5) I&S, DIV Social construction of 'disability' reflected in and shaped by popular culture. Examples from sports coverage, film, television, fashion, and art both by and about disabled people. Ways in which disability representations in the media reify, problematize, and/or challenge marginalization of this social status. Offered: jointly with CHID 235/SOC 235.

DIS ST 332 Disability and Society (5, max. 15) I&S Concentrates on contemporary issues in disability studies, focusing on the thematic frameworks of rights, identities, values, and science/medicine. Offered: jointly with CHID 332/LSJ 332.

DIS ST 335 Sex, Gender, and Disability (5) I&S, DIV Examines ways that disability, sex, and gender are connected as socially constructed categories. Topics include the ways in which the sexuality of people with disabilities is experienced and represented, the intersection of disability and gender inequality, and how the field of disability studies relates to and can transform other theoretical approaches to gender and sex. Offered: jointly with CHID 335/GWSS 335.

DIS ST 337 Social Construction of Madness and Mental Health in the United States (5) I&S The construct of "mental health" and mental "un-health" from a sociological perspective. How categories such as mental illness, intellectual and developmental disability, cognitive impairment, and Mad Studies developed in the United States. Offered: jointly with CHID 337/SOC 337.

DIS ST 346 Disability in Global and Comparative Perspective (5) I&S, DIV Examines the meaning, politics, and experience of disability globally and locally in order to understand what is universal and what is particular to the disability experience in a diverse world. Human rights, inclusive development, and social movements approaches addressing the marginalization of disabled persons explored throughout. Offered: jointly with JSIS B 346/LSJ 346.

DIS ST 419 Disability in the Arts (5) I&S/VLPA, DIV Examines how the expressive capacities of the arts capture, complicate, and transform the experience of disability. Recommended: DIS ST 230, LSJ 230, or CHID 230. Offered: jointly with CHID 419.

DIS ST 421 History of Eugenics (5) I&S *Woia* Examines the history of ideas, policies, and practices associated with eugenics and human genetics from the late nineteenth century to the present in American society and other national contexts. Offered: jointly with B H 421.

DIS ST 430 Topics in Disability Studies (1-5, max. 15) I&S Theoretical, critical, analytical, or comparative examination of an issue or issues in Disability Studies. Topics vary. Prerequisite: either DIS ST/CHID/LSJ 230, DIS ST 332, DIS ST 433, or DIS ST 434. Offered: jointly with CHID 430/LSJ 430.

DIS ST 433 Disability Law, Policy, and the Community (5) I&S, DIV Addresses the history of legal rights of disabled people, U. S. disability policy,

and the role of community activism and other forces in policy development and systems change. Introduces the existing social service system that affects disabled people. Offered: jointly with CHID 433/LSJ 433.

DIS ST 434 Civil and Human Rights Law for Disabled People (5) I&S, DIV *Brown* Expands knowledge of civil and human rights for disabled people. Examines the American perspective (ADA) as well as various international models including the United Nations' International Human Rights treaties as they relate to disabled people. Offered: jointly with CHID 434/LSJ 434; A.

DIS ST 435 Advanced Seminar in Disability Studies (5, max. 10) I&S Provides an opportunity to review foundational principles and do independent research on a topic in the field of disability studies.

DIS ST 437 Crime, Law, and Mental Illness (5) I&S, DIV Explores experiences of those with mental illness in the criminal justice system and involuntary civil commitment system. Emphasis on societal responses including the emergence of therapeutic courts and specialized police training. Examines how courts, legislature, and communities balance public safety and civil liberties. Offered: jointly with CHID 437/LSJ 437.

DIS ST 499 Independent Study (1-5, max. 15) Supervised independent study in disability studies. Recommended: completion of two courses related to disability studies.

DIS ST 503 Seminar on Writing Disability Studies (1/2, max. 10) Skills and strategies for writing and publishing in disability studies. Includes writing, revision, and presentation of students' work; also, evaluation of other students' writing. Analyzes academic communication in the range of methods, perspectives, and content of interdisciplinary disability studies.

DIS ST 535 Graduate Seminar in Disability Studies (1-5, max. 15) Study of topics in disability studies at the advanced level. Specific topics vary.

DIS ST 600 Independent Study or Research (1-5, max. 15) Independent study or research in disability studies with faculty supervision.

DRAMA

DRAMA 101 Introduction to the Theatre (5) VLPA

The theatre as an art form with emphasis on the play in production. The role of the various theatre artists: actors, directors, designers, and playwrights. Required attendance at one or more performances. Lecture and discussion groups. For nonmajors. Offered: AWSp.

DRAMA 103 Theatre Appreciation (5) VLPA Covers the art of live theatrical performance. Discussion of how theatre is assembled, who the artists are, what they do, how theatre differs from other media, and how the various genres and styles of performance function, to create a deeper understanding of live performance. Offered: AWSp.

DRAMA 111 Backstage Pass: Technical Marvels in Popular Culture (5) VLPA Explores popular culture events such as concerts, award shows, sports events, and half-time shows. Offers a behind-the-scenes look at how the entertainment industry conceives, plans, and executes state-of-the-art technical challenges and solutions in making these large-scale events come to life.

DRAMA 171 The Broadway Musical (5) VLPA, DIV Historical and cultural study of the Broadway Musical and how this uniquely American art form was predominantly created by outcasts from mainstream society; surveys its evolution including the mid-twentieth Century "Golden Age" and its current twenty-first Century resurgence. Explores how musicals have both reflected and shaped American culture - especially in regard to issues of race, gender, sexual orientation, social justice, and equality.

DRAMA 180 Collaboration and Inclusion: Ways of Working Together (5) VLPA *Geoff Korf* Different styles of working with people and shaping an effective environment for communication and collaboration in pursuit of creation, problem solving and discovery. Introduces tools and methodologies used to promote participation from groups of any size. Experiential exercises, discussion, and collaborative projects. Develops a formal process of critiquing the work of peers. For students of all backgrounds.

DRAMA 200 The Art of Story (5) VLPA Survey of narrative tradition and structure as they pertain to arts, culture, history, and society. Examines the origins and uses of narrative on a global scale, and presents the various forms of storytelling that inform our daily lives, in particular the dramatic arts. Offered: S.

DRAMA 201 Plays and Styles (5) VLPA Introduces theatre practitioners to the principles of play construction, to the process of reading and conceiving plays for production, and to the basic vocabulary of artistic styles through which plays are produced. Offered: AWSp.

DRAMA 202 Creative Leadership: A Course in Courage (5) VLPA *Valerie Curtis-Newton* Courage as the ability to move through fear rather than becoming paralyzed by it. Examines sources of fear and obstacles that keep us from becoming our fullest, most human, most successful selves. Aimed at developing, demonstrating, and exercising both courage and leadership's other critical skills: connecting and communicating.

DRAMA 210 Theatre Technical Practice (4) VLPA Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Technical procedures.

DRAMA 211 Theatre Technical Practice (4) VLPA *Trout* Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Costumes.

DRAMA 212 Theatre Technical Practice (4) VLPA Intensive lecture-laboratory in basic theories, techniques, and equipment of the stage. Stage lighting.

DRAMA 213 Introduction to Sound Design for Theatre (4) VLPA Explores the how and why of sound and music for theatre. Includes different uses for audio in plays; choosing sounds and pieces of music; basic editing of music, environments, and effects; designing a cohesive world of sound.

DRAMA 215 Visual Thinking in Theatrical Design (5) VLPA *Skip Mercier* From the perspective of theatrical design, develops visual literacy as a foundational skill relevant to all students and to a wide range of professional pathways from the sciences to the arts.

Examines "seeing" and understanding how images are constructed to work with, and against, the way we see. Focuses on expanding creativity. Offered: Sp.

DRAMA 221 Visual Narrative in Performance (5)

VLPA Narrative critically structures many forms of visual design that go into creating performance events. Includes ritual and guided tours. Uses change over time as an essential lens for developing effective sets, lighting, costumes, and other design elements. Includes class exercises, weekly assignments, and a final project.

DRAMA 222 Tools of Composition and Design for Performance and Events (5) VLPA

Elements and tools used in theatrical design in scenery, costumes, lighting, sound, and projections. In-class and at-home projects tailored to manipulating those aspects for greater understanding of their impact in performance and events. How these elements shape our understanding of events placed on stage.

DRAMA 250 Acting Skills for Everyday Life (4) VLPA

DRAMA 251 Acting (5) VLPA Explores theory and practice of fundamentals of American "method," based on principles of Stanislavsky and their American evolution. Development of basic acting skills through monologue work. Offered: AW.

DRAMA 252 Acting (5) VLPA Explores theory and practice of fundamentals of American "method," based on principles of Stanislavsky and their American evolution. Preparation of audition material and scene work within the context of entire play. Prerequisite: DRAMA 251. Offered: WSp.

DRAMA 254 Intro to acting skills (1-5, max. 15)

VLPA Z. JONES Introduces specific skills to the beginning actor and non-actor. No previous experience required. Topics vary Recommended: None needed. Offered: S.

DRAMA 259 Performance Practicum (2-6, max. 12)

VLPA Special work in various aspects of performance technique.

DRAMA 270 Survey of Great Theatre for Social Change (5) VLPA

Surveys a sampling of the more influential plays ever written and performed, and how they advocated for social and political change.

Considers plays that have directly engaged social and political problems, plays that began revolutions, and plays that quietly, persistently pushed the world toward a greater equity.

DRAMA 285 Creativity as Research:

Experimentation and Play (5) VLPA Examines creative research in the arts and the natural overlap with research in other fields. Individual and collaborative projects explore research through the lens of digital art, dance, science, and theater. Offered: jointly with DANCE 295/DXARTS 295; A.

DRAMA 290 Theatre Technical Practices Laboratory

(1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 291 Theatre Technical Practices Laboratory

(1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 292 Theatre Technical Practices Laboratory

(1-3, max. 3) VLPA Laboratory course involving specific production assignment, either in-shop or in-theatre or both. Offered: AWSp.

DRAMA 298 Theatre Production (1-2, max. 9) VLPA

Laboratory course for students participating in School of Drama minor productions and projects. Credit/no-credit only. Offered: AWSp.

DRAMA 302 Critical Analysis of Theatre (5) VLPA

Analyses of plays, based on leading critical traditions. Illustrates variety of approaches to a play, criteria for choosing best approach for a given play, and ways in which criticism aids in understanding dramatic effect, for both reader and practitioner. Prerequisite: DRAMA 201. Instructors: Mihaylova

DRAMA 303 The Structure of Dramatic Narrative (5)

VLPA Examines the nature and structures of storytelling and the dramatic arts through seminal works on the topic and through examples of narrative from different parts of the world. Combines reading and lectures with student presentation skills. No previous performance experience necessary.

DRAMA 316 Theatrical Makeup (2) VLPA Basic principles, with intensive practice in application of makeup for use on proscenium and arena stages.

DRAMA 317 Introduction to Costume Construction (2-5, max. 10) VLPA Introduction to clothing construction techniques applicable to theatrical costumes, fashion design, and textile arts. Includes lectures, demonstrations, and practice lab.

DRAMA 319 Projection Design in Performance (4) VLPA *N. Kwame Braun* Attributes, uses, and technology of projections in contemporary theater, dance, live music, sports events, public spectacle, and installation art. Students design and construct their own projections using basic computer programs to explore the three theatrical modes of projections: as lighting; as set; and as overt content. Recommended: introduction to theater or dance; visual communications; basic computer editing or design.

DRAMA 351 Intermediate Acting-Scene Study (4) VLPA Actor-training methodologies of Stanislavsky, Meyerhold, Michael Chekov, and other physically-based approaches. Increases understanding of psychological motivation, concentration, focus of attention, clarity of physical expressiveness. Perform three scenes. Prerequisite: DRAMA 251.

DRAMA 352 Intermediate Acting-Verse (4) VLPA Addresses character motivation within classical verse of Shakespeare, Moliere, Racine, etc. Sonnets, monologues, scenes in iambic pentameter and rhyming couplet, exploring rhythm, music, and how these relate to character psychology, motivation. Prerequisite: DRAMA 251.

DRAMA 353 Intermediate Acting - Physical Acting (3-4) VLPA *Jeffrey Frace* Movement based approaches to the acting process. Suzuki, Viewpoints or other systems that focus on actor's body, space and time, and the creation of effective drama through physicality. Prerequisite: DRAMA 251.

DRAMA 354 Psychophysical Foundations of Acting (4) VLPA *Bridget Connors* Explores various psychophysical exercises and techniques that awaken and synthesize the breath, body, voice, intellect, emotion and imagination in character transformation for the actor. Substantial focus on the foundational work of Michael Chekhov.

Prerequisite: either DRAMA 351, DRAMA 352, or DRAMA 353.

DRAMA 365 Diverse Voices in Performance (5, max. 15) I&S/VLPA, DIV *Valerie Curtis-Newton, Tim Bond* Topics vary. Examines how theatre and performance celebrate, grapple with, and bear witness to the experiences and representation on stage of historically underrepresented or marginalized communities.

DRAMA 367 African Theatre and Performance (5) VLPA, DIV *Catherine M. Cole* Theater, dance, and other types of performance, focusing on West Africa and South Africa. Considers plays by writers such as Wole Soyinka, Ama Ata Aidoo, and Athol Fugard, as well as contemporary dance works by choreographers such as Mamela Nyamza and Gregory Maqoma. Topics include slavery, colonialism, and apartheid, all of which have had a profound impact on African history and cultures.

DRAMA 371 Theatre History I (5) VLPA/I&S Explores the history of European theatre and theatre culture from ancient Greece and Rome, through the High Middle Ages, to the emergence of the first professional theatres in Elizabethan England and Spain in the Golden Age. Prerequisite: DRAMA 201.

DRAMA 372 Theatre History II (5) VLPA Covers Western European theatre from Italian Renaissance to the late eighteenth century. Beginning with humanism, examines Renaissance beginnings in Italy and its influence, unique practices in England and France, and then theatre of the English Restoration, the European Enlightenment, and revolutions in France and America. Prerequisite: DRAMA 201.

DRAMA 373 Theatre History III (5) VLPA Focuses on major works, forms, and styles of drama in Western European theatre from the mid-nineteenth century to the present. Explores modern and contemporary theatre from the rise of realism to modernist innovations with reference to cultural contexts, interpretive problems, and dramatic criticism. Prerequisite: DRAMA 201.

DRAMA 391 Beginning Technical Practices (1-3, max. 9) VLPA Laboratory course involving specific production assignments, either in-shop or in-theatre, or both.

DRAMA 396 Study Abroad (12, max. 24) VLPA
Current global trends in theatrical practice with emphasis on viewing and critiquing international work. Reception theory, various conventions of drama and performance and theories related to tourism and global culture as they relate to performance. Offered: S.

DRAMA 401 Majors Seminar (1, max. 2) VLPA
A professional seminar featuring guest artists and career development specialists. Credit/no-credit only. Offered: W.

DRAMA 405 Computer Graphics Systems (3) VLPA
Introduction to CAD applications in theatre design and technology. Focus on learning to use general purpose graphics software for CAD. Discussion of available hardware and software.

DRAMA 406 Digital Cinema Production (3-5) VLPA
Nathan A Braun Set up, operations and delivery of digital media equipment and content based on professional standards of film and TV production. Focuses on narrative film grammar and structures of cinematic storytelling. Covers cinema camera operations, production sound recording, basic cinema lighting. In rotation, students work as assistant director, director of photography, camera operator, sound operator, lighting and grip technician and script supervisor.

DRAMA 407 Documentary in Performance (5) VLPA
N. Kwame Braun Video production for documentary, focus on performers and performance. Covers a range of conceptual and technical skills, including pre-visualizing and planning; use of cameras, sound recording equipment and lights; editing. Use of this technology to research and document some aspect of people crafting a performance to present to an audience.

DRAMA 410 Advanced Theatre Technical Practices (2-4, max. 20) VLPA
Production-related apprenticeship, in the areas of scene construction, scene painting, costume, or lighting. Offered: AWSp.

DRAMA 414 Scene Design (3, max. 6) VLPA
Theory, practice, and rendering of scene designs. Repeat of course involves intermediate designs and models. Prerequisite: DRAMA 210.

DRAMA 415 Stage Costume Design (3, max. 6) VLPA
Trout Theory, practice, and rendering of costume designs for the theatre. Repeat of course involves intermediate designs.

DRAMA 416 History of Style - Dress, Architecture and Functional Decor (5) VLPA
Surveys the history of western design and visual culture from Ancient Greece through today. Covers a range of artistic fields, including clothing, the decorative arts, and architecture and pays particular attention to the sociological, religious, political and economic climates that shape the way we dress and decorate the world around us. Historic representations of the functional arts in film, television and theatre will also be analyzed. Offered: A.

DRAMA 417 Stage Costume Patterning and Construction (3, max. 6) VLPA
Techniques of costume construction, including study of fabrics; emphasis on creating patterns by draping.

DRAMA 418 Scene Painting (3, max. 6) VLPA
Lecture-laboratory with focus on techniques and principles of scene painting. Uses of various media and types of equipment as applicable to varied scenic pieces.

DRAMA 419 Lighting Design (3, max. 9) VLPA
Basic steps to generate a lighting plot and hook-up for a stage production. Includes instruction in the technical knowledge of instrumentation, electricity, drafting and photometrics. Helps students to "see" light better, and to develop a process to "visualize" lighting in for the stage. Recommended: Drama 212

DRAMA 420 Design and Technical Drafting (2, max. 4) VLPA
Laboratory and project critique covering stage design graphics and technical drawing; specifically: designer's elevations, ground plans, sections, detail drawing, transposition of design drawing information to technical drawings.

DRAMA 421 Drawing and Rendering Techniques for the Theatre (2, max. 10) VLPA
Weekly figure-drawing laboratories with live model and weekly field trips for laboratories in drawing natural phenomena and architectural detail. Studies in historical drawing styles. Practice in use of several media and techniques of expression.

DRAMA 441 Beginning Playwriting (1-6, max. 12)

VLPA Writing exercises and drafts of a one-act play provide first experience in writing for performance. Readings of representative one-act plays introduce genres and writing styles.

DRAMA 451 Advanced Acting - Production Workshop (4) VLPA

Improvisation skills. Methodology employed develops one five-minute solo work, using either original or adaptations of non-dramatic texts. Culminates in public showings of the five-minute one-person works.

DRAMA 452 Advanced Acting - Scene Study (4)

VLPA Invites actor to create a role. Script reading for action and consequence. Use and employment of five senses to express a character's life, presenting a coherent and alive person to the stage. Culminates in public performance. Prerequisite: DRAMA 351.

DRAMA 453 Advanced Acting - Physical Training (3-4) VLPA

J. FRACE Study of physical training methods of Tadashi Suzuki, Kenji Suzuki, and the relationship of their methodologies to Constantin Stanislavsky. Contemporary monologues analyzed for psychological motivation, while exploring the physical analog of "action" as expressed and accessed by the new physical training.

DRAMA 454 Projects in Acting (3, max. 9) VLPA

Rehearsal and classroom performance of dramatic literature of various periods and styles. Prerequisite: DRAMA 251.

DRAMA 455 Alexander Technique (1-3) VLPA

C. MADDEN A practical and theoretical introduction to the Alexander Technique, a psychophysical re-education process developed by F. M. Alexander (1869-1955). Studio application of this work improves physical/vocal coordination, enhances creativity, and clarifies thinking.

DRAMA 456 Topics in Theatre for Youth (3-5, max. 10) VLPA

Topics in rehearsal and performance of theatre for young audiences; basic principles and techniques for using drama in the classroom; and creating original work for young audiences.

DRAMA 457 Creating Drama (3-5) VLPA

Jeffrey Frace Covers learning and application of creative methodologies for the theatre artist. Students study established systems of creative development, the

use non-dramatic source texts as a foundation for adaptation into dramatic theatre pieces. Emphasizes artistic entrepreneurship, group collaboration, and applied narrative theories.

DRAMA 460 Introduction to Directing (4)

VLPA *Curtis-Newton* Student is introduced to the art of the stage director.

DRAMA 461 Elementary Directing (4) VLPA

Curtis-Newton Elementary study of the art of the stage director.

DRAMA 462 Elementary Directing (4) VLPA

Elementary study of the art of the stage director.

DRAMA 466 Stage Management (2-5, max. 15)

VLPA *Stewart* Study and practice of stage management.

DRAMA 490 Special Studies in Acting-Directing (1-6, max. 12) VLPA**DRAMA 491 Special Studies in Design-Technical (1-6, max. 12) VLPA****DRAMA 493 Drama Internship (1-6, max. 6)**

Supervised experiences in an off-campus venue.

DRAMA 494 Special Studies in Theatre and Drama (5, max. 20) VLPA

Topics in drama, history, and criticism. See Time Schedule for specific topic.

DRAMA 495 Practicum in Design and Technical Theatre (2-6, max. 15) VLPA

Emphasis on developing design and technology problem-solving skills through laboratory and project evaluation.

DRAMA 496 Stage Costume Problems (2, max. 8)

VLPA Specific research problems of stage costume design and execution: accessories, masks, wigs, fabric modification, millinery, or construction analysis for specialized costumes. Topics vary.

DRAMA 498 Theatre Production (1-2, max. 9) VLPA

Laboratory course for students participating in School of Drama major productions. Credit/no-credit only. Offered: AWSp.

DRAMA 499 Undergraduate Research (1-5, max. 15)

DRAMA 502 Designer-Director Analysis (4) Methods of examining plays to make the collaboration of director and designer productive. Attempts to create a structural whole from visual and verbal approaches to analysis.

DRAMA 506 Visual Communication for Theatrical Designers (3, max. 6) *Skip Mercier* Expands visual communication skills. Explores individual approaches of working professional designers; increases essential design skills (storyboard, modeling, sketching, costume rendering, drafting) and understanding of unique design voice within framework of standard practice. Steps of typical theatrical design process, from first reading to collaborations necessary, that lead to opening are explored and associated skills for each step. Offered: AW.

DRAMA 508 Advanced Stage Lighting Design-Plotmaking (1-3) Development of a working process consistent with current professional practice. Includes drafting, worksheets, color selection, organization systems and other processes related to creating a professional stage lighting plot. Students also read dramatic texts and develop analytical skills. Credit/no-credit only. Offered: A.

DRAMA 509 Advanced Stage Lighting Design-Unique Challenges (3) Continued development of lighting design process consistent with current professional practice. Students will be challenged to design lighting plots for unique directorial and scenic conceptual projects. Prerequisite: DRAMA 508 Credit/no-credit only. Offered: W.

DRAMA 510 Design Studio (1-5, max. 40) *Skip Mercier, Deborah L Trout, Thomas Lynch, Geoff Korf* Design for live performance focused primarily on scenery and costumes. Includes comprehensive investigation of space, form, light, texture, and color in theatre design, interpretation of literary and musical text, understanding of dramatic action, and collaborative communication. Projects include a variety of theatrical and musical genres.

DRAMA 512 Advanced Lighting (1-4, max. 28) Intensive training in lighting design for performance. Includes intermediate and advanced paper projects as well as advanced practical projects. Spans a variety of performance genres and environments.

DRAMA 514 Design and Technical Theatre Colloquium (2, max. 18) *Korf, Lynch, Trout* Discussion of work in progress or completed in production, centering on the conceptual work of the designer/director on the production and the methods of execution in the shops and on stage. Offered: AWSp.

DRAMA 518 History of Style - Dress, Architecture and Functional Decor (5) Surveys the history of western design and visual culture from Ancient Greece through today. Covers a range of artistic fields, including clothing, the decorative arts, and architecture and pays particular attention to the sociological, religious, political and economic climates that shape the way we dress and decorate the world around us. Historic representations of the functional arts in film, television and theatre will also be analyzed. Offered: A.

DRAMA 519 Projection Design in Performance (3) *N. Kwame Braun* Attributes, uses, and technology of projections in contemporary theater, dance, live music, sports events, public spectacle, and installation art. Students design and construct their own projections using basic computer programs to explore the three theatrical modes of projections: as lighting; as set; and as overt content.

DRAMA 520 Advanced Theatre Practicum (1-5, max. 15) Professional student internship with professional theatres: scenery, lighting, scene painting, costume, acting, directing, stage management, theatre management. Prerequisite: permission of instructor.

DRAMA 523 Digital Rendering (3) Covers the basics of digital rendering with an emphasis and application on theatre renderings and sketches. Includes methods of collecting visual research, basic concepts, and the practical use of software applications.

DRAMA 530 Advanced Stage Lighting Practice-Light Lab (1-3, max. 9) Laboratory practice of stage lighting design. Students will encounter a new hands-on, practical lighting challenge each week. Includes hanging, coloring, and cueing lighting rigs in the Drama light lab. Credit/no-credit only. Offered: Sp.

DRAMA 551 Teaching of Acting (1-3, max. 3) Seminar discussion on problems in teaching acting to

undergraduate students in DRAMA 251, DRAMA 252, and DRAMA 253. Prerequisite: permission of instructor and being a teaching assistant in acting.

DRAMA 552 Teaching of Acting (1-3, max. 3)

Seminar discussion on problems in teaching acting to undergraduate students in DRAMA 251, DRAMA 252, and DRAMA 253. Prerequisite: permission of instructor and being a teaching assistant in acting.

DRAMA 555 Studies in Acting (2-6, max. 18)

Individual or group work on special skills for the actor. Topics vary. Prerequisite: admission to the Professional Actor Training Program. Offered: AWSp.

DRAMA 557 Studio I (12, max. 36) *Scott Hafso, Jeffrey Frace, L. Zane Jones, Valerie Curtis-Newton, Catherine Madden, Bridget Connors* Skill development in acting, voice, speech, and movement necessary for professional training in acting. Prerequisite: admission to the Professional Actor Training Program. Offered: AWSp.

DRAMA 558 Studio II (12, max. 36) *L. Zane Jones, Bridget Connors, Valerie Curtis-Newton, Scott Hafso, Jeffrey Frace, Catherine Madden* Continuation of DRAMA 557. Prerequisite: DRAMA 557 and completion of the first year of the Professional Actor Training program. Offered: AWSp.

DRAMA 559 Studio III (6, max. 18) *Valerie Curtis-Newton, Jeffrey Frace, Catherine Madden, Bridget Connors, L. Zane Jones, Scott Hafso* Specialized and individualized work relating to the main curriculum of the third year of the Professional Actor Training Program. Prerequisite: DRAMA 558 and completion of the second year of the Professional Actor Training Program. Offered: AWSp.

DRAMA 560 Managing the Rehearsal and Production Process (2) Introduction to graduate-level directing. Play analysis, research, performance theory, and concept development as it relates to process-acting and rehearsal, design, staging techniques, and production management. Reading and writing assignments augmented by faculty and professional guests in performance, design, production, and dramaturgy.

DRAMA 561 Directing Projects (2-3, max. 12)

Rehearsal techniques and staging skills in a variety of spatial configurations. One-act and full-length plays

which follow a prescribed sequence. Prerequisite: graduate standing in the directing program.

DRAMA 562 Performance Studio (1-3, max. 12)

Performance techniques in specialized areas of importance to the professional director, including stage combat, speech and dialect, mask, physical comedy, improvisation, and puppetry.

DRAMA 563 Seminar in Directing (2, max. 18)

Seminar discussion of current productions; focused readings and discussion in specific areas of dramatic literature and problems related to stage direction. Prerequisite: permission of instructor.

DRAMA 564 Theatre Studies: History, Theory, Criticism (3, max. 15) Special topics in history, theory, and criticism.

DRAMA 565 Verse Workshop (4) Techniques necessary to direct and perform plays of Shakespeare, Moliere, and other verse playwrights: scansion and imagery; period and style using verse text; crowd scenes, transformations of time and space, and other staging exercises; direction of scenes or acts from verse plays.

DRAMA 566 Directing for Cinema, Television, and Digital Media I (3) Covers the applied methodologies of classic narrative film grammar. Includes the role of the director, in standard production structures, script development and analysis, the language of traditional cinematic storytelling, directing the screen actor, editing, post production, and an examination of new digital media technologies.

DRAMA 567 Acting Process (1-3, max. 30)

Development of acting skills necessary for the professional director. Emphasis on physical training, playing action, strong internal technique, imagination and clarity of expression.

DRAMA 568 Writing for the Stage (3, max. 6) Focus on adaptation for the stage of non-dramatic sources, such as literature, poetry, history, and contemporary events. Emphasis on structure, dialogue, dramatic action, rhythm, characterization. Writing exercises using fictive and non-fictive sources, biographical sources, and found objects. For MFA Directing students only.

DRAMA 569 Directing/Teaching Apprenticeship (3, max. 6) Assisting faculty or professional guest director in production for the entire rehearsal period, or assisting faculty in performance training.

DRAMA 571 Problems in Theatre History Research (5, max. 10) *Odai Johnson, Scott Magelssen* Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 572 Problems in Theatre History Research (5, max. 10) *Scott Magelssen, Odai Johnson* Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 573 Problems in Theatre History Research (5, max. 10) *Odai Johnson, Scott Magelssen* Methods and techniques of research, interpretation, and writing in theatre history. Relationship of theatre arts to culture in diverse periods and places.

DRAMA 575 Seminar in Theatre History (5, max. 10) *Johnson* Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 576 Seminar in Theatre History (5, max. 10) *Johnson* Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 577 Seminar in Theatre History (5, max. 10) *Johnson* Specific topics in theatre history, examining the drama of various national, linguistic, and/or religious culture in detail.

DRAMA 581 Analysis of Dramatic Texts (5, max. 10) *S. MIHAYLOVA* Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 582 Analysis of Dramatic Texts (5, max. 10) *S. MIHAYLOVA* Analytic approaches to dramatic materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 583 Analysis of Dramatic Texts (5, max. 10) *S. MIHAYLOVA* Analytic approaches to dramatic

materials, concentrating on semiotics, Marxism, feminism, or a related critical theory.

DRAMA 585 Seminar in Dramatic Theory (5, max. 10) *Stefka Mihaylova* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 586 Seminar in Dramatic Theory (5, max. 10) *S. MIHAYLOVA* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 587 Seminar in Dramatic Theory (5, max. 10) *S. MIHAYLOVA* Major problems in dramatic theory, such as aesthetics, mimesis, and the nature of theatre.

DRAMA 599 Advanced Studies in Theatre Arts (1-5, max. 20) Independent projects or group study of specialized aspects of theatre arts. Prerequisite: permission of instructor.

DRAMA 600 Independent Study or Research (*-)

DRAMA 700 Master's Thesis (*-)

DRAMA 800 Doctoral Dissertation (*-)

ECONOMICS

ECON 190 Advanced Placement (AP) Economics: Micro (5) I&S Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ECON 191 Advanced Placement (AP) Economics: Macro (5) I&S Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ECON 200 Introduction to Microeconomics (5) I&S, QSR Analysis of markets: consumer demand, production, exchange, the price system, resource allocation, government intervention. Offered: AWSpS.

ECON 201 Introduction to Macroeconomics (5) I&S, QSR Analysis of the aggregate economy: national income, inflation, business fluctuations,

unemployment, monetary system, federal budget, international trade and finance. Prerequisite: ECON 200. Offered: AWSpS.

ECON 230 Economics of Fisheries and Oceans (5) I&S/NW, QSR *C. ANDERSON* Examines how and why people and businesses make choices that lead to over-fishing, hypoxic zones, and oil spills in aquatic environments. Applies economic principles to understand how alternative policies might change these decisions, and how distributional effects influence politically feasible solutions. Offered: jointly with FISH 230; Sp.

ECON 235 Introduction to Environmental Economics (5) I&S/NW *S. RABOTYAGOV* Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key environmental issues. Offered: jointly with ENVIR 235/ESRM 235; SpS.

ECON 282 Using Econometrics: A Practical Approach (5) NW Concerned with estimating economic relationships, confronting economic theory with facts, and testing hypotheses involving economic behavior. Specific topics include mathematical statistics, single and multiple variable regression analysis, the Gauss-Markov Theorem, hypothesis testing, model specification, multicollinearity, dummy variable, heteroskedasticity, and serial correlation.

ECON 299 Study Abroad: Economics (1-5, max. 10) Lower-division economics courses taken for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 300 Intermediate Microeconomics (5) I&S Analysis of decisions by individuals and by firms and of outcomes in factor and product markets. Policy issues and applications. Prerequisite: ECON 200; either MATH 112, MATH 124, MATH 127, MATH 134, or MATH 145. Offered: AWSpS.

ECON 301 Intermediate Macroeconomics (5) I&S Analysis of the determinants of the aggregate level of employment, output, prices, and income of an economy. Policy issues and applications with special

reference to current monetary and fiscal policy. Prerequisite: minimum grade of 2.0 in ECON 201; 2.0 in ECON 300. Offered: AWSpS.

ECON 315 Study Abroad: Economics (3-5, max. 10) I&S Upper-division economics courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 345 Global Health Economics (5) I&S *C. Levin* Introduces the application of health economics and the tools economists use to inform global health solutions in low and middle-income countries. Examines relationship between global health and development, survey of health economic evaluation concepts with focus on diseases and conditions in low and middle-income countries. Recommended: ECON 200 strongly recommended, G H 101 recommended Offered: jointly with G H 345; A.

ECON 346 Using Economics to Solve Today's Healthcare Problems (4) I&S Health economics is a growing field and an important aspect of public policy. Introduces health economics and the tools economists use to analyze current issues in health care. Furthers the understanding of economics and how it is used in current debates. Prerequisite: ECON 200. Offered: jointly with HSERV 346; A.

ECON 382 Introduction to Econometrics (5) NW Applies statistical methods to economic data: estimating economic relationships using regression analysis and testing hypotheses involving economic behavior. Uses econometric software. Open to economics majors only. Cannot be taken for credit if ECON 482 taken previously or concurrently. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 396 Honors Research Seminar (2) I&S Different members of the Economics faculty present and discuss their research work. Exposes students to ideas about potential topics for their thesis. For Honors students only. Does not satisfy graduation requirement for the major. Prerequisite: ECON 301 Offered: Sp.

ECON 399 Economics Internship (1-6, max. 12) Academic work completed in conjunction with an economics-related internship. Faculty supervision required. Does not apply toward major. Credit/no-credit only.

ECON 400 Advanced Microeconomics (5) NW

Explores the rigorous development of mathematical models used by economists to explain the behavior of consumers, firms, and markets. Topics include comparative statics for consumption theory, duality in production, and decision-making under uncertainty. Prerequisite: minimum grade of 2.0 in ECON 300; MATH 126.

ECON 401 Advanced Macroeconomics (5) NW

Application of mathematics to macroeconomics. Possible topics include economic dynamics and growth, rational expectations, real business cycle models, and New Keynesian approach. Prerequisite: minimum grade of 2.0 in ECON 301; either MATH 126, MATH 129, or MATH 136.

ECON 402 Microeconomics: Methods and Applications (5) I&S

Generalizations and extensions of the course models of competition and monopoly taught in ECON 300. Topics may include: factor markets and effects of monopoly power; game theory and oligopoly theory; decision making over time; uncertainty and under asymmetric information; contracts and incentives. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 403 The Economics of Property Rights (5) I&S

Property rights as an economic concept. Delineation of rights as a subject of optimization. Formation of contracts to maximize the value of personal property. Formation of organizations to induce efficient use of resources and minimize losses to public domain. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 404 Industrial Organization and Price Analysis (5) I&S

Analysis of firm behavior in imperfectly competitive markets. Topics include monopoly, oligopoly, product differentiation, entry deterrence, and the role of asymmetric information. Game theoretic tools and empirical evidence used to analyze topics. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 405 Analytical Framework for Policy and Decisions (5) NW

Explores how insights from economics and finance can be used to design policies and formulate strategies to solve important real-life problems. Covers a variety of analytics and computational techniques, particularly those directed toward dynamics, uncertainty, and

interactive decision problems. Prerequisite: MATH 307; ECON 301; either ECON 400 or ECON 401; either ECON 382, ECON 424, ECON 482, or ECON 483.

ECON 406 Undergraduate Seminar in Economics (5, max. 10) I&S

Provides the undergraduate student an opportunity to apply the tools of economic analysis in a critical examination of theoretical and empirical work. A list of topics is available in the departmental office. Prerequisite: minimum grade of 2.0 in ECON 300

ECON 408 Economic Analysis of the Law (5)

Includes contracts, property, torts, securities regulation, antitrust, and intellectual property. Provides students a well-rounded view of both current examples and applications within the practice of law, as well as the underlying economic theory embedded in these areas of law. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 409 Undergraduate Seminar in Political Economy (5, max. 10) I&S

Seminar in political economy with focus on Marxian and public choice approaches to political economy. Explores the questions raised by each approach, the assumption(s) and testability of hypotheses, and applies these approaches to a number of problems in political economy. Offered: jointly with POL S 409.

ECON 410 Economics of Networks (5) I&S

Developing and using mathematical and other tools to describe and analyze networks in economic contexts. Applies tools to topics such as social learning, the effects of peers, and networked markets, as well as theoretical analysis of network formation and games on networks. Prerequisite: a minimum grade of 2.0 in ECON 300; recommended: ECON 400 and ECON 485.

ECON 411 Behavioral Economics (5) I&S

Incorporates insights from psychology into economic models. Examines evidence suggesting individuals systematically depart from traditional economic assumptions, and modifies these assumptions to construct models that generate sharp and testable predictions. Students learn how psychology and economics can be used together to understand human behavior. Prerequisite: a minimum grade of 2.0 in ECON 300.

ECON 412 Macroeconomics and Inequality (5) I&S

Examines the determinants of income and wealth distribution and how these distributions interact with the macroeconomy. Topics include the relationship between inequality and growth, the interaction between inequality and business cycles, and the effects of policies designed to reduce inequality. Prerequisite: a minimum grade of 2.0 in ECON 301.

ECON 415 Study Abroad: Economics (3-5, max. 10) I&S

Upper-division economics courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

ECON 421 Money, Credit, and the Economy (5) I&S

Role of money and the banking system in the United States economy. Relation of money to inflation, interest rates, and business fluctuations. Monetary policy and Federal Reserve System. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 422 Investment, Capital, and Finance (5) I&S

Intertemporal optimization: consumption and portfolio allocation decisions of households, investment and financing decisions of firms. Introduction to financial decisions under uncertainty. Portfolio theory, asset pricing, options, and futures. Financial market institutions and efficiency. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311, STAT 311, MATH 390, STAT 390, or Q SCI 381.

ECON 423 Topics in Financial Economics (5) I&S

Topics of current interest such as regulation of securities markets and valuation of stocks. Allows students to apply tools of economics to real world problems in finance. Prerequisite: minimum grade of 2.0 in ECON 301; and ACCTG 215 or ACCTG 219,

ECON 424 Computational Finance and Financial Econometrics (5) NW

Covers probability models, data analysis, quantitative, and statistical methods using applications in finance. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311/STAT 311, STAT 341, MATH 390/STAT 390, or Q SCI 381.

ECON 425 Topics in Monetary Economics (5) I&S

Topics include monetary policy and financial markets, two transmission mechanisms, dynamics of monetary policy, targeting interest rates versus

targeting the quantity of money, monetary policy under fixed versus flexible exchange rates, inflation targeting, and practices of central banks, i.e., Fed, ECB, BOJ and PBOC. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 426 Advanced Financial Economics (5) I&S

Provides an introduction to financial derivatives and structured financial products, with emphasis on futures, options, credit derivatives, swaps, economic theory, valuation methods, trading strategies, hedging, and securitization. Emphasizes real world applications and developments in the financial market. Prerequisite: ECON 422; MATH 124.

ECON 427 Central Banking (5) I&S

Role of central banks and monetary policy in the global economy. History of central banks, mechanics of monetary policy implementation, economic stabilization, lender of last resort, and liquidity provision to financial markets. Prerequisite: minimum grade of 2.0 in ECON 301

ECON 431 Government and Business (5) I&S

Economic effects of various governmental regulatory agencies and policies. Antitrust legislation as a means of promoting desired market performance. Observed economic effects of policies intended to regulate business practices, control prices, conserve resources, or promote competition. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 435 Natural Resource Economics (5) I&S

Survey of the economics of renewable and nonrenewable resources including fisheries, forest, minerals, and fuels. Optimal trade-offs between benefits and costs of resource use, including trade-offs between current and future use. Effects of property rights on resource use. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 436 Economics of the Environment (5) I&S

Microeconomic analysis of environmental regulation. The problem of social cost, policy instrument choice, enforcement of regulations, methods for damage assessment, and estimating benefits of environmental improvement. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 437 Economics of Biological Resources (5) I&S

Application of economic concepts to biology and biological concepts to economics. Examination of

theory of species maximization, parallels in behavior between humans and other biota, animal choices among alternative food sources, games animals play, evidence of risk aversion in animals. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 438 Economics of Energy (5) I&S Topics include the optimal extraction of depletable resources, the history and economic organization of the energy industries, and trade in energy commodities. Covers energy policies aimed at increasing national security or economic efficiency and those aimed at reducing the environmental effects of energy demand and supply. Prerequisite: 2.0 in ECON 300.

ECON 442 Economics of Human Resource Management (5) Analyzes the relationship between personnel practices and organizational performance. Economic analysis of compensation policy emphasized. Topics include hiring and retention strategies; incentive pay; relative performance evaluation; teams; promotions; seniority; and organization design. Examines human capital accumulation and labor legislation. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 443 Labor Market Analysis (5) I&S Determinants of employment and incomes in the United States: analysis of individual and firm decisions and of equilibrium in the labor market. Topics include decisions to work and retire, education and occupation choices, compensation, discrimination, poverty, unemployment, and unions. Examination of policy issues affecting the labor market. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 444 Topics in Labor Market Analysis (5) I&S In-depth analysis of special topics in the operation of labor markets and public policies affecting incomes and employment. Course content varies by instructor. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 446 Economics of Education (5) I&S Examines formal education as an investment industry, the economics of human capital investment, and competition among government-owned schools and the non-profit sector. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 447 Economics of Gender (5) I&S, DIV Microeconomic analysis of the sources of gender differences in earnings, labor force participation, occupational choice, education, and consumption. Economic theories of discrimination, human capital, fertility, and intrahousehold resource allocation. Economics of the family in developed and developing countries. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with GWSS 447.

ECON 448 Population and Development (5) I&S, DIV International economic development, with a focus on population issues. Demography, poverty and income inequality, fertility choice and sex selection, household production models and intra-household inequality, parental investments in child health and education, including discrimination against girls, and migration and urbanization. Evidence-based policy and differential impacts on diverse communities within developing societies. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 450 Public Finance: Expenditure Policy (5) I&S Application of normative microeconomic theory to analysis of government expenditures. Rationale for government economic activity, collective choice, public goods, and externalities, income redistribution, public sector pricing, and specific expenditure programs. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 451 Public Finance: Tax Policy (5) I&S Microeconomics of taxation: efficiency, incidence, effect on distribution of income, personal and corporate income taxes, sales and consumption taxes, taxation of property and estates. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 452 Economic Theory as Applied to the Political System (5) I&S Explanation and evaluation of the political system, using elementary economics theory. Topics include alternative voting rules, the political effectiveness of various types of groups, causes and consequences of logrolling, and bureaucratic organizations. Prerequisite: ECON 300. Offered: jointly with POL S 416.

ECON 454 Cost-Benefit Analysis (5) I&S Theory and practice of cost-benefit analysis of public sector projects and policies. Welfare criteria, investment criteria, shadow prices, social discount rate, marginal-willingness-to-pay for non-market goods,

social risk, and special topics. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 455 Microeconomics of Public Policy (5) I&S

Topics include general equilibrium analysis of efficiency and equity, income and substitution effects, analysis of alternative welfare programs, intergovernmental grants, price discrimination, price controls, rationing, industry regulation, and public goods. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 464 Financial Crisis (5) I&S Causes, effects, and cures for financial crisis traced through history from the Tulip Bubble, to the Great Depression, to the East Asian Crisis of 1997, and beyond. Explores the original work of Fisher, Keynes, Friedman, and Krugman, among others. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 471 International Trade (5) I&S Theory of comparative advantage and different models of international trade. Trade and welfare. Factor mobility and trade flows. Economic integration. Theory and practice of commercial policy. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 472 International Macroeconomics (5) I&S International monetary theory and open economy macroeconomics. Balance of payments and foreign exchange markets. Different exchange rate arrangements and their adjustment mechanisms. Money and international capital movements. Policy issues. The international monetary system. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 473 Topics in International Trade (5) I&S Advanced theory of trade and analysis of government trade policies. International trade and factor mobility. Theory of commercial policy. Prerequisite: minimum grade of 2.0 in ECON 301; ECON 471.

ECON 475 Economics of the European Union (5) I&S Analysis of economic issues relating to the European union. Explores the institutional aspects, the attempt to coordinate social and economic policies - welfare, employment, commercial, fiscal, and monetary - and the economic linkages between the European Union and the rest of the world. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 476 Trade, Foreign Direct Investment, and Labor Migration (5) I&S Covers the economic theory of foreign trade, foreign direct investment and international labor migration. Focuses on the phenomena of investment and migration, exploring their relations with trade and discussing relevant government policies. Real world examples and experience will be presented and explained in class. Prerequisite: 2.0 in ECON 301

ECON 482 Econometric Theory and Practice (5) NW Applies statistical modeling to empirical work in economics. Focuses on regression analysis; derivations of regression estimators and their properties; and applied computer work in estimating multiple regression models. Prerequisite: minimum grade of 2.0 in ECON 300; either ECON 311/STAT 311, MATH 390/STAT 390, or Q SCI 381.

ECON 483 Econometric Applications (5) NW Provides opportunity to learn econometric model building for a particular problem while applying the theory learned in various courses to specific economic cases. Estimate, test, and forecast economic models. Extensive use of the computer and econometric programs. Prerequisite: minimum grade of 2.0 in ECON 301; either ECON 311/STAT 311, STAT 341, MATH 390/STAT 390, or Q SCI 381.

ECON 484 Econometrics and Data Science (5) NW Advanced continuation of ECON 482 and ECON 483. Traditional topics: structural modeling, non-linear and logistic regression, the LASSO, and non-traditional topics: regression and classification trees, bagging, boosting, and random forests. Computer based, uses the R language, emphasizing interpretation, not formal proofs. Prerequisite: ECON 482; MATH 126.

ECON 485 Game Theory with Applications to Economics (5) NW Introduction to the main concepts of game theory: strategy, solution concepts for games, strategic behavior, commitment, cooperation, and incentives. Application to economics oligopoly theory, bargaining theory, and contract theory. Prerequisite: minimum grade of 2.0 in ECON 300.

ECON 486 Economics of Information (5) I&S Basic models of decision making and strategic interaction in the presence of imperfect and incomplete information. Information issues in market exchange

and in hierarchical settings. Includes adverse selection, moral hazard, signaling, and screening. Prerequisite: minimum grade of 2.0 in ECON 300; may not be taken for credit if credit received for ECON 402.

ECON 487 Data Science for Strategic Pricing (5) NW Focuses on applying data science techniques using economic principles. Applies the theory of optimal pricing to real-world datasets using the statistical program R. Data science and machine learning for policy evaluation also covered. Prerequisite: minimum grade of 2.0 in ECON 300; minimum grade of 2.0 in either ECON 382 or ECON 482 (ECON 482 recommended) .

ECON 488 Causal Inference (5) NW Statistical methods for inference about counterfactuals. Focuses on uncovering causal relationships, whereby the researcher is interested in quantifying the effect of a cause on one or more outcome variables of interest. Program evaluation with data from randomized control trials, matching, instrumental variables and LATE, difference-in-difference, synthetic controls, and regression discontinuity design (sharp and fuzzy) . Prerequisite: ECON 482; recommended: MATH 126

ECON 490 Comparative Economic Systems (5) I&S Study of resource allocation, growth, and income distribution in capitalist, market socialist, and centrally planned economies. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 491 Issues in Economic Development (5) I&S Examines factors contributing to the economic problems of developing countries and possible solutions. Theory and applications in economic development and international trade. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 492 Macroeconomics of Emerging Markets (5) I&S Examines how the standard macroeconomic models that are used in industrial countries can be modified to help understand the macroeconomic issues facing emerging and developing countries. Covers topics including fiscal policy, inflation targeting, financial market stability, natural resource dependence, and institutional reforms. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 493 Economy of Modern China (5) I&S
Prerequisite: minimum 2.0 in ECON 301.

ECON 494 Economy of Japan (5) I&S Analysis of the economic growth of Japan since about 1850 to the present. The reasons for rapid industrialization, various effects of sustained economic growth, and significant contemporary issues are investigated. Prerequisite: ECON 201.

ECON 495 Economies in Transition (5) I&S Analysis of the interaction between institutional change and economic performance in the transforming socialist economies. Resources allocation in command economies. Market institutions. Primary focus on empirical comparison of growth, productivity, and social institutions in former socialist economies in Asia, Europe, and Central Asia. Prerequisite: minimum grade of 2.0 in ECON 301.

ECON 496 Honors Seminar (5) I&S Honors and other students in high standing have the opportunity to develop research techniques, to pursue topics in breadth and depth, and to apply tools of economic analysis to selected topics in economic theory and current issues of national and international economic policy.

ECON 497 Honors Directed Study (5) Students write their honors thesis on the topic chosen in the Honors Seminar working under the previously arranged supervision of a faculty adviser. Prerequisite: ECON 496

ECON 498 Senior Seminar (5) I&S Advanced undergraduate research in economics. Students formulate some underlying economic issue, organize its study, gather necessary information, and analyze results. Does not satisfy graduation requirement for the major. Prerequisite: ECON 301; one 400-level ECON course.

ECON 499 Undergraduate Research (1-5, max. 10)
May not be applied toward an advanced degree.

ECON 500 Microeconomic Analysis I (4) Duality and comparative statics analysis. Consumer and firm behavior. Uncertainty. Prerequisite: permission of instructor.

ECON 501 Microeconomic Analysis II (4) General equilibrium and welfare economics. Introduction to game theory. Prerequisite: ECON 500.

ECON 502 Macroeconomic Analysis I (4) Topics include theories of business cycles, dynamics of price adjustments, consumption theory, dynamic programming, introduction to numerical techniques, and open economy macroeconomics. Prerequisite: permission of instructor.

ECON 503 Macroeconomic Analysis II (4) Rational expectations in macroeconomic models. Dynamic optimizing models under uncertainty. Empirical examination of consumption, asset-pricing, and real business cycles. Prerequisite: ECON 502.

ECON 508 Microeconomic Analysis III (4) Information economics. Prerequisite: ECON 500; ECON 501.

ECON 509 Macroeconomic Analysis III (4) Modern macroeconomic dynamics, presenting a range of approaches based on intertemporal optimization. Representative agent models with special emphasis on the analysis of government policy. More advanced discussion of economic growth. Prerequisite: ECON 502; ECON 503, or equivalent.

ECON 511 Advanced Microeconomic Theory: Selected Topics (3, max. 12) Seminar in advanced microtheory. Selected topics of special interest and significance. Prerequisite: ECON 500; ECON 501.

ECON 512 Advanced Macroeconomic Theory: Selected Topics (3, max. 12) Seminar in advanced macrotheory. Selected topics of special interest and significance.

ECON 515 Special Topics in Mathematical Economics (3, max. 12)

ECON 516 Noncooperative Game Theory (3) Study of both pure game theory and its applications to such problems as oligopoly pricing, non-cooperative bargaining, entry deterrence, reputation phenomena. Focus on game theory as a modeling tool as opposed to a body of known results. Prerequisite: ECON 508.

ECON 517 Foundations of Economic Analysis (3)

ECON 518 Contract Theory (3) Basic contract theory models, including hidden action and hidden information models. Current developments in contract theory. Prerequisite: ECON 508 or permission of instructor.

ECON 519 Economics of Contracts and Organizations: Empirics (3) Critically reviews empirical literature on contracts and organization. Topics include multi-tasking; incentives and risk sharing; relative and subjective performance evaluation; team production; tournament and promotion; efficiency wage; career concern; relational contracts; asset specificity and asset ownership; complexity, uncertainty, asset ownership; adverse selection. Prerequisite: ECON 518; ECON 582, or permission of instructor. Instructors: Shi

ECON 520 The Economics of Property Rights (3) Application of standard economic theory to analyze various forms of property rights as constraints of competition; the costs associated with delineation and enforcement of rights; the costs of negotiating and enforcing contracts for right transfers; resource allocation and income distribution implied by different property right and transaction cost constraints. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 523 Emergence of the State (3) Using tools of property rights, industrial organization, and game theory, explores the emergence of the state. Specifies conditions conducive to constitutional rule. Analyzes circumstances amenable to state-promoted exchange as opposed to self-enforced agreements. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 525 Computational Economics (3) Develops a basic understanding of computational techniques used in the economic literature. Demonstrates, with economic examples, when and how these techniques are used and why and how they work. Prerequisite: ECON 580; ECON 581; ECON 582.

ECON 527 Empirics and Theory in Macroeconomics (3) Explores the integration of empirical and theoretical methods central to macroeconomic research. Exposes students to frontier areas of research to help them learn substantive material and transition to conducting their own independent

research. Prerequisite: ECON 502; ECON 503; ECON 509; ECON 581; ECON 582.

ECON 528 Micro Heterogeneity in Macroeconomics

(3) Discusses the role of heterogeneity in impulse and propagation of shocks to output, consumption, and asset prices. Covers empirical methods and theoretical models to further our understanding of these topics.

ECON 534 Empirical Industrial Organization (3)

Exposes students to the research frontier in empirical industrial organization. Topics include identification in linear models, models of product differentiation, estimation in data-rich environments, static games of imperfect competition, dynamic games of imperfect competition, and computational approaches to large-scale games.

ECON 535 Natural Resource Economics (3) Half of integrated two-course sequence in environmental and natural resource economics. Dynamic optimization. Nonrenewable resource extraction and exploration, including effects of market structure, uncertainty, and taxation. Renewable resources, including fisheries and forests. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 536 Environmental Economics (3) Half of integrated two-course sequence in environmental and natural resource economics. Theory of externalities. Normative and positive analysis of policy instruments for environmental management. Theory and methods of measuring environmental and resource values. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 537 Economic Aspects of Marine Policy (3)

Development of pertinent economic concepts and their application to selected topics in marine policy decision making, including maritime policy, OCS oil and gas development, and wetlands management. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with SMEA 537; W.

ECON 538 Economics of Living Marine Resources (3)

Develops pertinent economic concepts and applications for conservation, regulation, and restoration of fisheries and other living resources. Gives special attention to fishery management, including harvest regulation and enforcement,

recreational fisheries evaluation, property rights regimes, contemporary issues, and marine protected area management. Offered: jointly with SMEA 538; Sp.

ECON 539 Economics of Natural Resources Seminar III (3)

ECON 541 Labor Economics (3) Theoretical and empirical analysis of the labor market, focusing on the time allocation and labor supply decisions of individuals and households and the determinants of wages and wage differentials.

ECON 542 Labor Economics (3) Theoretical and empirical analysis of the labor market. The determinants of labor supply and demand, human capital investment, the pattern of compensation, employment contracts and incentives, unemployment and labor market dynamics.

ECON 543 Population Economics (3) Analysis of population issues from an economic perspective. Focuses on the study of household behavior in both developed and developing countries. Studies areas including fertility decisions, health and mortality, investment in education, the intra-household allocation of resources, and household structure and marriage. Prerequisite: ECON 501.

ECON 547 Health Policy Economics (3) Applies economic theory to selected topics in healthcare, including information, risk and insurance, industry organization, government regulation, and public health issues. Emphasizes policy implications of these applications. Offered: jointly with HSERV 587.

ECON 550 Public Finance: Expenditure Policy (3)

Theory of public finance with emphasis on public expenditures. Social welfare maximization, public goods and externalities, decreasing cost industries, theory of collective choice, second-best analysis. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 551 Public Finance: Tax Policy (3)

Theory of public finance with emphasis on taxation. Second-best analysis, optimal taxation, general equilibrium incidence analysis, issues in personal income taxation and corporate income taxation. Prerequisite: ECON 500; ECON 501, or permission of instructor.

ECON 554 Cost-Benefit Analysis (3) Covers the theoretical foundations of cost-benefit analysis using graduate microeconomics. Stresses both the conceptual and practical problems encountered in the subject. Emphasis on problem solving and term project. Prerequisite: ECON 500; ECON 501.

ECON 568 Game Theory for Social Scientists (5) Studies non-cooperative game-theory and provides tools to derive appropriate statistical models from game-theoretic models of behavior. Equilibrium concepts, learning, repeated games and experimental game theory. Prerequisite: MATH 112, MATH 124, or MATH 134; STAT 311/ECON 311 or equivalent. Offered: jointly with CS&SS 568.

ECON 571 International Trade Theory (3) Comparative advantage, resource allocation, income distribution, and foreign trade. Different theories of trade, with or without perfect competition and constant returns. International factor mobility. Prerequisite: ECON 500; ECON 501.

ECON 572 International Financial and Monetary Economics (3) Analysis of open economy macro models with emphasis on exchange rates and balance of payments determination. Prerequisite: ECON 502; ECON 503.

ECON 573 International Commercial Policy (3) Analysis of welfare aspects of international trade and factor mobility. Costs and benefits of protection; implications of different government policies. Import competition and response. Prerequisite: ECON 500; ECON 502.

ECON 574 International Macroeconomics (3) Surveys recent developments in international macroeconomics, placing particular emphasis on the dynamic aspects. One sector, multisector, and two-country international models discussed. Fiscal issues treated in depth. Stochastic aspects introduced and related to the literature on international real business cycles. Prerequisite: ECON 509 or equivalent.

ECON 575 International Trade and Macroeconomics (3) Studies how international macroeconomic models with trade microfoundations can shed light on questions in international macroeconomics. Theories are confronted with evidence, and special attention is paid to the roles of produces entry and

exit into markets, and of firm heterogeneity, in shaping aggregate fluctuations and economic policy outcomes.

ECON 580 Econometrics I: Introduction to Mathematical Statistics (4) Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the delta-method. Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Offered: jointly with CS&SS 509/STAT 509.

ECON 581 Econometrics II (4) Methods, tools, and theory of econometrics as the basis for empirical investigation in economics. Specification, testing, and use of econometric models with reference to examples in the literature. Prerequisite: either ECON 580, CS&SS 509, or STAT 509.

ECON 582 Econometrics III (4) Methods, tools, and theory of econometrics as the basis for empirical investigation in economics. Specification, testing, and use of econometric models with reference to examples in the literature. Prerequisite: ECON 581.

ECON 583 Econometric Theory I (3) Estimation and testing in linear and nonlinear regression models. Asymptotic theory, bootstrapping. Theoretical developments are reinforced with a variety of empirical examples and applications. Prerequisite: ECON 580, ECON 581, ECON 582 or equivalent.

ECON 584 Econometric Theory II (3) Continuation of ECON 583. Analysis of stationary and nonstationary, univariate, and multivariate time series models. Emphasis on empirical applications. Prerequisite: ECON 583.

ECON 585 Econometric Theory III (3) Econometric issues that arise in applied microeconomic research. Topics range from standard methods to recent developments. Focus varies yearly to reflect interests of instructors and students. Prerequisite: ECON 582 or equivalent.

ECON 586 Advanced Applied Time Series Analysis

(3) Time series and empirical macroeconomics with focus on applications of time series analysis to various topics in macroeconomics and finance. Topics include: state-space models and Kalman filter; Markov-switching models and their extensions; Bayesian Gibbs sampling; randomization; and measurement of volatility.

ECON 587 Applied Microeconometrics (3)

Application of microeconomics methods. Topics include treatment effects, instrumental variables, natural experiments, measurement error, panel data, difference-in-differences, sibling data, regression discontinuity, randomization, and quantile regression. Prerequisite: ECON 582.

ECON 588 Bayesian Econometrics (3) Introduces the Bayesian approach to econometrics, and examines how estimation problems can be recast in a Bayesian light. Emphasizes practical technique. Examines Bayesian methods, standard econometric models, and computational issues.

ECON 589 Financial Econometrics (4) Focuses on statistical modeling of financial time series with an emphasis on modeling volatility and correlation. Topics include statistical properties of asset returns, volatility and correlation modeling, statistical analysis of ultra high frequency time series, and estimation of continuous time models for asset returns. Prerequisite: ECON 583; either ECON 584 or STAT 519.

ECON 590 Analysis of Economies in Transition (3) Theoretical and empirical analysis of major issues in development economics, with a focus on testing theory and applied research methodology. Topics include randomization, program evaluation, structural vs. reduced-form analysis, and issues in social economics. Prerequisite: micro- and macroeconomic theory or permission of instructor.

ECON 591 Microeconomics of Development (3) Theoretical and empirical analysis of the microeconomics of development. Focuses on the study of household behavior in developing countries and how households respond to missing/imperfect markets. Topics include land access, nutrition and productivity, responses to risks and shocks, credit markets, micro-finance, and program evaluation. Prerequisite: ECON 501.

ECON 592 Development Policy (3) Theoretical and empirical analysis of macroeconomic policies pursued by developing countries. Topics include the determination of exchange rates and relative prices in small economies; the examination of government spending, taxation, banking, trade, and labor market policies; and the evaluation of market-oriented economic reform programs. Prerequisite: ECON 503.

ECON 593 Topics in Microeconomics of Development (3) Builds on ECON 591, studying a variety of special topics in development economics, including health, education, political economy, behavioral development economics, and environmental economics in developing countries.

ECON 594 Economic Growth (3) Studies various theoretical approaches to the question of why some countries are richer than others using generalizations and extensions of contemporary macroeconomic theory. Discusses the implications of various macroeconomic policies for economic growth. Prerequisite: ECON 502; ECON 503; ECON 509.

ECON 595 Growth and Inequality (3) Introduces the modern tools of macroeconomic analysis, in the context of several research topics in the areas of growth and inequality. Helps prepare students to undertake research of their own.

ECON 596 Research Issues in Microeconomics (3) Provides opportunity to practice research and presentation skills in applied and theoretical microeconomics. Students develop and refine thesis topics under faculty supervision. Maximum of 6 credits allowed in 596, 597, and 598 combined. Credit/no-credit only.

ECON 599 Research Issues in Econometrics (3) For second-year students or above who plan to do research in micro-econometrics or nonparametric and semi-parametric econometrics. Provides a forum for state-of-the-art research and an opportunity for students to practice research and presentation skills in applied and theoretical econometrics. Credit/no-credit only.

ECON 600 Independent Study or Research (*-) Credit/no-credit only.

ECON 601 Internship (1-9, max. 9) Credit/no-credit only.

ECON 602 Teaching Introductory Economics (1)
Examines problems encountered in preparing and presenting courses in introductory economics. Credit/no-credit only.

ECON 800 Doctoral Dissertation (*-) Credit/no-credit only.

ENGLISH

ENGL 101 Writing from Sources I (5) Academic reading and graphics from different genres to provide opportunities for noticing lexis and grammar of genre and specific topic. Students discuss topic, receiving feedback on use of structures and lexis, and write short responses to the type of questions that might be asked on exams related to the readings. Sentence-level issues related to sentence structure and lexis. Limited to student admitted to UW with English language requirement. Offered: AWSp.

ENGL 102 Essentials of College Reading & Writing (5) Develop and practice the reading, writing and critical thinking strategies needed for analyzing and responding to academic texts. Strengthen grammar, organization and vocabulary to improve accuracy and fluency in writing. Prerequisite: either ENGL 101 or placement by test score.

ENGL 103 Writing from Sources (5) Developmental and practice of reading, writing, and critical thinking strategies needed to create organized and correctly documented papers using academic sources. Practices critical reading of academic texts, developing research questions, making claims, determining credibility of sources, and appropriately citing sources in writing. Prerequisite: either ENGL 102 or placement by test score. Offered: AWSpS.

ENGL 104 Essentials of College Communication (5) Discover how to take effective notes, give clear presentations and oral reports, and participate in important class discussions. Practice asking engaging questions, sharing opinions, and arguing your point persuasively in the classroom. Offered: AWSp.

ENGL 105 English for International Teaching Assistants (5) Develops language production skills, lesson planning and presentation skills, and TA-student interaction skills related to classroom teaching for international teaching assistants. Requires speak exam.

ENGL 106 Advanced Placement (AP) English Preparation for University Study in English (5, max. 10) Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

ENGL 107 International Baccalaureate (IB) English Preparation for University Study in English (5) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

ENGL 108 Writing Ready: Preparing for College Writing (5) Builds writing confidence through frequent informal writing, and introductions to key learning strategies. Includes user-friendly orientation to library and research documents, revision skills, and peer review work central to 100- and 200-level college writing assignments. Offered: A.

ENGL 109 Introductory Composition (5-)

ENGL 110 Introductory Composition (-5) C Development of writing skills: sentence strategies and paragraph structures. Expository, critical, and persuasive essay techniques based on analysis of selected readings. For Educational Opportunity Program students only, upon recommendation by the Office of Minority Affairs.

ENGL 111 Composition: Literature (5) C Study and practice of good writing; topics derived from reading and discussing stories, poems, essays, and plays. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 115 Writing Studio (2) Supports multilingual students concurrently enrolled in a composition course. Builds academic reading skills in order to analyze complex texts, review, and analyze grammar structures to produce different writing effects. Also assists students to develop critical reflective skills to become better familiarized with the writing and revision process. Credit/no-credit only.

ENGL 121 Composition: Social Issues (5) C Focuses on the study and practice of good writing: topics derived from a variety of personal, academic, and public subjects. Includes a service-learning component allowing students to engage with and write about social issues in applied ways.. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 131 Composition: Exposition (5) C Study and practice of good writing: topics derived from a variety of personal, academic, and public subjects. Cannot be taken if student has already received a grade of 2.0 or higher in either ENGL 111, ENGL 121, or ENGL 131.

ENGL 141 The Research Paper (5) C Includes study of library resources, the analysis of reading materials, and writing preparatory papers as basic to writing a reference or research paper. Prerequisite: Either ENGL 111, ENGL 121, or ENGL 131.

ENGL 182 Composition: Multimodal (5) C Study and practice of strategies/skills for effective writing/argument in various situations, disciplines, genres; explicit focus on how multimodal elements of writing--words, images, sound, design, etc.-- work together to produce meaning. Cannot be taken if student already received a 2.0 or higher in ENGL 111, 121, or 131.

ENGL 195 STUDY ABROAD (1-5, max. 15)
Equivalency for 100-level English courses taken on UW study abroad programs or direct exchanges. General elective credit only; may not apply to major requirements.

ENGL 197 Interdisciplinary Writing/Humanities (5, max. 15) C Expository writing based on material presented in a specified humanities lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required.

ENGL 198 Interdisciplinary Writing/Social Science (5, max. 15) C Expository writing based on material presented in a specified social science lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces

of analytic prose. Concurrent registration in specified course required.

ENGL 199 Interdisciplinary Writing/Natural Science (5, max. 15) C Expository writing based on material presented in a specific natural science lecture course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required.

ENGL 200 Reading Literary Forms (5) VLPA Covers techniques and practice in reading and enjoying literature in its various forms: poetry, drama, prose fiction, and film. Examines such features of literary meanings as imagery, characterization, narration, and patterning in sound and sense. Offered: AWSp.

ENGL 201 Introduction to English Within the Humanities (5) VLPA Concepts in the study of language, literature, history, culture, and civilization. Offers substantive encounters with a range of humanities and methods of study. Offered: AWSp.

ENGL 202 Introduction to the Study of English Language and Literature (5) VLPA Gateway course designed for English pre-majors and majors. Introduces critical, historical, and theoretical frameworks important to studying the literature, language, and cultures of English. Cannot be taken for credit if student has taken ENGL 301.

ENGL 204 Popular Fiction and Media (5) VLPA Introduces students to the study of popular culture, possibly including print or visual media, understood as sites of critical reflection. Particular attention to dynamics of production and reception, aesthetics and technique, and cultural politics. Topics may foreground genres (science fiction; romance) or forms (comics; graffiti) . Offered: S.

ENGL 205 Method, Imagination, and Inquiry (5) VLPA Examines ideas of method and imagination in a variety of texts, in literature, philosophy, and science. Particularly concerned with intellectual backgrounds and methods of inquiry that have shaped modern Western literature. Offered: jointly with CHID 205.

ENGL 206 Rhetoric in Everyday Life (5) VLPA Introductory rhetoric course that examines the strategic use of and situated means through which

images, texts, objects, and symbols inform, persuade, and shape social practices in various contexts. Topics focus on education, public policy, politics, law, journalism, media, digital cultural, globalization, popular culture, and the arts.

ENGL 207 Introduction to Cultural Studies (5) I&S/VLPA *Kimberlee Gillis-Bridges* Introduces cultural studies as an interdisciplinary field and practice. Explores multiple histories of the field with an emphasis on current issues and developments. Focuses on culture as a site of political and social debate and struggle. Offered: S.

ENGL 210 Medieval and Early Modern Literature, 400 to 1600 (5) VLPA Introduces literature from the Middle Ages and the Age of Shakespeare, focusing on major works that have shaped the development of literary and intellectual traditions of these periods. Offered: AWSp.

ENGL 211 Literature, 1500-1800 (5) VLPA *Coldewey, Remley, Shields, Streitberger* Introduces literature from the Age of Shakespeare to the American and French Revolutions, focusing on major works that have shaped the development of literary and intellectual traditions in these centuries. Topics include: The Renaissance, religious and political reforms, exploration and colonialism, vernacular cultures, and scientific thought. Offered: AWSpS.

ENGL 212 Literature, 1700-1900 (5) VLPA Introduces eighteenth- and nineteenth-century literature, focusing on representative works that illustrate literary and intellectual developments of the period. Topics include: exploration, empire, colonialism, slavery, revolution, and nation-building. Offered: AWSp.

ENGL 213 Modern and Postmodern Literature (5) VLPA Introduces twentieth-century literature and contemporary literature, focusing on representative works that illustrate literary and intellectual developments since 1900.

ENGL 225 Shakespeare (5) VLPA Introduces Shakespeare's career as dramatist, with study of representative comedies, tragedies, romances, and history plays.

ENGL 242 Reading Prose Fiction (5) VLPA Critical interpretation and meaning in works of prose fiction, representing a variety of types and periods.

ENGL 243 Reading Poetry (5) VLPA Critical interpretation and meaning in poems, representing a variety of types and periods.

ENGL 244 Reading Drama (5) VLPA Critical interpretation and meaning in plays, representing a variety of types and periods.

ENGL 250 American Literature (5) VLPA Introduces American culture through a careful reading of a variety of representative texts in their historical contexts.

ENGL 251 Literature and American Political Culture (5) VLPA/I&S Introduction to the methods and theories used in the analysis of American culture. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media. Offered: jointly with POL S 281.

ENGL 256 Introduction to Queer Cultural Studies (5) I&S, DIV Examines the cultural practices in literature, film, and art that articulate and give meaning to bodies, sexualities, and desires. Teaches critical thinking about identity, power, inequalities, and marginality. Offered: jointly with GWSS 264.

ENGL 257 Asian-American Literature (5) VLPA, DIV Examines the emergence of Asian American literature as a response to anti-Asian legislation, cultural images, and American racial formation. Encourages thinking critically about identity, power, inequalities, and experiences of marginality.

ENGL 258 Introduction African American Literature (5) VLPA, DIV Introduction to various genres of African American literature from its beginnings to the present. Emphasizes the cultural and historical context of African American literary expression and its aesthetics criteria. Explores key issues and debates, such as race and racism, inequality, literary form, and canonical acceptance. Offered: jointly with AFRAM 214.

ENGL 259 Literature and Social Difference (5) VLPA, DIV Literary texts are important evidence for social

difference (gender, race, class, ethnicity, language, citizenship status, sexuality, ability) in contemporary and historical contexts. Examines texts that encourage and provoke us to ask larger questions about identity, power, privilege, society, and the role of culture in present-day or historical settings.

ENGL 265 Introduction to Environmental Humanities (5) I&S/VLPA, DIV Introduces the study of the environment through literature, culture, and history. Topics include changing ideas about nature, wilderness, ecology, pollution, climate, and human/animal relations, with particular emphasis on environmental justice and the unequal distribution of environmental crises, both globally and along class, race and gender lines.

ENGL 266 Literature and Technology (5) VLPA J. Knight Provides an introduction to manuscript, print, and digital media cultures with a focus on the production and dissemination of literature in English. Topics include the history of the book, reading and reception, orality and literacy, editing and publishing, early computing, and the future of literary writing in a digital era.

ENGL 270 The Uses of the English Language (5) VLPA Surveys the assumptions, methodologies, and major issues of English in its cultural settings. Connects English language study with the study of literature, orality and literacy, education, ethnicity, gender, and public policy.

ENGL 277 Introduction to Children's and Young Adult Literature (5) VLPA Introduction to creative works written for children and young adults, with emphasis on historical, cultural, institutional, and industrial contexts of production and reception. Also examines changing assumptions about the social and educational function of children's and young adult literature.

ENGL 281 Intermediate Expository Writing (5) C Writing papers communicating information and opinion to develop accurate, competent, and effective expression.

ENGL 282 Intermediate Multimodal Composition (5) C Strategies for composing effective multimodal texts for print, digital physical delivery, with focus on affordances of various modes--words, images, sound, design, and gesture--and genres to address

specific rhetorical situations both within and beyond the academy. Although the course has no prerequisites, instructors assume knowledge of academic writing.

ENGL 283 Beginning Verse Writing (5) VLPA Intensive study of the ways and means of making a poem.

ENGL 284 Beginning Short Story Writing (5) VLPA Introduction to the theory and practice of writing the short story.

ENGL 285 Writers on Writing (5) VLPA *Bosworth, Kenney, Shields, Sonenberg* Experiencing literature from the inside. Members of the creative writing faculty and other practicing writers discuss their poetry, fiction, and literary nonfiction, literary inspiration, artistic practice, and the writer's life.

ENGL 288 Introduction to Professional and Technical Writing (5) C Engages in professional genres and communication practices in light of emerging technologies. Students produce texts that prepare them to enter professional spaces. Offered: AWSp.

ENGL 295 Study Abroad (1-5, max. 30) VLPA Equivalency for 200-level English courses taken on UW study abroad programs or direct exchanges. May not apply to major requirements.

ENGL 296 Critical Literacy in the Natural Sciences (5) C *Megan Callow* Develops critical literacy in the diffuse but interlocking disciplines of the natural sciences. Through analysis and composition of various texts, students become authoritative participants in scientific discourse while also becoming familiar with ways that Western values are embedded and centered (often invisibly) in the sciences and its related institutions. Offered: AWSp.

ENGL 297 Intermediate Interdisciplinary Writing - Humanities (5, max. 15) C Expository writing based on materials presented in a specified humanities course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 298 Intermediate Interdisciplinary Writing - Social Sciences (5, max. 15) C Expository writing based on materials presented in a specified social science course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 299 Intermediate Interdisciplinary Writing - Natural Sciences (5, max. 15) C Expository writing based on materials presented in a specified natural science course. Assignments include drafts of papers to be submitted in the specified course, and other pieces of analytical prose. Concurrent registration in the specified course required. Offered: AWSpS.

ENGL 300 Reading Major Texts (5) VLPA Intensive examination of one or a few major works of literature. Classroom work to develop skills of careful and critical reading. Book selection varies, but reading consists of major works by important authors and of selected supplementary materials.

ENGL 302 Critical Practice (5) VLPA Intensive study of, and exercise in, applying important or influential interpretive practices for studying language, literature, and culture, along with consideration of their powers/limits. Focuses on developing critical writing abilities. Topics vary and may include critical and interpretive practice from scripture and myth to more contemporary approaches, including newer interdisciplinary practices. Prerequisite: minimum 2.0 in ENGL 202.

ENGL 303 History of Literary Criticism and Theory I (5) VLPA Literary criticism and theory from its beginnings in Plato through the early twentieth century. Philosophical and theoretical grounds for critical practice put forward by philosophers and critics.

ENGL 304 History of Literary Criticism and Theory II (5) VLPA Provides an introduction to contemporary literary, cultural, and critical theory and modern antecedents. Explores frameworks used in study of literature and culture by scholars today.

ENGL 305 Theories of Imagination (5) VLPA/I&S Survey of theories of imagination since the seventeenth century. Focuses on the uses of the concept in literature, criticism, science, and society.

ENGL 306 Introduction to Rhetoric (5) VLPA Introduces rhetorical theory from the classical period to the present, including an overview of core issues, vocabulary, and concepts in rhetorical theory; a discussion of methods for studying rhetoric, and a consideration of the social importance of studying rhetoric in the contemporary moment.

ENGL 307 Cultural Studies (5) VLPA Overview of cultural studies with a focus on reading texts or objects using cultural studies methods and writing analytic essays using cultural studies methods. Focuses on culture as a site of political and social debate and struggle.

ENGL 308 Marxism and Literary Theory (5) VLPA Introduces Marxist theory and methodology. Explores how and why Marx's writings, Marxist theory, and materialist methods became central to the study of literature and culture over the course of the twentieth century.

ENGL 309 Theories of Reading (5) VLPA Investigates what it means to be a reader. Centers on authorial and reading challenges, shifting cultural and theoretical norms, and changes in the public's reading standards.

ENGL 310 The Bible as Literature (5) VLPA Introduction to the development of the religious ideas and institutions of ancient Israel, with selected readings from the Old Testament and New Testament. Emphasis on reading The Bible with literary and historical understanding.

ENGL 311 Modern Jewish Literature in Translation (5) VLPA Survey of Jewish experience and its literary expression since 1880. Includes such Yiddish writers as Sholom Aleichem, Peretz, and I. B. Singer; such Israeli writers as Agnon, Hazaz, and Appelfeld; and such writers in non-Jewish languages as Primo Levi and Kafka.

ENGL 312 Jewish Literature: Biblical to Modern (5) VLPA/I&S, DIV A study of Jewish literature from Biblical narrative and rabbinic commentary to modern prose and poetry with intervening texts primarily organized around major themes: martyrdom and suffering, destruction and exile, messianism, Hasidism and Enlightenment, Yiddishism and Zionism. Various critical approaches;

geographic and historic contexts. Offered: jointly with JEW ST 312.

ENGL 313 Modern European Literature in Translation (5) VLPA Covers selected fiction, poetry, drama, and nonfiction (diaries, manifestos, etc.) in translation by European writers from the mid-19th century to the present. Considers questions of aesthetics, history, and form. Writers may include Bachmann, Baudelaire, Brecht, Celan, Chekhov, Dostoevsky, Ferrante, Flaubert, Ibsen, Jelinek, Kafka, Perec, Proust, Rilke, Tsvetaeva, and Undset.

ENGL 314 Transatlantic Literature and Culture (5) VLPA Explores literatures and cultures produced in the Atlantic world. Emphasizes historical lines of communication and exchange among Atlantic cultures and their literature.

ENGL 315 Literary Modernism (5) VLPA Introduces the genealogy, character, and consequences, of modernism/modernity. Topics may include: preoccupations with novelty/the new; narratives of historical development; temporality; constructions of high and low culture; intersections between aesthetics and politics; transnationalism; and philosophical influences upon literary modernism.

ENGL 316 Postcolonial Literature and Culture (5, max. 10) VLPA, DIV Readings of major texts and writers in postcolonial literature and culture. Surveys some of the most important questions and debates in postcolonial literature, including issues of identity, globalization, language, and nationalism. Cultural focus may vary; see professor for specific details.

ENGL 317 Literature of the Americas (5) VLPA, DIV Examines writings by and about people of the Americas, with a focus on intersections of gender, colonialism, race, sexuality, and ethnicity.

ENGL 318 Black Literary Genres (5) VLPA, DIV Considers how generic forms and conventions have been discussed and distributed in the larger context of African American, or other African diasporic literary studies. Links the relationship between generic forms to questions of power within social, cultural, and historical contexts. Offered: jointly with AFRAM 318; AWSp.

ENGL 319 African Literatures (5) VLPA, DIV *Chrisman* Introduces and explores African

literatures from a range of regions. Pays particular attention to writings connected with the historical experiences of colonialism, anti-colonial resistance, and decolonization. Considers the operations of race, gender, nationhood, neocolonialism, and globalization within and across these writings. Offered: AWSp.

ENGL 320 English Literature: The Middle Ages (5) VLPA Literary culture of Middle Ages in England, as seen in selected works from earlier and later periods, ages of Beowulf and of Geoffrey Chaucer. Read in translation, except for a few later works, which are read in Middle English.

ENGL 321 Chaucer (5) VLPA Chaucer's Canterbury Tales and other poetry, with attention to Chaucer's social, historical, and intellectual milieu.

ENGL 322 English Literature: The Elizabethan Age (5) VLPA Covers literature and culture of the English Renaissance through the age of Shakespeare. May include poetry by the first English laureates, the drama of the first public theaters and prose by the first English essayists.

ENGL 323 Shakespeare to 1603 (5) VLPA Explores Shakespeare's early drama and poetry. May include the sonnets, narrative poems, and selected comedies, histories, or tragedies.

ENGL 324 Shakespeare after 1603 (5) VLPA Explores Shakespeare's later works. Focuses on the mature tragedies and late-career romances, by may include selected comedies and histories.

ENGL 325 English Literature: The Late Renaissance (5) VLPA Covers literature and culture of the late Renaissance in England, from the age of Shakespeare to the English Revolution. May include verse by the metaphysical poets, drama by Jacobean playwrights and rivals to Shakespeare, and selected prose.

ENGL 326 Milton (5) VLPA Milton's early poems and the prose; *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*, with attention to the religious, intellectual, and literary contexts.

ENGL 327 English Literature: Restoration and Early Eighteenth Century (5) VLPA Examines the impact of historical changes including urban growth and

imperial expansion on print culture through selections of poetry, prose, and drama from authors such as Aphra Behn, John Dryden, Alexander Pope, Joseph Addison, and Jonathan Swift.

ENGL 328 English Literature: Later Eighteenth Century (5) VLPA Explores an era of tension between reason and felling; antiquity and modernity; and conservatism and revolution. Readings may include gothic novels by Ann Radcliffe and Matthew Lewis, poetry by Oliver Goldsmith and Robert Burns; and nonfiction prose by Samuel Johnson and Thomas Paine.

ENGL 329 Rise of the English Novel (5) VLPA Traces the development of a major and popular modern literary genre - the novel. Readings survey forms of fiction including the picaresque, the gothic, the epistolary novel, and the romance. Authors range from Daniel Defoe to Jane Austen and beyond.

ENGL 330 English Literature: The Romantic Age (5) VLPA Literary, intellectual, and historical ferment of the period from the French Revolution to the 1830s. Readings from major authors in different literary forms; discussions of critical and philosophical issues in a time of change.

ENGL 331 Romantic Poetry I (5) VLPA Blake, Wordsworth, Coleridge, and their contemporaries.

ENGL 332 Romantic Poetry II (5) VLPA Byron, Shelley, Keats, and their contemporaries.

ENGL 333 English Novel: Early and Middle Nineteenth Century (5) VLPA Explores the romantic and early-Victorian phases of the English novel. May include gothic, historical, or realist works. Possible authors include: Scott, Austen, the Brontes, and Dickens.

ENGL 334 English Novel: Later Nineteenth Century (5) VLPA Examines the high water mark of the realist novel, as well as its fragmentation into popular genres like science and detective fiction and the emergence of literary modernism. Possible authors include: George Eliot, Thomas Hardy, Robert Louis Stevenson, Marie Corelli, Olive Schreiner, H.G. Wells, and Joseph Conrad.

ENGL 335 English Literature: The Age of Victoria (5) VLPA Examines literary works from Victorian Britain and its empire (1837-1901), paired with contemporary social, scientific, and historical developments such as industrialization; urbanization; child labor; imperial expansion; scientific ideas of evolution and geologic time; changing ideas of gender/sexuality; mass education and mass literacy; and the popularization of print media.

ENGL 336 English Literature: Early Twentieth Century (5) VLPA Explores fiction, poetry, and drama in English from the period of 1900-1945. Considers the literature in socio-historical context. Modernism, realism, imperialism, and questions of nationality may be foregrounded.

ENGL 337 The Modern Novel (5) VLPA Explores the novel in English from the first half of the twentieth century. May include such writers as Virginia Woolf, D.H. Lawrence, Gertrude Stein, E.M. Forster, Claude McKay, Elizabeth Bowen, Raja Rao, William Faulkner, Jean Rhys, and Edith Wharton. Includes history and changing aesthetics of the novel as form, alongside the sociohistorical context.

ENGL 338 Modern Poetry (5) VLPA Covers poetry from the 1890s through the 1940s, focusing on modernism and the avant-garde. This period, with the birth of free verse, is one of formal and social tumult. Likely topics include Imagism and Dada; the Harlem Renaissance; World War I and the Great Depression; urbanization; and the New Woman. Authors may include Eliot, H.D., Hughes, Loy, Moore, Pound, Stein, Stevens, Williams, and Yeats.

ENGL 339 English Literature: Contemporary England (5) VLPA Engages literary-historical approaches to the post-1945 period in England, Scotland, Wales, and Ireland. Emphasizes the history and aesthetics of form, alongside issues of contemporary society. Social realism, literary experimentation, dialect, the fate of the bildungsroman, and questions of nationality may be foregrounded. Possible authors range from Orwell to Zadie Smith.

ENGL 340 Anglo-Irish Literature (5) VLPA Principal writers in English of the modern Irish literary movement - Yeats, Joyce, Synge, Gregory, and O'Casey among them - with attention to traditions of Irish culture and history.

ENGL 341 Studies in the Novel (5) VLPA Explores the workings and evolution of the novel. Introduces the distinct styles and purposes of the novel, such as the romance, the roman-a-clef, realism, naturalism, modernism, and postmodernism.

ENGL 342 Contemporary Novel (5) VLPA Study of recent fiction by diverse writers with attention to contemporary ideas in all kinds of forms.

ENGL 343 Studies in Poetry (5) VLPA Explores the workings and development of poetry and poetic theory. Possible topics may include theories and practices of individual genres (e.g. lyric, epic, romance, verse drama) or subgenres (e.g. the ode, the sonnet, the sestina) and verse forms (regular meter vs. free verse) .

ENGL 344 Studies in Drama (5) VLPA Explores the workings and historical development of theatrical practices, including performance and spectatorship more broadly. Possible topics include genres of drama (tragedy, mystery play, melodrama, agitprop) ; histories of drama (Elizabethan theater, Theater of the Absurd, the Mbari Mbayo club, In-Your-Face Theater; and theorists of performance and dramaturgy.

ENGL 345 Studies in Film (5) VLPA Types, techniques, and issues explored by filmmakers. Emphasis on narrative, image, and point of view.

ENGL 346 Studies in Short Fiction (5) VLPA The American and English short story, with attention to the influence of writers of other cultures. Aspects of the short story that distinguish it, in style and purpose, from longer fiction.

ENGL 347 Studies in Non-Fiction Prose (5) VLPA Explores the workings and evolution of non-fiction prose, Introduces the distinct styles and purposes on non-fiction prose such as autobiography, biography, personal essay, reflective and meditative writing, social and scientific inquiry, and persuasive writing.

ENGL 348 Studies in Popular Culture (5) VLPA Explores one or more popular genres (fantasy, romance, mystery) or media (comics, television, videogames) , with attention to historical development, distinctive formal features, and reading protocols. May include study of audience, reception histories, or fan cultures.

ENGL 349 Science Fiction and Fantasy (5) VLPA The study of the development of and specific debates in the related genres of fantasy and science fiction literatures

ENGL 350 American Fiction (5) VLPA Study of novels and shorter fiction by diverse writers, ranging from the earliest narratives to the present. Considers the history and aesthetics of genres of fiction as embedded in their social and cultural context.

ENGL 351 American Literature: The Colonial Period (5) VLPA Examines writings from the earliest explorations of America, encounters with, and responses from, indigenous peoples, and colorization, through the early period of the United States. Readings may include a variety of genres from histories, captivity narratives, autobiographies, to the first novels and poetry of the republic.

ENGL 352 American Literature: The Early Nation (5) VLPA Explores American fiction, poetry, and prose from the early nineteenth century through the Civil War. May include such representative authors of the period as Emerson, Melville, Hawthorne, Douglass and Fuller, along with supplementary study of the broader cultural and political milieu.

ENGL 353 American Literature: Later Nineteenth Century (5) VLPA Explores American fiction, poetry, and prose during the latter half of the nineteenth century. May include such representative authors of the period as Twain, Dickinson, DuBois, Crane, Wharton and Chopin, along with supplementary study of the broader cultural and political milieu.

ENGL 354 American Literature: Early Twentieth Century (5) VLPA Investigates the period of American literary modernism (1900 to WW II) . Topics include nationalism, migration, race, gender, and the impact of the visual arts on literary modernism, as well as the relation between modernity/modernization (social, economic, and technological transformation) and modernism (revolution in literary style) .

ENGL 355 American Literature: Contemporary America (5) VLPA Examines recent American literature and its historical and cultural contexts.

ENGL 356 American Poetry (5) VLPA Examines American poetry in its historical and cultural

contexts. Possible authors include Dickinson, Whitman, Eliot, Frost, Hughes, Brooks, Ginsberg, and Plath.

ENGL 357 Jewish American Literature and Culture (5) VLPA, DIV *Butwin* Examines the literary and cultural production of American Jews from the colonial period to the present time. Considers ways in which American Jews assimilate and resist assimilation while Jewish writers, filmmakers, playwrights, and graphic novelists imitate and alter American life and literature. Offered: jointly with JEW ST 357; AWSp.

ENGL 358 African American Literature (5) VLPA, DIV Selected writings, novels, short stories, plays, and poems by African American and African-descended writers in or from the United States. Study of the historical, cultural, and intellectual context for the development of literary work by such writers, including attention to identity, power, and inequality. Offered: jointly with AFRAM 358.

ENGL 359 Contemporary American Indian Literature (5) VLPA, DIV Creative writings (novels, short stories, poems) of contemporary Indian authors; the traditions out of which these works evolved. Differences between Indian writers and writers of the dominant European/American mainstream. Offered: jointly with AIS 377.

ENGL 360 American Literature and Culture (5) VLPA/I&S American literature and culture in its political and cultural context. Emphasizes an interdisciplinary approach to American literature and culture, including history, politics, anthropology, and mass media.

ENGL 361 American Political Culture: After 1865 (5) VLPA/I&S, DIV American literature in its political and cultural context from the Civil War to the present. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media. Includes attention to thinking critically about differences of power and inequality stemming from sociocultural, political, and economic difference.

ENGL 362 Latino Literary Genres (5) VLPA, DIV Considers how conventions of genre have been distributed in U.S Latino literature and beyond in networks of Latino transnationalism and trans-

border exchanges. Links the relationship between generic forms to questions of power within social, cultural, and historical contexts.

ENGL 363 Literature and the Other Arts and Disciplines (5, max. 10) VLPA Examines the relationships between literature and other arts: for example, painting, photography, architecture, and music; or between literature and other disciplines, such as sciences (e.g. biology, physics, and math) and social sciences (e.g. sociology, psychology, fashion, and environmental studies).

ENGL 364 Literature and Medicine (5) VLPA/I&S How changing concepts of doctor-patient relationship and of body depicted in literary texts affect decisions throughout the human life cycle. Medicine and disease as metaphors for personal experience and social analysis.

ENGL 365 Literature and Discourse on the Environment (5) VLPA *Blake, Handwerk Pays* attention to verbal expression; forms and genres; and historical, cultural, and conceptual contexts of the natural environment. Focuses on sites, nations, and historical periods. Forms and genres include: nature writing, environmentalist discourses, the pastoral, the sublime, discourses of the city, fiction, poetry, nonfiction prose, dramatic forms, and religious texts. Offered: AWSpS.

ENGL 366 Literature and Law (5) VLPA Introduces and explores topics in law and literature, with a focus on the relationship between legal materials and literary or cultural imaginaries. Surveys debates in the field of law and literature or focuses on a specific problem, genre, or historical period.

ENGL 367 Gender Studies in Literature (5, max. 15) VLPA, DIV The study of contemporary approaches to analyzing the gender politics of literature and culture. Examines special topics in the history and development of the major theoretical trends, including the relationship of certain theories of gender to relevant works of literature.

ENGL 368 Women Writers (5, max. 15) VLPA, DIV Investigates how perceptions of "woman writer" shape understandings of women's literary works and the forms in which they compose. Examines texts by women writers with attention to sociocultural, economic, and political context. Considers gender as

a form of social difference as well as power relationships structured around gender inequality.

ENGL 369 Research Methods in Language and Rhetoric (5) VLPA Introduces research theories and methodological approaches in language and rhetoric. Methods and content focus vary by instructor and may include ethnography, corpus analysis, case study, discourse analysis, rhetorical criticism, and various other qualitative and quantitative research methods.

ENGL 370 English Language Study (5) VLPA Wide-ranging introduction to the study of written and spoken English. Includes the nature of language; ways of describing language; the use of language study as an approach to English literature and the teaching of English.

ENGL 371 English Syntax (5) VLPA Description of sentence, phrase, and word structures in present-day English.

ENGL 372 World Englishes (5) VLPA, DIV Examines historical, linguistic, economic, and sociopolitical forces involved in the diversification of Global/New Englishes. Attention to changing power relations, language hierarchies, and inequalities associated with the teaching, learning, and use of English. Explores current debates on linguistic imperialism and resistance, concepts of 'mother tongue', nativeness, comprehensibility/intelligibility judgments, and language ownership.

ENGL 373 History of the English Language (5) VLPA Explores evolution of English sounds, forms, structures, and word meanings from Anglo-Saxon times to the present. Topics include the history of standardizing practices, colonial/post-colonial English, the evolution of English words, and textual history.

ENGL 374 The Language of Literature (5) VLPA Examines the ways that literary texts structure and use language. Topics may include sound, meter, style, sentence and discourse structure, conversation strategies, narrative orientation, and/or dialect/variation in literature.

ENGL 375 Rhetorical Genre Theory and Practice (5) Explores the workings and evolution of rhetorical genres as they emerge from and shape recurring

social situations. Focuses on the relationship between form and content, and how the typified rhetorical features and linguistic styles of genres are related to specific purposes, activities, relations, and identities.

ENGL 376 Introduction to Middle English Language (5) VLPA *Moore* Explores the language and culture of the Middle English period in England (1100-1500). Examines Middle English texts, the cultural importance of written material, the shifting roles of literacy in early England, the relationship to French and Latin, the regional dialects of English in the period, and manuscript culture. Offered: AWP.

ENGL 378 Special Topics in Theories/Methods (5, max. 15) Introduces and explores a specific area of theory or method as it has influence the production, practice, or study of literature, language, and culture in English.

ENGL 379 Special Topics in Forms/Genres/Media (5, max. 15) Introduces and explores a specific area of form, genre, or media as it has influenced the production, practice, or study of literature, language, and culture in English.

ENGL 380 Special Topics in Histories (5, max. 15) Introduces and explores a specific area of history as it has influenced the production, practice, or study of literature, language, and culture in English.

ENGL 381 Advanced Expository Writing (5) C Concentration on the development of prose style for experienced writers.

ENGL 382 Special Topics in Multimodal Composition (5, max. 10) C Focuses on emerging questions, debates, genres, and methods of multimodal analysis and production. Topics vary but might include transmedia storytelling, digital humanities, audiovisual essays, new media journalism, and performance. Although course has no prerequisites, instructors, assume knowledge of academic argumentation strategies.

ENGL 383 The Craft of Verse (5) VLPA Intensive study of various aspects of the craft verse. Readings in contemporary verse and writing using emulation and imitation. Prerequisite: ENGL 283; ENGL 284.

ENGL 384 The Craft of Prose (5) VLPA Intensive study of various aspects of the craft of fiction or creative nonfiction. Readings in contemporary prose and writing using emulation and imitation. Prerequisite: ENGL 283; ENGL 284.

ENGL 385 Modernism/Modernity (5) Introduces and explores the genealogy, character, and consequences of the modern for textual production and reception. Addresses competing conceptions of modernism and periodizations of modernity, including: preoccupations with novelty/the new; narratives of historical development; temporality; constructions of high and low culture; intersections between aesthetics and politics; and transnationalism.

ENGL 386 Asian-American Literature (5) I&S/VLPA, DIV Examines different forms of Asian American expression as a response to racial formations in local and global contexts. Teaches critical thinking about identity, power, inequalities, and marginality.

ENGL 387 Screenwriting (5) VLPA *Shawn H. Wong* Students read screenwriting manuals and screenplays, analyze exemplary films, and write synopses, treatments, and first acts of their own screenplays.

ENGL 388 Professional and Technical Writing (5) C Prepares students to become conscious and conscientious communicators in various modes, platforms, and professions. Recommended: ENGL 288. Offered: AWSp.

ENGL 395 Study Abroad (1-5, max. 30) VLPA Relates major works of literature, literary theory and criticism, or creative writing to the landscape and activities of their settings for students in UW English Department study abroad programs. Equivalency for upper-division English coursework taken on a UW study abroad program or direct exchange.

ENGL 407 Special Topics in Cultural Studies (5) VLPA Advanced work in cultural studies.

ENGL 411 Introduction to the Folktale Among Literate Peoples (3) VLPA Techniques of classification, geographic-historical distribution, theories of origin and interpretations, and related areas of investigation of the oral prose folk narrative of literate peoples.

ENGL 422 Arthurian Legends (5) VLPA Medieval romance in its cultural and historical setting, with concentration on the evolution of Arthurian romance.

ENGL 430 British Writers: Studies in Major Authors (5, max. 15) VLPA Concentration on one writer or a special group of British writers.

ENGL 431 Topics in British Literature (5, max. 15) VLPA Themes and topics of special meaning to British literature.

ENGL 440 Special Studies in Literature (3/5, max. 10) VLPA Themes and topics offering special approaches to literature.

ENGL 442 The Novel: Special Studies (5, max. 10) VLPA Readings may be English or American and drawn from different periods, or they may concentrate on different types - gothic, experimental, novel of consciousness, realistic novel. Special attention to the novel as a distinct literary form. Specific topic varies from quarter to quarter.

ENGL 443 Poetry: Special Studies (5, max. 10) VLPA A poetic tradition or group of poems connected by subject matter or poetic technique. Specific topics vary, but might include poetry as a geography of mind, the development of the love lyric, the comic poem.

ENGL 444 Dramatic Literature: Special Studies (5, max. 10) VLPA Study of a particular dramatic tradition (such as expressionism or the absurd theatre) or character (the clown) or technique (play-within-a-play, the neoclassical three unities). Topics vary.

ENGL 451 American Writers: Studies in Major Authors (5, max. 15) VLPA Concentration on one writer or a special group of American writers.

ENGL 452 Topics in American Literature (5, max. 15) VLPA Exploration of a theme or special topic in American literary expression.

ENGL 453 Introduction to American Folklore (5) VLPA Study of different kinds of folklore inherited from America's past and to be found in America today.

ENGL 457 Pacific Northwest Literature (5) VLPA
Concentrates in alternate years on either prose or poetry of the Pacific Northwest. Prose works examine early exploration, conflicts of native and settlement cultures, various social and economic conflicts. Pacific Northwest poetry includes consideration of its sources, formative influences, and emergence into national prominence.

ENGL 466 Queer and LGBT Studies (5) VLPA/I&S, DIV Special topics in queer theory and lesbian/gay/bisexual/transgender (LGBT) studies. Examination of ways lesbian, bisexual, transgender and queer histories and cultures are represented in criticism, literature, film, performance, and popular culture.

ENGL 470 Theory and Practice of Teaching Literature (5, max. 10) VLPA Reviews the institutional history of English as an academic discipline and the core debates and politics that have shaped the content, teaching, and study of literature and literacy theory. Introduces some theoretical and methodological approaches that inform the teaching of literature.

ENGL 471 Theory and Practice of Teaching Writing (5) VLPA Reviews the research, core debates, and politics that have shaped the practice, teaching and study of writing. Introduces theoretical and methodological approaches that inform the teaching and learning of writing.

ENGL 472 Language Learning (5) VLPA Consideration of how an individual achieves psychological and esthetic grasp of reality through language; relates language development to reading skills, literary interpretation, grammar acquisition, oral fluency, discursive and imaginative writing.

ENGL 473 Current Developments in English Studies: Conference (5) VLPA

ENGL 474 Special Topics in English for Teachers (1-10, max. 10) VLPA

ENGL 475 Colloquium in English for Teachers (1-5, max. 10) VLPA

ENGL 476 Puget Sound Writing Program Institute (10) VLPA Focus on the writing process and the

teaching of writing, accomplished through research, writing, reflection, and demonstration of writing instruction. Affiliated with the National Writing Project.

ENGL 477 Children's Literature (5) VLPA An examination of books that form a part of the imaginative experience of children, as well as a part of a larger literary heritage, viewed in the light of their social, psychological, political, and moral implications.

ENGL 478 Language and Social Policy (5) VLPA/I&S, DIV Examines the relationship between language policy and social organization; the impact of language policy on immigration, education, and access to resources and political institutions; language policy and revolutionary change; language rights.

ENGL 479 Language Variation and Language Policy in North America (5) VLPA/I&S, DIV Surveys basic issues of language variation: phonological, syntactic, semantic, and narrative/discourse differences among speech communities of North American English; examines how language policy can affect access to education, the labor force, and political institutions.

ENGL 481 Special Studies in Expository Writing (5) VLPA Individual projects in various types of nonfictional prose, such as biographical sketches, informational reports, literary reviews, and essays.

ENGL 483 Advanced Verse Workshop (5, max. 10) VLPA Intensive verse workshop. Emphasis on the production and discussion of student poetry. Prerequisite: ENGL 383; ENGL 384.

ENGL 484 Advanced Prose Workshop (5, max. 10) VLPA Intensive prose workshop. Emphasis on the production and discussion of student fiction and/or creative nonfiction. Prerequisite: ENGL 383; ENGL 384.

ENGL 485 Novel Writing (5, max. 15) VLPA Experience in planning, writing, and revising a work of long fiction, whether from the outset, in progress, or in already completed draft. Prerequisite: ENGL 384.

ENGL 486 Playwriting (5, max. 10) VLPA Experience in planning, writing, and revising a play, whether from the outset, in progress, or in already completed draft.

ENGL 490 Looking Forward: Professionalization and Public Life (5) *Kimberlee Gillis-Bridges* Offers methods for students to identify transferrable skills gleaned while completing the English major. Connections between specific skills of literary/theoretical and critical reading and writing, and the demands of contemporary workplaces and civic life offer students the opportunity to consider their post-college goals. Students will develop an e-portfolio to help present their skills to potential employers. Offered: AWSp.

ENGL 491 Internship (1-6, max. 12) Supervised experience in local businesses and other agencies. Open only to upper-division English majors. Credit/no-credit only.

ENGL 492 Advanced Expository Writing Conference (1-5, max. 10) Tutorial arranged by prior mutual agreement between individual student and instructor. Revision of manuscripts is emphasized, but new work may also be undertaken.

ENGL 493 Advanced Creative Writing Conference (1-5, max. 10) Tutorial arranged by prior mutual agreement between individual student and instructor. Revision of manuscripts is emphasized, but new work may also be undertaken.

ENGL 494 Honors Seminar (5, max. 10) VLPA Survey of current issues confronting literary critics today, based on revolving themes and topics. Focuses on debates and developments affecting English language and literatures, including questions about: the relationship of culture and history; the effect of emergent technologies on literary study; the rise of interdisciplinary approaches in the humanities.

ENGL 495 Major Conference for Honors in Creative Writing (5) Special projects available to Honors students in creative writing. Required of, and limited to, Honors students in creative writing.

ENGL 496 Major Conference for Honors (5) Individual study (reading, papers) by arrangement with the instructor. Required of, and limited to, Honors seniors in English.

ENGL 497 Honors Senior Seminar (5) VLPA Seminar study of special topics in language and literary study. Limited to Honors students majoring in English.

ENGL 498 Senior Seminar (5) VLPA Seminar study of special topics in language and literary study. Limited to seniors majoring in English.

ENGL 499 Independent Study (1-5, max. 10) Individual study by arrangement with instructor.

ENGL 501 Textual Theory (5) Provides an introduction to the intellectual foundations of textual studies; historical background in disciplines of philology and textual criticism, theories of textuality from formalism and New Criticism to poststructuralism, and media-specific analysis; current and emerging concerns in the history of the book, media studies, globally comparative philologies, and digital humanities. Offered: jointly with C LIT 551.

ENGL 502 Manuscript Studies (5) An examination of the theoretical and methodological issues attending the study of written texts including literacy, circulation, production, and reception in Premodern genetics, and archival research methods. Offered: jointly with C LIT 552.

ENGL 503 Studies in Print Culture and Publication (5) An examination of the theoretical and methodological issues attending the study of printed texts; training in bibliography and the history of the book from Gutenberg's hand press to the machine and periodical presses of the nineteenth and twentieth centuries; and contemporary book art. Offered: jointly with C LIT 553.

ENGL 504 Digital Literary and Textual Studies (5) An examination of digital textuality from the rise and fall of "hypertext" to contemporary convergence and transmediation in hybrid visual-verbal genres; computer games, digital video, and e-poetry. Coverage of practical issues surrounding digital scholarship and the digital humanities. Offered: jointly with C LIT 554.

ENGL 505 Theories of American Literature (5) Examination of selected texts in American Literature, concentrating on the specific problems of interpretation and scholarship characteristic of the study of works in this field.

ENGL 506 Modern and Contemporary Critical Theory (5) Engages ongoing critical conversations that inform English studies, including: language, textual production, disciplinarity, the university, capital, nation formation, postcolonialism, the environment, race, gender, class, and sexuality. The historical focus is contemporary, with attention to foundational modern theorists.

ENGL 507 History of Literary Criticism and Theory I (5, max. 15) A general introduction to the major issues in the history of criticism followed by the study of the classical theorists, including Plato, Aristotle, Longinus, and the major medieval critics. Offered: jointly with C LIT 507.

ENGL 508 History of Literary Criticism and Theory II (5, max. 15) Literary criticism and theory from the Middle Ages and the Renaissance through the eighteenth century to, but not including, Kant. Offered: jointly with C LIT 508.

ENGL 509 History of Literary Criticism and Theory III (5, max. 15) Literary criticism and theory from Kant's Critique of Judgment to the mid-twentieth century and the work of Northrop Frye. Offered: jointly with C LIT 509.

ENGL 510 History of Literary Criticism and Theory IV (5, max. 15) A study of the major issues in literary criticism and theory since about 1965. Offered: jointly with C LIT 510.

ENGL 512 Introductory Reading in Old English (5)

ENGL 513 Old English Language and Literature (5, max. 15)

ENGL 514 Middle English (5, max. 15)

ENGL 515 Chaucer (5, max. 15)

ENGL 516 Topics in Medieval English Literature (5, max. 15)

ENGL 517 Sixteenth-Century Literature (5, max. 15)

ENGL 518 Shakespeare (5, max. 15)

ENGL 520 Seventeenth-Century Literature (5, max. 15)

ENGL 522 Topics in the English Renaissance, 1485-1660 (5, max. 15)

ENGL 524 Restoration and Eighteenth-Century Literature (5, max. 15)

ENGL 527 Romanticism (5, max. 15)

ENGL 528 Victorian Literature (5, max. 15)

ENGL 529 Topics in Nineteenth-Century Studies (5, max. 15)

ENGL 531 Early American Literature (5, max. 15)

ENGL 532 Nineteenth-Century American Literature (5, max. 15)

ENGL 533 Modern American Literature (5, max. 15)

ENGL 535 American Culture and Criticism (5, max. 15)

ENGL 537 Topics in American Studies (5, max. 15)

ENGL 540 Modern Literature (5, max. 15)

ENGL 541 Contemporary Literature (5, max. 15)

ENGL 543 Anglo-Irish Literature (5, max. 15)

ENGL 544 World Literature in English (5, max. 15)

ENGL 546 Topics in Twentieth-Century Literature (5, max. 15)

ENGL 550 Studies in Narrative (5, max. 15)

ENGL 551 Studies in Poetry (5, max. 15)

ENGL 552 Studies in Drama (5, max. 15)

ENGL 554 Theories of Structure, Genre, Form, and Function (5, max. 15)

ENGL 555 Feminist Theories (5, max. 15)

ENGL 556 Cultural Studies (5, max. 15)

ENGL 558 Capstone in Textual and Digital Studies

(1) Capstone in Textual and Digital Studies.

Prerequisite: ENGL 501/C LIT 551; recommended: Must have completed a sequence of three courses, beginning with an Introduction to Textual Theory course (ENG 501/C LIT 551) and followed by one core elective and one open elective related to Textual and Digital Studies . Credit/no-credit only. Offered: jointly with C LIT 555.

ENGL 559 Literature and Other Disciplines (5, max. 15)**ENGL 560 The Nature of Language: History and Theory (5)****ENGL 561 Stylistics (5)****ENGL 562 Discourse Analysis (5)**

ENGL 563 Research Methods in Language and Rhetoric (5, max. 15) Introduces research theories and methodological approaches in language and rhetoric. Methods and content focus include ethnography, corpus analysis, case study, discourse analysis, rhetorical criticism, and various other qualitative and quantitative research methods.

ENGL 564 Current Rhetorical Theory (5, max. 15)

Prerequisite: teaching experience.

ENGL 567 Approaches to Teaching Composition (1-5, max. 10)

Readings in composition theory and discussion of practical classroom applications. Prerequisite: previous experience or concurrent assignment in teaching writing.

ENGL 568 Topics in Composition Studies (5, max. 15)

Covers various issues in composition studies including: the history of composition study, contemporary composition theory, basic writing, service-learning pedagogy, engaged scholarship, new media and digital studies, writing assessment, writing across the curriculum, and writing program administration.

ENGL 569 Topics in Language and Rhetoric (5, max. 15)

ENGL 570 Practicum in Teaching English as a Second Language (5, max. 10) Discussion and practice of

second-language teaching techniques. Three hours per week teaching required in addition to regular class meetings. Prerequisite: ENGL 571 or permission of instructor. Credit/no-credit only.

ENGL 571 Theory and Practice on Teaching English to Speakers of Other Languages (5, max. 10) Topics include second language reading, aural/oral skills, critical pedagogy, program administration, and language policy.

ENGL 572 Methods and Materials for Teaching English as a Second Language (5) Prerequisite: LING 445 or permission of instructor.

ENGL 574 Research Methods in Second-Language Acquisition (5) Prerequisite: ENGL 572, LING 449, or permission of instructor.

ENGL 575 Pedagogy and Grammar in Teaching English as a Second Language (5)

ENGL 576 Testing and Evaluation in English as a Second Language (5) Evaluation and testing of English language proficiency, including testing theory, types of tests, and teacher-prepared classroom tests. Prerequisite: ENGL 571 and ENGL 572 or permission of instructor.

ENGL 578 Colloquium in Teaching English to Speakers of Other Languages (5, max. 10) Overview of major issues in second-language acquisition, teaching methodology, and classroom practice with special emphasis on links between theories of language learning and practical aspects of teaching English to speakers of other languages.

ENGL 581 The Creative Writer as Critical Reader (5, max. 15)

ENGL 584 Advanced Fiction Workshop (5, max. 20) Prerequisite: graduate standing.

ENGL 585 Advanced Poetry Workshop (5, max. 20) Prerequisite: graduate standing.

ENGL 586 Graduate Writing Conference (5)

ENGL 587 Topics in the Teaching of Creative Writing (3/5)

ENGL 590 Master of Arts Essay (5/10, max. 10)

Research and writing project under the close supervision of a faculty member expert and with the consultation of a second faculty reader. The field of study is chosen by the student. Work is independent and varies. The model is an article in a scholarly journal. Prerequisite: graduate standing in English.

ENGL 591 Master of Arts for Teachers Essay (5)

Research and writing project under the close supervision of a faculty member expert in the field of study chosen by the student within the MAT degree orientation toward the teaching of English, and with the consultation of a second faculty reader. The model is an article in a scholarly journal.

ENGL 592 Graduate English Studies (1-5, max. 10)**ENGL 595 Topics in Teaching Literature (5, max. 15)**

ENGL 597 Directed Readings (*, max. 18) Intensive reading in literature or criticism, directed by members of doctoral supervisory committee. Credit/no-credit only.

ENGL 598 Colloquium in English (1-5, max. 10)

Lectures and seminars presented by visiting scholars or a range of local scholars relevant to English graduate studies.

ENGL 599 Special Studies in English (5, max. 15)**ENGL 600 Independent Study or Research (*-)**

ENGL 601 Internship (3-10, max. 10) Credit/no-credit only.

ENGL 700 Master's Thesis (*-)**ENGL 800 Doctoral Dissertation (*-)****FRENCH AND ITALIAN STUDIES****FRENCH**

FRENCH 101 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language

laboratory is required. First in a sequence of three. Prerequisite: FL placement test score of 0-14 only needed if French is the language of admission or if previous credit for French appears on transcript. If you have never taken French you do not need to take the placement exam.

FRENCH 102 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. Second in a sequence of three. Prerequisite: either FRENCH 101 or score of 15-30 on FR TL placement test.

FRENCH 103 Elementary French (5) Development of speaking, listening, reading, and writing skills to a basic level of proficiency. Teaches students to communicate in French and understand the cultural context of the language. Methods and objectives are primarily oral-aural. Oral practice in the language laboratory is required. Third in a sequence of three. Prerequisite: either FRENCH 102, FRENCH 110, or score of 31-56 on FR TL placement test.

FRENCH 134 First-year Intensive French (15)

Equivalent of FRENCH 101, FRENCH 102, FRENCH 103. No more than 15 credits allowed for any combination of FRENCH 101, FRENCH 102, FRENCH 103, and FRENCH 134. Offered: S.

FRENCH 199 Foreign Study - Elementary (4-16, max. 16)

Elementary level instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through FRENCH 103.

FRENCH 201 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. First in a sequence of three. Prerequisite: either FRENCH 103, FRENCH 134, or score of 57-100 on FR TL placement test.

FRENCH 202 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language

in context through a multi-media approach. Second in a sequence of three. Prerequisite: FRENCH 201.

FRENCH 203 Intermediate French (5) VLPA Designed to bring students to an intermediate level of proficiency. Emphasis on experiencing the language in context through a multi-media approach. Third in a sequence of three. Prerequisite: FRENCH 202.

FRENCH 210 Paris (5) VLPA/I&S Taught in English. Provides an introduction to the art, architecture, politics, and literature of the City of Light.

FRENCH 211 Renaissance, Enlightenment, Revolution: Major Works in English (5) VLPA/I&S Introduction to major figures of French culture from the Middle Ages to the eighteenth century, their contributions to the intellectual life of the Western world. Readings include Montaigne, Descartes, Rousseau, Voltaire, and Moliere. In English. Offered: jointly with JSIS D 217.

FRENCH 212 French Masterworks: Modern in English (5) VLPA Introduction to major figures of French culture from the nineteenth and twentieth centuries. Readings include Balzac, Flaubert, Proust, Sartre, and Celine. In English.

FRENCH 214 The French Fairy Tale Tradition in English (5) VLPA *Delcourt* French fairy tales as a major trend in French literature and a continuing influence on modern fictions and films. Particular attention given to the numerous French women writers of fairy tales at the time of Charles Perrault (seventeenth century) and after. In English.

FRENCH 224 Culture and Media Forms (5) VLPA/I&S Explores French, Francophone, and European culture in history through a focus on varied and evolving media forms: manuscripts, printed books, digital media, visual forms, etc. Taught in English. Offered: jointly with JSIS A 224.

FRENCH 225 Dealing with Death in Francophone Literature and Media (5) VLPA Considers a broad range of French/Francophone cultural media from the Middle Ages to the late twentieth century whose primary concern is death. Investigates how authors and their characters understand, approach, rationalize, engage with, and are emotionally involved with death. Taught in ENGLISH.

FRENCH 226 The Idea of Europe in French Film (5) I&S/VLPA Demonstrates how the European ideal today emerged from a context of extreme conflict. Asks how traces of these conflicts might still haunt modern Europe. Students think critically about the ideals and problem spots of perceived European identity, particularly in relation to non-European cultures.

FRENCH 227 Intermediate Conversational French (2, max. 8) VLPA Practice of intermediate-level French conversational skills through class discussion and oral presentations. Topics oriented toward French culture and current events. Prerequisite: FRENCH 103

FRENCH 228 The Water Crisis in Literature and Film (5) VLPA/I&S *Watts* Interprets a variety of texts (literary, cinematic, etc.) that address the water crisis to understand how water's meaning has changed as people become more conscious of risks in supply (pollution and natural/man-made scarcity) and as access to it is increasingly mediated in light of things like privatization and commodification. Offered: jointly with LIT 228.

FRENCH 229 A Comparative Look at Immigrant Cultural Production in English (5) VLPA, DIV Explores cultural production of contemporary immigrant populations, primarily in France and the United States. Uses an interdisciplinary approach from fields of sociolinguistics, migrant/identity/cultural studies. Considers broad range of examples from interactions between immigrant groups and host countries. Informs students of the processes of identity (re) construction migrants undergo in new environments.

FRENCH 234 Second-year Intensive French (15) VLPA Taught through a task-based approach. This methodology entails exclusive use of French in class and focuses on communicative skills, fostering a highly interactive class in which the language is contextualized and emphasis is placed on meaning as well as forms. No more than 15 credits are allowed for any combination of FRENCH 201, FRENCH 202, FRENCH 203, and FRENCH 234. Prerequisite: either FRENCH 103, FRENCH 134, or score of 57-100 on FR TL placement test. Offered: S.

FRENCH 237 Foreign Study Conversational French (2-8, max. 8) VLPA For participants in foreign study programs.

FRENCH 240 Introduction to French and Italian Studies (5) VLPA Introduction to cultures, histories, and ideas from French and Italian-speaking countries. Attention given to connections with current and global issues. Readings and instruction in English. Offered: jointly with ITAL 240; S.

FRENCH 250 History of French Cinema in English (5) VLPA History of cinema in France from the birth of film, the seventh art, to the present. Socio-historical context of French cinema explored. In English.

FRENCH 297 Foreign Study - French Civilization (3/6, max. 6) VLPA For participants in the Study Abroad Program. Literary tradition, social and cultural values as reflected in literature. Paper (in English) and higher degree of participation required to earn 6 credits. In English.

FRENCH 299 Foreign Study - Intermediate (4-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Evaluation by departmental adviser required to establish proficiency. Further study at 200-level subject to departmental evaluation.

FRENCH 301 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. FRENCH 303 prepares students for literature classes. First in a sequence of three. Prerequisite: either FRENCH 203 or FRENCH 234.

FRENCH 302 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. FRENCH 303 prepares students for literature classes. Second in a sequence of three. Prerequisite: FRENCH 301.

FRENCH 303 Advanced French (5) VLPA Designed to bring students to an advanced level of proficiency in grammar and composition. Emphasis on experiencing the language in context through a multi-media approach. Prerequisite: FRENCH 302.

FRENCH 304 Issues and Perspectives in French and Francophone Studies (5) VLPA For students majoring or minoring in French. Introduces objects study (literature, cinema, popular culture, etc.) and forms of knowledge, methods of analysis, and types of skills to be acquired. Taught in French. Prerequisite: FRENCH 302. Offered: ASp.

FRENCH 305 Texts and Traditions I (5) VLPA Provides broad historical introduction to texts and traditions from the Middle Ages to 1700 that have shaped French and Francophone literatures, art, cultures, political discourses, and histories. Texts surveyed are not a static corpus of "great works" but representative of cultural references with which most French speakers are familiar. Prerequisite: FRENCH 302. Offered: W.

FRENCH 306 Texts and Traditions II (5) VLPA Key texts in modern (French Revolution to the present) literature, cinema, and other forms of cultural production from France and the francophone world read in their cultural, political, and historical contexts. Taught in French. Prerequisite: FRENCH 302. Offered: ASp.

FRENCH 307 Survey of Francophone Literatures and Cultures (5) VLPA Survey of contemporary Francophone (post) colonial literatures and cultures. Prerequisite: FRENCH 302.

FRENCH 308 Foreign Study Composition (3-5, max. 10) VLPA For participants in foreign study programs. Compositions on topical subjects of intermediate difficulty relating to the civilization of the French-speaking countries of Europe. Grammar review as needed. Prerequisite: FRENCH 203.

FRENCH 313 Business Communication in French (5) VLPA Offers students the opportunity to develop French language skills (reading, writing, speaking, and listening) within the context of the French-speaking business world. Business-specific culture emphasized. Prerequisite: FRENCH 302.

FRENCH 314 French Language in Media and Politics (5) I&S/VLPA Develops and applies students' advanced French language skills (reading, writing, speaking, and listening) within the context of media, politics, and current events in the French-speaking world. Conducted in French. Prerequisite: FRENCH 302 Offered: Sp, even years.

FRENCH 315 Everything But Writing; Advanced Oral Skills Development (5) VLPA Focuses entirely on the development of oral production skills, listening comprehension skills and vocabulary expansion, through the use of audio-visual documents as well as texts. Using a task-based approach, achieves a high level of interaction among students while working on group projects and individual presentations. Also focuses on phonetics and pronunciation. Prerequisite: FRENCH 203 Offered: S.

FRENCH 320 French Language and Cultural Identity (5) VLPA/I&S Explores the French language as social practice. Students learn of the social aspect of the evolution of the French language, the dynamic relationship between language and identity, and the linguistic and cultural diversity in the Francophone world. Texts in English. Prerequisite: either FRENCH 103 or FRENCH 134.

FRENCH 327 Advanced Conversation (2, max. 8) VLPA Not open to students whose native language is French. Prerequisite: FRENCH 203.

FRENCH 337 Foreign Study Conversational French (2-8, max. 8) VLPA For participants in foreign study programs. Prerequisite: FRENCH 203.

FRENCH 373 Introduction to Localization and Project Management (5) Covers basic concepts of translation, localization, and internationalization. Explores rationales for localizing products; history and future of the industry; workflows, professional roles, and localization tools. Includes the application of central concepts of localization to real-life situations; and introduction to the basics of localization project management. Offered: jointly with LING 373.

FRENCH 374 Localization: Technology and Tools (5) Covers basic concepts of localization and internationalization. Examines how technology and tools are applied to solving translation and localization scenarios in the real world. Includes daily tasks and basic steps; machine translation; community localization; and experience with actual localization tools. Offered: jointly with LING 374.

FRENCH 376 Culture, Politics, and Society in France from the Religious Wars to Revolutions (5) VLPA/I&S Studies the development of intellectual, literary, and artistic cultures in the context of the

profound political and social evolutions of the Renaissance through the early nineteenth century in France. Taught in English.

FRENCH 378 The Making of Contemporary France (5) VLPA/I&S Study of the historical origins and subsequent development of contemporary problems and characteristics of French government and politics, economy, and society. Taught in English.

FRENCH 379 French and Francophone Cultural and Literary History through Digital Archives and Tools (5) VLPA/I&S Digital archives and tools offer new resources for studying French and Francophone culture, literature, and history, and have transformed the way to learn about these materials. Takes advantage of new resources, as well as to understand them better: how are these technologies reshaping the ways we undertake research?

FRENCH 390 Supervised Study (2-6, max. 20)

FRENCH 397 Foreign Study French Civilization (3/6, max. 6) VLPA For participants in the foreign study program. Literary tradition, social and cultural values as reflected in literature. Paper (in French) and higher degree of participation required to earn 6 credits. In French. Prerequisite: FRENCH 203.

FRENCH 404 Old French (5) VLPA

FRENCH 406 Advanced French Composition (5) VLPA Extensive guidance in advanced French composition, emphasizing stylistics and grammar. Prerequisite: FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 411 Topics in the Middle Ages (5) VLPA Sixteenth-century literature with emphasis on poetry and the general artistic ambiance. Prerequisite: FRENCH 304, FRENCH 305 or FRENCH 306.

FRENCH 412 Topics in Sixteenth Century French Literature (5) VLPA An introduction to major French literature and culture of the sixteenth century, usually with a guiding theme such as travel and the court. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 413 Topics in Seventeenth Century Literature (5) VLPA Seventeenth-century literature,

with emphasis on the development of classicism. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 414 French Literature of the Eighteenth Century: Enlightenment (5) VLPA Eighteenth-century literature, with emphasis on the development of the Enlightenment ideology. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 415 French Literature of the Eighteenth Century: Post-Enlightenment (5) VLPA Eighteenth-century literature, with emphasis on the "dark side of the Enlightenment" and nascent romanticism. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 416 French Literature of the Nineteenth Century: Romanticism (5) VLPA Nineteenth-century literature, with emphasis on romanticism and the early manifestations of realism. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 418 French Literature of the Early Twentieth Century (5) VLPA Twentieth-century literature, with emphasis on the period 1900-1939. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 419 French Literature Since World War II (5) VLPA Twentieth-century literature, with emphasis on the period 1939 to the present. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 420 Interdisciplinary Approaches to Literature (5) VLPA Interdisciplinary studies in French literature and culture, focusing on the complex interactions of literature and other disciplines, i.e. philosophy, psychoanalysis, anthropology, architecture. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 421 Psychoanalysis and Literature (5) VLPA Readings from Freud and French critical writers regarding the relationship between psychoanalysis and literature. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 427 Fiction: Twentieth Century (5) VLPA Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 431 Critical Approaches to French Poetry (5) VLPA Interdisciplinary approaches to French poetry focusing on the intersection of fine art, cultural movements, and the production of literature in the Second Empire and the Third Republic. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 432 Critical Approaches to French Fiction (5) VLPA Addresses theory and practice of fiction within the context of a given century or movement. Content varies. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 435 Topics in Non-Fiction (5) VLPA Content varies. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 441 Quebecois Literature (5) VLPA Readings of novels, plays, and occasionally, poetry. Special attention paid to how Quebecois authors represent in their works the complex socio-political reality of their culture. Conducted in French. French majors required to read and write in French; all others may read and write in English. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306. Offered: jointly with JSIS A 441.

FRENCH 445 Women Writers (5) VLPA Focuses on French women writers and writing about women. Chronological and geographic range varies. Gender issues addressed in critical fashion, considering the different historical and ideological contexts in which each of the works was produced. Prerequisite: either FRENCH 304, FRENCH 305, FRENCH 306.

FRENCH 448 Cultures of Franco-America (5) VLPA/I&S, DIV Considers a broad range of literary and cultural texts emerging from the long history of the French in North America and Americans in France. Traces processes of racialization; paying particular attention to intersections between race and class, gender, and sexuality. Texts in French and English. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 450 Themes in French Literature and Culture (5) VLPA Interdisciplinary studies in French

literature and culture, focusing on the construction and representation of gender roles in the French novel from the early eighteenth century.

Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 451 History and Literature of the French Religious Wars (5) VLPA/I&S Major political, social, and religious movements and events of, and related to, the French religious wars of 1560 to the end of the century, along with the treatment of these in the prose, poetry, and drama of the period. For students receiving French credit, readings must be done in French. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 455 One Author in French Literature/Culture (5, max. 15) VLPA In-depth focus on the works of one author in French literature or culture. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 457 One Decade in French Literature and Culture (5, max. 15) VLPA Content varies. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 458 French Art and Literature: Period Studies (5) VLPA Comparative studies of theme and technique in art and literature to illustrate major concerns of a particular period as expressed in these two media. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 461 Seventeenth-Century Drama (5) VLPA Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 463 Nineteenth-Century Drama (5) VLPA Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 465 Twentieth-Century Drama (5) VLPA Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 470 Cinema (5) VLPA Major films and figures of French cinema from the beginnings to the present. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306.

FRENCH 472 Translation Theory and Practice (5) VLPA This course develops advanced translation skills through work on a variety of genres (literary, commercial, journalistic, etc.) and in a variety of modes (interpreting, subtitling, etc.) . It also engages translation theory by considering the problem of cultural difference embedded in language and broader issues of originality in and the "ownership" of the translated text. Conducted in French and English. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306. Offered: W, even years.

FRENCH 490 Honors Seminar (2-5, max. 10) VLPA Special studies in French literature. Required of candidates for Honors in French. Prerequisite: FRENCH 303; either FRENCH 304, FRENCH 305, FRENCH 306, or FRENCH 307.

FRENCH 499 Special Topics (1-5, max. 10) Topics to meet specific needs.

FRENCH 510 Methodology of French Language Teaching (3) Theoretical and practical foundation of teaching French. Major topics include modern theories of language and language acquisition which underlie modern methods of foreign language teaching, teaching techniques, testing, and classroom relations with emphasis on the multiple-approach direct method. Required for beginning French teaching assistants. Credit/no-credit only.

FRENCH 515 French Literature of the High Middle Ages (5, max. 10) Old French literature, from the beginning to 1315. Prerequisite: permission of instructor.

FRENCH 516 Middle French Literature (5, max. 10) French literature from 1315 to 1500. Prerequisite: permission of instructor.

FRENCH 541 History of the French Language (5) Survey of the phonological, morphological, and syntactical development of the French language from its origins to the present.

FRENCH 550 Methods in Literary and Humanistic Scholarship (5) Review of basic tools, techniques, and paradigms for scholarly research and writing in literary studies and the humanities. Offered: jointly with ITAL 550.

FRENCH 551 Theories of the Text from Medieval Manuscripts to Digital Media (5) Overview of textual theory and literary criticism. Foundations in philology and literary history. Bibliography and textual criticism. Formalist and poststructuralist critiques. Sociology and materiality of the text. History of the book. Texts in the digital age. Offered: jointly with ITAL 551.

FRENCH 552 Manuscript Cultures (5) Techniques, terminology, and bibliography of manuscript scholarship. The production of manuscripts from Antiquity through the Renaissance; the evolution of scripts; the rise of literacy; and the development of libraries in Italy and France. Topics and methods include material philology, textual criticism, relations between text/image, and the digitalization of manuscripts. Offered: jointly with ITAL 552.

FRENCH 553 Topics in Print Culture (5) Key readings, theoretical questions, and critical approaches in book history, focusing on printed texts from Gutenberg to today. The impacts of evolving technologies, material forms, and circulation within French, Italian, and other literary traditions. Methods and tools for evaluating an interpreting these impacts (bibliography, *histoire du livre*, and textual scholarship). Offered: jointly with ITAL 553.

FRENCH 565 Studies in French Drama (5, max. 10) Studies in French drama, sixteenth to twentieth centuries.

FRENCH 570 Seminar in Cinema (5, max. 10)
Prerequisite: permission of instructor.

FRENCH 577 Modern Critical Methods (5) Modern critical methodology and theory.

FRENCH 590 Special Seminar and Conference (1-10, max. 30) Group seminars, or individual conferences, are scheduled under this number to meet special needs. Prerequisite: permission of the Graduate Program Coordinator.

FRENCH 591 Literary Problems: Middle Ages (5, max. 10)

FRENCH 592 Literary Problems: Renaissance (5, max. 10)

FRENCH 593 Literary Problems: Seventeenth Century (5, max. 10)

FRENCH 594 Literary Problems: Eighteenth Century (5, max. 10)

FRENCH 595 Literary Problems: Nineteenth Century (5, max. 10)

FRENCH 596 Literary Problems: Twentieth Century (5, max. 10)

FRENCH 600 Independent Study or Research (*-)

FRENCH 700 Master's Thesis (*-) Credit/no-credit only.

FRENCH 800 Doctoral Dissertation (*-) Credit/no-credit only.

ITALIAN

ITAL 101 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. First in a sequence of three. Offered: A.

ITAL 102 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. Second in a sequence of three. Prerequisite: either ITAL 101 or score of 15-30 on IT TL placement test. Offered: W.

ITAL 103 Elementary Italian (5) Methods and objectives are primarily oral-aural. Use of audio material required. Third in a sequence of three. Prerequisite: either ITAL 102, ITAL 111, or score of 31-56 on IT TL placement test. Offered: Sp.

ITAL 111 Accelerated First-Year Italian (10) Intensive version of ITAL 101 and ITAL 102 designed for highly motivated students.

ITAL 127 Beginning Conversational Italian (2, max. 6) Development of beginning-level Italian conversational skills through class discussions and oral presentations. Topics vary. Not open to native speakers.

ITAL 134 Intensive First-Year Italian (15) An intensive language course equivalent to ITAL 101, ITAL 102, ITAL 103, designed for highly motivated students. Not open for credit to students who have taken ITAL 102 and ITAL 103. Offered: S.

ITAL 199 Foreign Study - Elementary (4-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through ITAL 103.

ITAL 201 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either ITAL 103, ITAL 113, ITAL 134, or score of 57-100 on IT TL placement test.

ITAL 202 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: ITAL 201.

ITAL 203 Intermediate Italian (5) VLPA Intensive speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: ITAL 202.

ITAL 227 Intermediate Conversational Italian (2, max. 6) VLPA Development of intermediate-level Italian conversational skills through class discussions and oral presentations. Topics vary. Not open to native speakers. Prerequisite: ITAL 103.

ITAL 234 Intensive Second-Year Italian (15) VLPA Intensive language course designed for highly motivated students. Equivalent to ITAL 201, ITAL 202, ITAL 203. Prerequisite: either ITAL 103, ITAL 113, ITAL 134, or score of 57-100 on IT TL placement test. Offered: S.

ITAL 240 Introduction to French and Italian Studies (5) VLPA Introduction to cultures, histories, and ideas from French and Italian-speaking countries. Attention given to connections with current and global issues. Readings and instruction in English. Offered: jointly with FRENCH 240; S.

ITAL 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center.

Literary and historic documents, visual arts, architecture, film, and opera used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with ART H 250/HSTEU 250; W.

ITAL 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gaylard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes, make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ART H 260/JSIS A 260; W.

ITAL 261 Italian Cities (5) VLPA Introduces Italian culture by focusing on the past and present of five of the nation's most important cities: Rome, Florence, Venice, Milan, and Naples. Taught in English. Offered: jointly with ART H 261.

ITAL 262 Dante's Divine Comedy (5) VLPA Introduces Dante Alighieri's *Divine Comedy*. Covers Dante's journey through the afterlife. Explores questions about the nature of evil, the possibility for spiritual improvement, and the experience of true happiness. Identifies parallels with the modern day. Taught in English.

ITAL 299 Foreign Study - Intermediate (4-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Evaluation by departmental adviser required to establish proficiency. Further study at 200-level subject to departmental evaluation.

ITAL 301 Advanced Italian Language through Contemporary Culture (5) VLPA Advanced Italian language study through authentic cultural documents. Prerequisite: either ITAL 203 or ITAL 234. Offered: A.

ITAL 302 Italian Cultural Traditions (5) VLPA Modern culture through literary, journalistic, cinematic, and other texts. Prerequisite: ITAL 301. Offered: W.

ITAL 303 Italian Stylistics (5) VLPA Functional grammar review; creative written and oral composition and reading, with special attention to problems of style. Prerequisite: ITAL 302.

ITAL 304 Issues and Perspectives in Italian Studies

(5) VLPA For students majoring or minoring in Italian. Introduces objects of study (literature, cinema, popular culture, etc.) and forms of knowledge, methods of analysis, and types of skills to be acquired. Taught in Italian. Offered: A.

ITAL 305 Texts and Traditions I (5) VLPA Provides broad historical introduction to texts and traditions from the Middle Ages to 1700 that have shaped Italian literature, art, culture, political discourse, and history. Texts surveyed are not a static corpus of "great works" but representative of cultural references with which most Italian speakers are familiar. Offered: W.

ITAL 306 Texts and Traditions II (5) VLPA Key texts in modern Italian literature, cinema, and other media read in their cultural, political, and historical contexts. Texts surveyed are not a static corpus of "great works" but representative of cultural references with which most Italian speakers are familiar. Taught in Italian. Prerequisite: ITAL 303.

ITAL 313 Made in Italy - Italian for Business (5- I&S G. Tassone) Prepares students to experience and actively engage in the dynamic world of Italian business, fosters cultural competency, hones practical communications skills, and cultivates linguistic expertise necessary for making connections in one of the world's most important economy. Provides students practical and transferable skills and empowers them in the global job market. Prerequisite: ITAL 202 or ITAL 234

ITAL 318 Italian Literature in English (5) VLPA

ITAL 327 Advanced Conversation (2, max. 8) VLPA Not open to students whose native language is Italian. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 334 Intensive Third-Year Italian (15) VLPA Intensive advanced Italian language equivalent to ITAL 301, ITAL 302, and ITAL 303. Prerequisite: Either ITAL 203 or ITAL 234. Offered: S.

ITAL 341 Italian and American Poetry in Translation (5) VLPA Introduction to basic concepts and skills required for Italian-to-English translation. Examines the main aspects of contrastive grammar and stylistics used in translation, providing practical opportunities to incorporate and apply the material.

Exposure to a variety of types of translation. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 342 Advanced Italian Composition and Essay Writing (5) VLPA

Addresses issues of syntax and grammar, register and style, and advanced vocabulary for academic writing. Teaches students to write a cogent, well-structured essay for upper-level literature classes in Italian. Writing intensive. Conducted in Italian (some material in English) . Prerequisite: either ITAL 203 or ITAL 234.

ITAL 343 Stylistics and Rhetoric (5) VLPA Introduces rhetorical devices and figures of speech through analysis of texts within Italian literary tradition. Particular attention given to poetic texts. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 351 Contemporary Italian Culture (5) I&S Italian culture from the 1980s to the present, with discussion of major events of the period and readings from fiction, political manifestos, song lyrics, etc. Emphasis on recent linguistic developments, changed role of women, meaning of multiculturalism in Italy, and the spread of global culture. Conducted in Italian. Prerequisite: either ITAL 203 or ITAL 234.

ITAL 352 Italian Cultural History (5) VLPA/I&S Italian history and culture from the thirteenth to the twentieth century, with discussion of major historical and cultural events. Readings from selected bibliography and historical documents, literature, etc. Emphasis on the historical context of the most significant aspects of Italian culture through the centuries. Conducted in Italian.

ITAL 353 Language and Cultural Identity (5) VLPA/I&S Investigates the connection between Italian language and cultural identity, from Dante's linguistic theories in the early fourteenth century to nineteenth-century nationalist myths and today's transformations in Italian society. Taught in Italian. Prerequisite: ITAL 302.

ITAL 354 Travels, Migrations, and Exile (5) VLPA, DIV Literature of travel and exploration from medieval times to the twenty-first century as a means of evaluating historical societies, as well as recording responses to encountering real or imagined new places/people. Topics include epic

adventures, short stories, travel journals, the 'gran tour', quests of introspection. In English.

ITAL 355 Culture, Politics, and Media in Italy (5) VLPA/I&S *Beatrice Arduini* Role of media in shaping Italian history, culture, and politics: from medieval scriptoria, to Venice as Renaissance capital of printing, to Berlusconi's media empire. Topics include propaganda and political conflict; heresy and censorship; rising literacy, mass publics, and Americanization of Italian media. Taught in English. Offered: WSp.

ITAL 356 Italian Society in Film and Literature (5, max. 15) VLPA/I&S Studies the evolution of Italian postwar society through the analysis of film and literature as well as critical, historical, and sociological readings.

ITAL 357 Race in Italy: Inventing Others in the Early Modern World (5) VLPA, DIV Shifting Italian and European definitions of race and otherness in literary and visual representations from 1300-1700, ranging from medieval stories about Jews to 17th-century paintings. Topics include religion as race; language and nationalism; travel literature, costume history, and ethnography; and the presence of "black" Africans across Renaissance Europe. Taught in English.

ITAL 380 Italian Culture Seminar (1, max. 7) VLPA Focuses on culture topics (eg. cinema, the media, race and immigration) . Must be taken in conjunction with an ITAL 350-level course. Taught in Italian. Prerequisite: ITAL 203 or ITAL 234. Credit/no-credit only. Offered: A WSp.

ITAL 390 Supervised Study (2-6, max. 20)

ITAL 399 Foreign Study: Advanced (4-16, max. 16) VLPA Advanced instruction in approved foreign study program.

ITAL 401 Medieval Italian Readings (5) VLPA Exploration of medieval Italian cultural history through a broad variety of literary and other textual traditions. Prerequisite: ITAL 302.

ITAL 402 Early Modern Italian Readings I (5) VLPA Readings in Italian Quattro/Cinquecento, covering

the period of the Renaissance. Prerequisite: ITAL 302.

ITAL 403 Early Modern Italian Readings II (5) VLPA Readings in Italian Sei/Settecento, covering the periods of Baroque and Enlightenment literature. Prerequisite: ITAL 302.

ITAL 404 Modern Italian Readings I (5) VLPA Readings in Italian Ottocento, covering the period of Romanticism. Prerequisite: ITAL 302.

ITAL 405 Modern Italian Readings II (5) VLPA Readings in Italian Novecento, covering the work of major Italian twentieth-century authors. Prerequisite: ITAL 302.

ITAL 431 Italian Theater (5) VLPA The development of Italian theater from the Renaissance to the twentieth century. Prerequisite: ITAL 302.

ITAL 465 Contemporary Italian Narrative (5, max. 15) VLPA Critical reading of selected modern exponents of the short story and novel. Prerequisite: ITAL 302.

ITAL 466 Italian Society in Cinema and Literature in Italian (5, max. 15) VLPA/I&S Studies the evolution of Italian postwar society through the analysis of film and literature as well as critical, historical, and sociological readings. Offered in Italian. Prerequisite: ITAL 302.

ITAL 470 Dante (5) VLPA Introduction to Dante's *Commedia* and minor works, conducted in Italian. Prerequisite: ITAL 302.

ITAL 475 Italian Fascism: Architecture and Power (5) VLPA/I&S Fascism in Italy as studied within the broader European context of nationalism, imperialism, and modernization, with particular emphasis on the arts - literature, film, architecture, and urbanism. Offered: jointly with ART H 495.

ITAL 480 Dante's Comedy in English (5) VLPA Introduction to Dante's *Comedy*. Considers formal, structural, linguistic, literary, historical, cultural, philosophical, and theological issues raised by the text. Discusses the main currents of twentieth-century Dante criticism.

ITAL 481 Dante's Comedy in English (5) VLPA

Second half of a two-quarter series. Close study of Dante's Purgatory and Paradiso and retrospective reading of Inferno. Explores Dante's concept of art, both human and divine, as it is developed in and defines the poem. Prerequisite: ITAL 480.

ITAL 482 The Decameron in English (5) VLPA An integral reading of the Decameron, with some consideration of its place in world literature and as an expression of the culture of its time.

ITAL 490 Proseminar in Italian Literature (3-5) VLPA

Intended to help students achieve a mature critical mastery of Italian literature.

ITAL 499 Special Topics (1-5, max. 10) Topics to meet specific needs. Prerequisite: either ITAL 302 or ITAL 334.

ITAL 501 Medieval Italian Readings (5) Exploration of medieval Italian cultural history through a broad variety of literary and other textual traditions.

ITAL 502 Early Modern Italian Readings I (5)

Readings in Italian Quattro/Cinquecento over the period of the Renaissance. Covers major intellectual, literary, and cultural movements and figures of the period, including humanistic rediscovery of Graeco-Roman models, chivalric poems, comic theater.

ITAL 503 Early Modern Italian Readings II (5)

Readings in Italian Sei/Settecento, covering the periods of Baroque and Enlightenment literature.

ITAL 504 Modern Italian Readings I (5)

Readings in Italian Ottocento, covering the period of Romanticism.

ITAL 505 Modern Italian Readings 2 (5)

Readings in Italian Novecento, covering the work of the major Italian twentieth-century authors.

ITAL 514 Dante (5, max. 10)

ITAL 531 Italian Theater (5) The development of Italian theater from the Renaissance to the twentieth century. Individual conferences with lecturing professor. Prerequisite: graduate students only.

ITAL 550 Methods in Literary and Humanistic Scholarship (5)

Review of basic tools, techniques, and paradigms for scholarly research and writing in literary studies and the humanities. Offered: jointly with FRENCH 550.

ITAL 551 Theories of the Text from Medieval Manuscripts to Digital Media (5)

Overview of textual theory and literary criticism. Foundations in philology and literary history. Bibliography and textual criticism. Formalist and poststructuralist critiques. Sociology and materiality of the text. History of the book. Texts in the digital age. Offered: jointly with FRENCH 551.

ITAL 552 Manuscript Cultures (5)

Techniques, terminology, and bibliography of manuscript scholarship. The production of manuscripts from Antiquity through the Renaissance; the evolution of scripts; the rise of literacy; and the development of libraries in Italy and France. Topics and methods include material philology, textual criticism, relations between text/image, and the digitalization of manuscripts. Offered: jointly with FRENCH 552.

ITAL 553 Topics in Print Culture (5)

Key readings, theoretical questions, and critical approaches in book history, focusing on printed texts from Gutenberg to today. The impacts of evolving technologies, material forms, and circulation within French, Italian, and other literary traditions. Methods and tools for evaluating an interpreting these impacts (bibliography, *histoire du livre*, and textual scholarship). Offered: jointly with FRENCH 553.

ITAL 560 Reading Fashion (5)

Examines the emergence and problematizing of the notion of "fashion" in early modern Europe, focusing on Italy, France, and England. Analyzes late medieval and early modern literary and visual reflections of "fashion" in relation to today's critical discourses on fashion. Taught in English.

ITAL 570 Seminar in Cinema (5)

Studies in various areas of Italian cinema, concentrating on major directors, critics, and movements. Prerequisite: permission of instructor.

ITAL 590 Special Seminar and Conference (1-10,

max. 30) Group seminars, or individual conferences,

are scheduled under this number to meet specific needs. Prerequisite: permission of instructor.

ITAL 591 Literary Problems: Middle Ages and Fourteenth Century (5, max. 10)

ITAL 592 Literary Problems: Renaissance (5, max. 10)

ITAL 593 Literary Problems: Early Modern (5, max. 10)

ITAL 594 Literary Problems: Eighteenth Century (5, max. 10)

ITAL 595 Literary Problems: Nineteenth Century (5, max. 10)

ITAL 596 Literary Problems: Twentieth Century (5, max. 10)

ITAL 600 Independent Study or Research (*-)

GENDER, WOMEN, AND SEXUALITY STUDIES

GWSS 200 Introduction to Women Studies (5) I&S, DIV Feminist analysis of the construction and enforcement of gender differences and gender inequalities in various contexts. Emphasis on the intersection of race, class, sexuality, and nationality in the lives of women. Topics include feminist theory, motherhood, popular culture, sexual autonomy, racism, and activism in the United States, Asia, Latin America. Offered: AWPpS.

GWSS 206 Philosophy of Feminism (5) I&S, DIV Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with PHIL 206/POL S 212.

GWSS 235 Global Feminist Art (5) VLPA/I&S Introduces feminism as a way of thinking about visual art practice in terms of social hierarchy, aesthetic form, and ideology. Explores how feminist artists working in diverse locations and cultural

traditions challenge, at the local and global level, artistic conventions and representations of gender, sexuality, race, class, and nationality. Offered: jointly with ANTH 235.

GWSS 241 Hip Hop and Indie Rock (5)

VLPA/I&S Habell-Pallan Introduction to pop music studies. Examines how archives, oral histories, and new media transform stories about music. Traces rhythms, tempos, and genres including blues, gospel, estilo bravo, punk, son jarocho, and disco that influence hip hop and indie rock, contextualizing their relation to gender, race/ethnicity, class, locality, and nation. Offered: Sp.

GWSS 244 Indigenous Feminisms (5) I&S, DIV

Ross Reconceptualizes and examines the formation of feminisms within a transnational indigenous framework. Topics include indigenous knowledge production, sovereignty, analyses of genders and sexualities, violence, poverty, the politics of reproduction, cultural identities, media, and environmental and social justice.

GWSS 251 Introduction to Gender and Popular Culture (5) I&S/VLPA

Habell-Pallan Introduction to critical examination of gender, race/ethnicity, and sexuality in music, film, television, and the internet. Explores cultural meanings and social uses of popular culture by various communities in local and global contexts. Analysis of commercial and independent pop culture. Examination of popular culture forms varies depending on instructor.

GWSS 255 Masculinities: Contestation, Circulation, and Transformation (5) I&S, DIV

Looks at different ways that masculinity is understood and represented historically and contemporarily. While primarily U.S. based, also attends to how different styles of masculinity travel via immigration and media. Explores the relationship between men, masculinity, and other social movements (e.g. anti-violence, gay rights).

GWSS 256 Feminist Exploration Series (2-5, max. 6)

I&S Explores special topics developed and presented by an upper division Gender, Women, and Sexuality Studies major under the supervision of a faculty member. Prerequisite: GWSS 200. Credit/no-credit only.

GWSS 257 Psychology of Gender (5) I&S, DIV *Kenney* Major psychological theories of gender-role development; biological and environmental influences that determine and maintain gender differences in behavior; roles in children and adults; topics include aggression, cognitive abilities, achievement motivation, affiliation. Offered: jointly with PSYCH 257.

GWSS 262 Gender and Sport (5) I&S, DIV Considers the relationship between sports and society. Focuses on how sports shape cultural ideas of masculinity and femininity. Examines how assumptions about professional and amateur athletes reflect and challenge social norms about gender, sexuality, race, and class. Other topics include student athletes, the business of sport, and non-normative athletic bodies. Offered: ASp.

GWSS 264 Introduction to Queer Cultural Studies (5) I&S, DIV Examines the cultural practices in literature, film, and art that articulate and give meaning to bodies, sexualities, and desires. Teaches critical thinking about identity, power, inequalities, and marginality. Offered: jointly with ENGL 256.

GWSS 272 Introduction to Gender and Fandom (5) I&S/VLPA, DIV *R. LEE* Examines gender, race, and sexuality in transformation of cultural products by online fandoms, in both domestic and transnational contexts, across a wide variety of media.

GWSS 283 Introduction to Women's History (5) I&S Includes units on American, European, and Third World women that examine centers of women's activities, women's place in male-dominated spheres (politics), women's impact on culture (health, arts), and the effect of larger changes on women's lives (technology, colonization). Offered: jointly with HSTCMP 283; A.

GWSS 290 Special Topics in Women Studies (2-5, max. 15) I&S Exploration of specific problems and issues relevant to the study of women. Offered by visiting or resident faculty members.

GWSS 299 Women Studies Colloquium (2) I&S Introduces the discipline of Gender, Women, and Sexuality Studies to new and potential majors and minors. Credit/no-credit only.

GWSS 300 Gender, Race, and Class in Social Stratification (5) I&S, DIV The intersection of race, class, and gender in the lives of women of color in the United States from historical and contemporary perspectives. Topics include racism, classism, sexism, activism, sexuality, and inter-racial dynamics between women of color groups. Prerequisite: GWSS 200. Offered: jointly with AES 322.

GWSS 302 Feminist Theories and Methods (5) I&S Explores tools for conducting research, using feminist, anti-racist, and anti-imperialist frameworks. Focus on qualitative research methods includes ethnographic interviews, discourse and visual analyses, radical archival research. Students craft viable research questions; identify and access relevant resources; and plan, organize, and write complex and nuanced research proposals. Prerequisite: either GWSS 200 or GWSS 206.

GWSS 305 Feminism in an International Context (5) I&S Women and feminism from global theoretical perspectives. Critical theoretical ways of thinking about feminism. How women are differently situated throughout the world. How they are represented affects women's agency. Focus on how race and gender affect one another. Representations of and by women throughout the world.

GWSS 310 Women and the Law (5) I&S, DIV Examines how law addresses women, how the courts have made attempts to address women of color, poor women, lesbians, and women with disabilities. Topics include constitutional construction of equality, employment discrimination, reproductive rights, regulation of sexuality, families and motherhood, sexual harassment, violence against women, and international women and human rights.

GWSS 313 Women in Politics (5) I&S, DIV Theoretical, historical, and empirical studies of women's participation in political and social movements. Women's diverse efforts to improve their political, social, and economic status. Policy issues of particular concern to women. Women's political experiences in household, local, regional, national, and international arenas. Offered: jointly with POL S 313.

GWSS 315 Gender, Race, Sexuality, and Medicine: From the Plantation to the Clinic (5) I&S,

DIV Bettina A Judd Interdisciplinary humanities-based approach toward the intersection of gender, race, and medicine. Scientific constructions of race, gender, and sexuality. Examines the role medicine has played in social orientations to race, gender, and sexuality. Legacy of slavery, and medical institutions. Recommended: courses and topics related to American Ethnic Studies, Gender, Women & Sexuality Studies, Pre-Med, Public Health, Anthropology, Sociology, and Nutrition.

GWSS 321 History of African American Women and the Feminist Movement (5) I&S, DIV "Feminist Movement" from early nineteenth century to present. Treats relationship between black and white women in their struggle for independence, at times together and at times apart. Discusses the reasons, process, and results of collaboration as well as opposition. Examines recent and contemporary attempts at cooperation. Offered: jointly with AFRAM 321.

GWSS 328 Gender and Sexuality in China (5) I&S, DIV Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform. Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with ANTH 328/JSIS A 328.

GWSS 332 Black Feminist Geographies (5) I&S, DIV Kemi Adeyemi Stereotypes about blackness, gender, and sexuality are enmeshed with how we think, feel, and move about the landscapes we move through - and black people are often seen threatening presences that "need" to be policed, contained, and completely erased. This course considers how black feminist approaches to geographic space reveal ways that these restrictive understandings of blackness, gender, and sexuality are refused and redefined. Offered: jointly with GEOG 332.

GWSS 333 Gender and Globalization: Theory and Process (5) I&S, DIV Ramamurthy Theoretical, historical, and empirical analysis of how current processes of globalization are transforming the actual conditions of women's lives, labor, gender ideologies, and politics in complex and contradictory

ways. Topics include feminist exploration of colonialism, capitalism, economic restructuring policies, resistance in consumer and environmental movements. Offered: jointly with JSIS B 333.

GWSS 334 Gender, Sex, and Religion (5) I&S, DIV M. AHUVIA The Bible and its interpreters invented the gender categories and hierarchies that readers take for granted. Employs academic approaches that illuminate the construction of those categories and explores the debates within Judaism and Christianity as well as within academia today about gender, sex, sexuality, and religion. Offered: jointly with RELIG 334; Sp.

GWSS 335 Sex, Gender, and Disability (5) I&S, DIV Examines ways that disability, sex, and gender are connected as socially constructed categories. Topics include the ways in which the sexuality of people with disabilities is experienced and represented, the intersection of disability and gender inequality, and how the field of disability studies relates to and can transform other theoretical approaches to gender and sex. Offered: jointly with CHID 335/DIS ST 335.

GWSS 339 Social Movements in Contemporary India (5) I&S, DIV P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 339/JSIS A 339.

GWSS 341 Native Women in the Americas (5) I&S Historiography, sociology, biography, autobiography, and fiction about native women in the United States and Canada. Offered: jointly with AIS 341.

GWSS 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with ANTH 345/JSIS B 345.

GWSS 350 Women in Law and Literature (5) I&S/VLPA, DIV Representations of women in American law and literature. Considers how women's political status and social roles have influenced legal and literary accounts of their behavior. Examines how legal cases and issues involving women are represented in literary texts and also how law can influence literary expression. Offered: jointly with CHID 350.

GWSS 351 Women of Color as Cross-Cultural Artists (5) VLPA/I&S, DIV *Habell-Pallan* Provides a historical context for artistic forms produced by racialized women. Examines the cultural production of Chicanas and Latinas in relation to that of Native American, African American, East and South Asian American, and Arab American women as well as those women of mixed heritage in the U.S.

GWSS 353 Feminist Anthropology (5) I&S, DIV Explores the history and contemporary practice of feminist ethnography at the interdisciplinary intersection of anthropology and gender studies. Examines how the inclusion of women, as subjects and researchers, has influenced anthropological knowledge production, and how the cross-cultural imperative of anthropology has influenced understandings of gender, sexuality, and race. Offered: jointly with ANTH 353; W.

GWSS 355 Men and Masculinity (5) I&S Critical study of systematic responses of men to feminist movements, including conservative, pro-feminist, men's rights, mythopoetic, and religious responses. How men of color and gay men view these various men's movements and their issues. Special attention given to philosophical problems such as nature of oppression, human nature, justice, and masculinity.

GWSS 357 Psychobiology of Women (5) NW, DIV *Kenney* Physiological and psychological aspects of women's lives; determinants of biological sex; physiological and psychological events of puberty; menopause; sexuality; contraception, pregnancy, childbirth, and lactation; role of culture in determining psychological response to physiological events. Offered: jointly with PSYCH 357.

GWSS 374 Introduction to Transgender Studies (5) I&S, DIV *A. SWARR* What does it mean to look beyond a simplistic binary of "man" and "woman"? With definitions of sex and gender as a starting

point, we blur these contested categories, complicating them with sexuality, race, class, ability, history, and location.

GWSS 383 Social History of American Women to 1890 (5) I&S, DIV *Yee* A multi-racial, multicultural study of women in the United States from the seventeenth century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and nineteenth century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with HSTAA 373; W.

GWSS 384 Social History of American Women in the Twentieth Century (5) I&S Analyzes major themes in the history of women in North America from 1890 through the 1990s. Themes include family and community formation, social activism, education, paid and unpaid labor patterns, war, migration, and changing conceptions of womanhood and femininity in the twentieth century. Offered: jointly with HSTAA 374.

GWSS 385 Women and Activism in the U.S., 1820-1990s (5) I&S Analyzes how U.S. social reform movements between the 1820s and the 1990s shaped discourses of gender, race, class, nation, and citizenship. Social movements include temperance, anti-prostitution, prison reform, dress reform, reproductive rights, eugenics, suffrage/anti-suffrage, abolitionism, labor, the "mothers' movement," civil rights, QBLTQ movement and dis/abilities, and evangelicalism.

GWSS 389 Race, Gender, and Sexuality in the Media (5) I&S, DIV Introduction to media representations of gender, race, and sexuality. Offered: jointly with AES 389/COM 389.

GWSS 390 Intermediate Topics in Gender, Women, and Sexuality Studies (5, max. 15) I&S Exploration of various topics and issues relevant to the study of gender, women, and sexuality.

GWSS 391 Collaborations in Feminism and Technology (5) I&S, DIV *Christine Keating* Examines feminist theories of technology and social change, ways that activists have used technology to build coalitions across diverse contexts, and links between the "do it yourself" approach to social movement and open-source ethics in technology cultures.

Course topics include: identity and subjectivity; technological activism; gender, race and sexualities; place; labor; ethics; and the transformative potentials of new technologies.

GWSS 392 Asian American and Pacific Islander Women (5) I&S, DIV Explores the intersection of race, ethnicity, gender, class, and sexuality in the lives of Asian American and Pacific Islander women. Examines how forces such as immigration, colonialism, sovereignty, labor, family, gender roles and relations, community, war, homeland politics, transnationalism, and social movements shaped and were shaped by these women. Offered: jointly with AAS 392.

GWSS 405 Comparative Women's Movements and Activism (5) I&S Comparative cultural, national, and historical study of women's movements and activism. Critically analyzes multiple arenas of women's movements and resistance. Topics include feminist anti-racism, pre-nationalism and nationalism, economics, electoral politics, women's and human rights, and international/transnational feminisms. Prerequisite: either GWSS 305, or SOC 364.

GWSS 409 Queer Health (5) I&S, DIV Examines the relationship between Western biomedicine and Queer theory. Critically analyzes the modes of thinking, caring, being, and expressing that emerge as a result of the "merger" of these two fields with contradicting views of gender, sex, health, wellbeing, and sexuality. Offered: jointly with ANTH 409.

GWSS 417 The Politics of Talent Development (5) I&S Investigation of the psychological, cultural, socioeconomic, and political factors that enhance or inhibit the development of exceptional ability, focusing principally, but not exclusively, on women and girls. Pays special attention to issues of race, class, gender, geography, and an individual's orientation to the mainstream of her culture.

GWSS 427 Women and Violence (5) I&S, DIV *Ginorio* Multi-disciplinary explorations of the continuum of violence which affects women's lives, ranging from experience in personal settings (family violence) to cultural or state policies (prisons, wars). Violence against women explored in the context of societal, political, and state violence.

GWSS 428 Feminist Understanding of Victims (5) I&S, DIV Explores the meanings of the term "victim" within popular, religious, psycho-social, and feminist discourses and the implications these have for victims, people and institutions that serve victims, and scholars who are concerned with these questions. Examines the tensions between activist and academic understandings of the impact of "backlash". Prerequisite: GWSS 200. Instructors: Ginorio

GWSS 429 Scandinavian Women Writers in English Translation (5) VLPA, DIV Selected works by major Scandinavian women writers from mid-nineteenth-century bourgeois realism to the present with focus on feminist issues in literary criticism. Offered: jointly with SCAND 427.

GWSS 435 Gender and Spirituality (5) I&S Exploration of ways in which gender informs spiritual teachings and practices of different groups in ancient and contemporary times, with particular attention to the relationship between spiritual beliefs and the construction of social, psychological, and political realities.

GWSS 438 Jewish Women in Contemporary America (5) I&S, DIV *Friedman* Examines how Jewish women's identities are socially constructed and transformed in contemporary America, using social histories, memoirs, and ethnographies to analyze scholars' approaches to Jewish women's lives. Topics include the role of social class, religion, migration, the Holocaust, and race relations in Jewish women's lives. Offered: jointly with JEW ST 438.

GWSS 440 Reading Native American Women's Lives (5, max. 10) I&S, DIV Seminar based on social science writings, autobiographies, biographies, and fiction written by, with, or about indigenous women of the United States and Canada. Offered: jointly with AIS 440.

GWSS 442 Images of Natives in the Cinema and Popular Cultures (5) VLPA/I&S, DIV *D. HART, L. ROSS* Cultural examination of images of Native people in cinema and popular culture based on social science writings and films by or about Natives in the United States and Canada. Offered: jointly with AIS 442.

GWSS 444 Criminality and "Deviance" in Native Communities (5) L. ROSS Seminar based on social

science writings and biographies written by and about incarcerated Natives and "deviance" in Native communities in the United States and Canada. Offered: jointly with AIS 444.

GWSS 445 Feminist science (Fiction) Studies (5) I&S/VLPA *Regina Y Lee* This course addresses science fictional narratives to trouble and transform the human, the inhumane, the scientific apparatus, and the natural world. Students examine gender, race, sexuality, and ability, alongside relevant scientific documents and feminist theory, to better understand both science and fiction through feminist lenses. Recommended: Recommended: GWSS 200 or equivalent

GWSS 446 Global Asia (5) I&S, DIV Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 442/JSIS A 452; W.

GWSS 447 Economics of Gender (5) I&S, DIV Microeconomic analysis of the sources of gender differences in earnings, labor force participation, occupational choice, education, and consumption. Economic theories of discrimination, human capital, fertility, and intrahousehold resource allocation. Economics of the family in developed and developing countries. Prerequisite: minimum grade of 2.0 in ECON 300. Offered: jointly with ECON 447.

GWSS 450 Language and Gender (5) VLPA/I&S, DIV Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203. Offered: jointly with ANTH 450/LING 458.

GWSS 451 Latina Cultural Production (5) VLPA/I&S Explores the expressive culture of Chicana/Mexican American/Latina women in the United States. Cultural and artistic practices in home and in literary, music, film, spoken word, performing and visual arts. Focuses on how Chicana/Latina writers and artists re-envision traditional iconography.

GWSS 453 Lesbian Lives and Culture (5) I&S An exploration and overview of lesbianism in historical, social, cultural, and interpersonal contexts. Prerequisite: either GWSS 200 or GWSS 206.

GWSS 454 Women, Words, Music, and Change (5) VLPA/I&S, DIV Comparative analysis of use of myths, tales, music, and other forms of expressive culture to account for, reinforce, and change women's status and roles. Offered: jointly with ANTH 454.

GWSS 455 Contemporary Feminist Theory (5) I&S, DIV Raises the question of how political contexts condition the way some ideas become theory. Emphasizes the present crises in thinking about a transnational feminism. Prerequisite: GWSS 200.

GWSS 456 Feminism, Racism, and Anti-Racism (5) I&S, DIV Examines meaning of racism and feminism in women's lives in an international context. Building upon an analysis of racial hierarchies and institutionalized racism, explores strategies used by women engaged in feminist and anti-racist activism. Prerequisite: GWSS 200.

GWSS 457 Women in China to 1800 (5) I&S, DIV Gender in Chinese culture, women's situations in the patrilineal family system, and the ways women's situations changed as other dimensions of China's political system, economy, and culture changed from early times through the nineteenth century. Offered: jointly with HSTAS 457.

GWSS 458 Ideologies and Technologies of Motherhood (5) I&S, DIV Examines how motherhood is culturally constituted, regulated, and managed within various ideological and technological milieus. Uses ethnographies from anthropology and case studies from feminist legal theory. Topics include slave mothers, surrogate mothers, lesbian mothers, transracial mothers, co-mothers, teen mothers. Prerequisite: GWSS 200. Offered: jointly with ANTH 484.

GWSS 459 Gender Histories of Modern China, Eighteenth to Twentieth Centuries (5) I&S Emergence of modernist social, political, intellectual gender formations in social activism, revolutionary writing, scientific ideologies, economic globalization. Stresses gender difference in colonial modernity, revolutionary movement, communism, post-socialist market society. Relates modern Chinese women to

global flows, new division of labor, local and regional experience. Offered: jointly with HSTAS 459.

GWSS 462 Isak Dinesen and Karen Blixen (5) VLPA

The fiction of Isak Dinesen (pseudonym for Karen Blixen) reevaluated in light of current issues in literary criticism, particularly feminist criticism. Close readings of selected tales, essays, and criticism. Offered: jointly with SCAND 462.

GWSS 464 Queer Desires (5) I&S, DIV Swarr

Explores desire and the politics of sexuality as gendered, raced, classed, and transnational processes. Intimacies and globalization, normality and abnormality, and power and relationships are sites of inquiry into the constitution of "queerness." Students interrogate queer and sexuality studies, using varied media - films, activist writings, and scholarly articles.

GWSS 466 Gender and Architecture (3) I&S/VLPA

Examines gender in the experience, practice, and theory of architecture and urban space with a focus on modern typologies: skyscraper, home, convent, bachelor pad, street, and closet. Draws from architectural and art history, social studies, design practice and theory, comparative literature, film studies, and queer theory. Offered: jointly with ARCH 466.

GWSS 468 Latin American Women (5) VLPA/I&S,

DIV J. ROBLES RIVERA The elaboration of discourses of identity in relation to gender, ethnicity, social class, and nationality, by women writers from South America, Mexico, Central America, and the Caribbean. Testimonial literature, literature and resistance, women's experimental fiction. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with SPAN 468.

GWSS 474 Trans/Gender Queries (5) I&S, DIV Swarr

Writings by and about people who fall outside common conceptions of "women" and "men." Looks beyond this dualism in contemporary and historical global concepts, locating the emerging field of transgender studies in feminist studies and asking what the category "transgender" enables and obscures.

GWSS 476 Women and the City (5) I&S, DIV

Explores the reciprocal relations between gender relations, the layout of cities, and the activities of

urban residents. Topics include: feminist theory and geography (women, gender, and the organization of space); women and urban poverty, housing and homelessness; gender roles and labor patterns; geographies of childcare; and women and urban politics. Offered: jointly with GEOG 476.

GWSS 483 Topics in U.S. Women's History (5, max. 10) I&S

Selected topics in United States women's history from the nineteenth and twentieth centuries. Prerequisite: either GWSS 200, GWSS 283, or GWSS 383. Instructors: Yee

GWSS 485 Issues for Ethnic Minorities and Women In Science and Engineering (3/5) I&S

Addresses issues faced by women and ethnic minorities in physical sciences and engineering. Focuses on participation, barriers to participation, and solutions to those issues for women and ethnic minorities in physical sciences and engineering. Offered: jointly with PHYS 451.

GWSS 486 Representing Beyond the Binaries: Mixing Race, Gender, and Sexuality in the Media (5) I&S, DIV Joeseeph

Cultural studies approach to examining the mixed formations that race, sexuality, and gender take in the contemporary United States media. Draws upon multi-disciplinary scholarship in examination of the media. Offered: jointly with AES 490/COM 490.

GWSS 487 Advanced Psychobiology of Women (5) I&S/NW

Intensive reading on current issues relevant to women's psychology and physiology. Prerequisite: minimum 2.0 grade in PSYCH 357/ GWSS 357. Instructors: Kenney Offered: jointly with PSYCH 487; W.

GWSS 488 Women and/in Science (5) I&S,

DIV Ginorio Explores science as a method of inquiry and as a profession while also expanding knowledge about women through the use of biographies of women scientists, discipline-based and feminist critiques, and the psycho-social concept of socially defined identities.

GWSS 489 Black Cultural Studies (5) I&S

Examines how images of blackness have been (re) constructed through identity formation and entrenched inequality. Topics include black women's bodies, black men's bodies, blackface minstrelsy, black

queer studies, black power, and black hybridities.
Offered: jointly with AES 489/COM 489.

GWSS 490 Special Topics in Women Studies (2-5, max. 15) I&S Exploration of specific problems and issues relevant to the study of women. Offered by visiting or resident faculty members. Primarily for upper-division and graduate students.

GWSS 493 Senior Thesis (2-5, max. 15) I&S Students conceptualize a topic, conduct primary and secondary research, and write a major paper or project that engages methodologies and theories in interdisciplinary women's studies. Students work independently with a faculty member.

GWSS 494 Women Studies Capstone (5) I&S Provides graduating seniors with the opportunity to demonstrate facility with writing, critical thinking, documentation of scholarly work, research/gathering of information, and the ability to disseminate ideas to intended audiences via the creation of a capstone project. Prerequisite: GWSS 200; GWSS 300; minimum grade of 2.0 in one additional graded 300-level GWSS course; minimum grade of 2.0 in one additional graded 400-level GWSS course. Offered: AWSpS.

GWSS 495 Tutoring Women Studies (5) Students train to serve as tutors in designated courses. Facilitate weekly group discussions, assist with writing assignments, explain course materials. Prerequisite: GWSS 200; GWSS 300. Credit/no-credit only.

GWSS 496 Global Feminisms: International and Indigenous Communities (5-12, max. 24) I&S Participation in academic study abroad programs related to Gender, Women, and Sexuality Studies, emphasizing globalization and study in international contexts or indigenous communities within the United States. Prerequisite: GWSS 200; GWSS 300.

GWSS 497 Fieldwork in Women Studies (1-15, max. 15) Internship in local feminist-oriented agencies or projects. Includes a seminar component linking internship to scholarly literature and small group discussion. Supports in-depth exploration of social issues and skill development. Prerequisite: GWSS 200; GWSS 300. Credit/no-credit only. Offered: AWSpS.

GWSS 499 Undergraduate Research (1-5, max. 10) Independent study and research supervised by a faculty member with appropriate academic interest. Prerequisite: GWSS 200; GWSS 300. Offered: AWSpS.

GWSS 501 History of Feminism (5) Study of feminism from the eighteenth through the twentieth centuries in the national, international, and intranational world system, with a focus on imperialism, colonialism, nationalism, and modernity. Surveys the literature in a global context, supplemented by critical essays and historiographic reviews.

GWSS 502 Cross Disciplinary Feminist Theory (5) Raises questions about how feminism becomes theory and what the relation of feminist theory is to conventional disciplines. Readings exemplify current crises in feminism (e.g., the emergence of neo-materialism; critical race theory; citizenship; identity; transnational and migrancy and questions of post-colonialism) to consider disciplinization.

GWSS 503 Feminist Research and Methods of Inquiry (5) Explores appropriate research methodologies for interdisciplinary work. Asks how scholarship is related to feminism as a social movement and to the institutions in which we work. Focuses on how similar objects of study are constituted in different disciplines for feminist scholars. Offered: Sp.

GWSS 504 Philosophies and Techniques of Teaching (5) Acquaints students with professional and educational issues of college teaching. Students design a course, including a daily outline, reading materials, evaluation instruments, course activities, assessment plans. Includes weekly teaching exercises as well as videotaping an actual class. Prerequisite: experience as a TA or equivalent. Priority given to Women Studies graduate students.

GWSS 505 Feminist Publishing (5) Seminar on feminist academic publishing. Students revise a scholarly paper in preparation for submission to an academic journal and provide critical commentary on other students' scholarly work. Also addresses general and specific issues related to the profession of academic publishing.

GWSS 510 Documentary Film/Video Research Methods in Native Communities (5) D. HART, L.

ROSS Seminar exploring theoretical, methodological, and aesthetic issues when researching documentary film and video projects in Native American communities. Utilizes readings, screening, discussions, and a major research project to explore issues of documentary representation, ethics, and historiography. First part of a two-quarter documentary production sequence. Offered: jointly with AIS 501.

GWSS 526 The Study of Lives in Feminist Research: Narrative and Visual Approaches (5) Examines the study of others' lives by feminist researchers using ethnography, oral history, biography, photography, and documentary film. Explores the craft, goals, and ethics involved in these forms of representation. Includes workshop critique of research project in development.

GWSS 528 Gender and Sexuality in China (5) Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform. Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with ANTH 528/JSIS A 528.

GWSS 534 Gender, Sex, and Religion (5) *M. AHUVIA* Delves more deeply into foundational texts of the Bible, Judaism, and Christianity, while paying closer attention to historiographic trends in the field of gender and feminist studies of religion. With JSIS C 334/GWSS 334. Offered: jointly with RELIG 534; Sp.

GWSS 539 Social Movements in Contemporary India (5) *P. RAMAMURTHY* Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 539/JSIS A 531.

GWSS 541 Research Seminar: Feminist Geographies (5) Explores major research themes in feminist geographies. Particular attention to the concept that gendered identities and spaces are discursively (re) produced. Emphasizes recent feminist scholarship that emphasizes difference, as well as the

intersections between gender, "race," ethnicity, sexuality, age, nationality, class, and other social identities and divisions. Offered: jointly with GEOG 541.

GWSS 542 Gender, Music, Nation (5) *Habell-Pallan* Music criticism and music studies as a site of feminist intellectual practice. Explores the ways gender and race/ethnicity shape musical discourse as well as narrative constructions of nation in regional and transnational contexts. Considers the influence of feminist theory, queer studies, performance studies, and cultural studies on music scholarship.

GWSS 545 Transnational Sexualities (5) *Swarr* Focuses on transnational processes such as colonialism and globalization, imperialism, and consumerism. Analyzes attempts to both codify and undermine universal queer subjects. Participants theorize sexual practices, discourses, and histories through explorations of tourism, HIV/AIDS, immigration, and other interstices of transnational intimacies.

GWSS 555 Feminist International Political Economy (5) *Ramamurthy* Provides overview of feminist engagements with international political economy. Topics include: feminist critiques of classical political economists; inter-war internationalisms, anti-colonial nationalisms and feminisms; feminist development studies; post colonial; 'third world' and transnational feminisms; feminist critiques of globalization, governmentality, and neoliberalism.

GWSS 564 Queer Desires (5) *Swarr* Explores desire and the politics of sexuality as gendered, raced, classed, and transnational processes. Intimacies and globalization, normality and abnormality, and power and relationships as sites of inquiry into the constitution of "queerness." Students interrogate queer and sexuality studies using varied media - films, activist writing, scholarly articles.

GWSS 572 Transnational Chicana Feminist Theory (5) Examination of the body of knowledge and scholarship produced under the rubric "Transnational Chicana feminist theory." Analyzes the ways Chicana feminist theory dynamically engages intellectual, poetic, and aesthetic traditions. Considers how Chicana feminist theory functions within and between disciplinary frameworks.

Explores transnational roots and routes of Chicana feminist theory.

GWSS 575 Feminist New Media Studies (5) *R. Lee*

Examines the raced and gendered stakes in the construction of online lives as disembodied, and provides feminist frameworks for intersectional and transnational analyses of online engagement. Explores methodological variations and ethical stakes of critical theory, autoethnography, and creative academic work to clarify knowledge claims made by these analytical forms. Prerequisite: Graduate standing; otherwise, permission of the instructor

GWSS 577 Women of Color in Academia (5) *Ginorio*

Through scholarship and identifications, "women of color" in academia are often positioned to question and redefine academia, education, and the established boundaries between academia and other communities. Discussion focuses on understanding institutional sites and forms of knowledge production and validation in academia in the United States.

GWSS 581 Queer and Trans History (5) *L. MARHOEFER*

Studies development of queer and trans history as subfields and interdisciplinary thought that has shaped them (critical race theory, queer theory, trans studies). Surveys foundational works of theory that have influenced historians (and other scholars) as well as important books and articles in the two interrelated historical subfields. Examines the role of intersectional analysis in the subfields as well as generative debates among historians. Offered: jointly with HSTCMP 581.

GWSS 589 Gender, Race, and Communication (5)

Analysis of the role of media in the construction of reality, production processes, and their influence on media representation of women and people of color. Offered: jointly with COM 567.

GWSS 590 Special Topics (1-5, max. 15) Offered by visitors or resident faculty as a one-time in-depth study of special interest.

GWSS 593 Feminist Doctoral Research Workshop (5) *Swarr*

Designed to meet the needs of graduate students writing dissertation prospectuses on feminist subjects within any discipline. Students start with a drafted prospectus and revise their work

together. Topics addressed include IRB applications, CV preparation, and dissertation funding. Credit/no-credit only.

GWSS 595 Graduate Student Colloquium (2, max. 12)

Forum for graduate students to share their research ideas and progress, general examination preparation issues, and teaching concerns. Prerequisite: Gender, Women, and Sexuality Studies graduate students only. Credit/no-credit only. Offered: AWSp.

GWSS 596 Preceptorial for Women Studies Graduate Students (5, max. 15)

Graduate student and faculty member work collaboratively in developing or revising course content and pedagogical approach on a specialized area.

GWSS 597 Fieldwork in Women Studies (2-5, max. 15)

Supervised ethnographic and other on-site research by Gender, Women, and Sexuality Studies graduate students. Gender, Women, and Sexuality Studies graduate students only.

GWSS 598 Directed Readings in Women Studies (*, max. 35)

Selected topics for individualized or small group study.

GWSS 599 Graduate Research Colloquium (2, max. 6) *Kenney*

A colloquium in which Gender, Women, and Sexuality Studies graduate students and faculty present and discuss their research at various points in its development. Credit/no-credit only. Offered: AWSpS.

GWSS 600 Independent Study or Research (*-)

Offered: AWSpS.

GWSS 700 Master's Thesis (*-) Credit/no-credit only.

Offered: AWSpS.

GWSS 701 Master's Practicum ([1-10]-, max. 10)

Offered: AWSpS.

GWSS 800 Doctoral Dissertation (*-)

GENERAL STUDIES

GENERAL STUDIES

GEN ST 101 University Learning Skills (1-3, max. 3)

Introduction to university culture. Practice in skills necessary for academic success, including note-taking, test-taking, writing, active learning, and time and stress management. Academic planning. Introduction to university resources.

GEN ST 105 Introduction to Liberal Studies (1-10, max. 10)

Designed to increase the academic proficiencies of new freshmen entering the University. Includes coursework in the liberal arts and sciences and related work in writing, speaking, and mathematics. Introduces students to computing and campus culture. Credit/no-credit only.

GEN ST 160 Discovery Seminar in the Humanities (5)

VLPA Small intensive seminar focusing on the visual, literary, and performing arts taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 161 Discovery Seminar in Individuals and Society (5) I&S

Small intensive seminar focusing on individuals and society taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 162 Discovery Seminar in the Natural World (5) NW

Small intensive seminar focusing on the natural world taught during Early Fall Start led by faculty representing a wide spectrum of academic disciplines and interests. Offered: A.

GEN ST 197 Freshman Seminar (1-3, max. 3)

Small-group discussion with faculty representing a wide spectrum of academic disciplines. Topics and approaches vary. Instructor may introduce research techniques or findings, concentrate on readings in his/her area of interest, or illustrate problems and alternatives related to the study of a particular academic discipline. Credit/no-credit only. Offered: AWSp.

GEN ST 199 The University Community (1-2, max. 2)

Introduces students to various aspects of the University of Washington community. Includes exploration of university resources and

opportunities, and academically related skill development. Credit/no-credit only. Offered: A.

GEN ST 297 Undergraduate Seminar (1-3, max. 3)

Small-group discussion with faculty representing a wide spectrum of academic disciplines. Topics include faculty's research techniques or findings, concentrated reading in his/her area of interest, or illustrated problems and alternative related to the study of a particular academic discipline. Class structure varies based on instructor. Credit/no-credit only. Offered: AWSp.

GEN ST 300 Colloquium on Education, Learning, and Society (1, max. 3) I&S

Creates a learning community among Education minor students and their instructors. Students learn from researchers and practicing educators about current pedagogical projects and theories. Fosters self-reflexive projects to build understanding of learning pathways.

GEN ST 301 Learning Leadership in Theory and Practice (2-4)

Explores leadership techniques and principle using readings, case, lectures, and large group discussions designed to increase knowledge of leadership theory and practice as well as develop leadership potential. Uses small group sessions incorporating experiential exercises, self-reflection, and leadership conversations. Credit/no-credit only. Offered: jointly with B A 391.

GEN ST 340 Community Fieldwork: Law (1-5, max. 5)

Credit/no-credit only.

GEN ST 341 Community Fieldwork: Law (1-5, max. 5)

Credit/no-credit only.

GEN ST 342 Community Fieldwork: Health (1-5, max. 5)

Credit/no-credit only.

GEN ST 343 Community Fieldwork: Health (1-5, max. 5)

Credit/no-credit only.

GEN ST 344 Community Fieldwork: Social Services (1-5, max. 5)

Credit/no-credit only.

GEN ST 345 Community Fieldwork: Social Services (1-5, max. 5)

Credit/no-credit only.

GEN ST 346 Community Fieldwork: Education (1-5, max. 5)

Credit/no-credit only.

GEN ST 347 Community Fieldwork: Education (1-5, max. 5) Credit/no-credit only.

GEN ST 348 Community Fieldwork: Special Topics (1-5, max. 5) Credit/no-credit only.

GEN ST 349 Community Fieldwork: Special Topics (1-5, max. 5) Credit/no-credit only.

GEN ST 350 Independent Fieldwork (1-6, max. 18)
Rachel L. Vaughn, Briana K Randall Independent fieldwork in community agencies, apprenticeships, internships, as approved for College of Arts and Sciences credit. Student can complete work under the guidance of a faculty sponsor and internship site supervisor, or under the guidance of an internship site supervisor with concurrent enrollment in an on-line section. Credit/no-credit only. Offered: AWSpS.

GEN ST 391 Supervised Study in Selected Fields (*, max. 15) Special supervised study in a field represented in the College of Arts and Sciences. Faculty supervisor required. Offered: AWSpS.

GEN ST 470 Undergraduate Peer Instructor Practicum (1-3, max. 12) Provides instruction in group leadership and promotion of values and methods of learning within a university setting. For Peer Instructors in the First-year Interest Group (FIG) program. Credit/no-credit only. Offered: AWSpS.

INDIVIDUALIZED STUDIES

INDIV 493 Senior Study (5) For Individualized Studies majors only. Faculty supervisor required. Offered: AWSpS.

GEOGRAPHY

GEOG 123 Introduction to Globalization (5) I&S, DIV Provides an introduction to the debates over globalization. Focuses on the growth and intensification of global ties. Addresses the resulting inequalities and tensions, as well as the new opportunities for cultural and political exchange. Topics include the impacts on government, finance, labor, culture, the environment, health, and activism. Offered: jointly with JSIS 123.

GEOG 180 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) I&S *Todd Faubion, Stephen Gloyd* Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with G H 101/JSIS B 180; Sp.

GEOG 195 Special Topics in Geography (1-5, max. 10) I&S

GEOG 203 Introduction to Migration (5) I&S, DIV Introduces contemporary issues in international migration. Covers the relationship between contemporary human mobility and changes in the global economy; gendered migration; transnationalism; refugee and asylum issues; and immigrant integration. Offered: A.

GEOG 205 Our Global Environment: Physical and Human Dimensions (5) NW Explores environmental systems using a geographic perspective that emphasizes spatial patterns of phenomena, relationships between different places, and interconnections between people and environment. Evaluates causes, consequences, and solutions to environmental problems. Topics include climate, atmosphere, water, ecosystems, and soils.

GEOG 207 Economic Geography (5) I&S The changing locations and spatial patterns of economic activity, including: production in agriculture, manufacturing, and services; spatial economic principles of trade, transportation, communications, and corporate organization; regional economic development, and the diffusion of technological innovation. Offered: A.

GEOG 208 Geography of the World Economy: Regional Fortunes and the Rise of Global Markets (5) I&S Examines the relationship between the globalization of economic activity and regional development. Topics include international trade, colonialism, industrial capitalism, advanced capitalism, and the globalization of labor markets.

GEOG 230 Geographies of Global Inequality (5) I&S, DIV Addresses increasing global inequalities by focusing on shifting spatial division of labor and the role of the international development industry in

shaping economic and social inequality. Examines relationships between economic globalization, development industry, and rising global inequality: reviews the history and record of the international development project, and asks what it means to say that Western, advanced economies are not the norm.

GEOG 236 Development and Challenge in Greater China (5) I&S Studies the geography of development processes, patterns, and problems in "Greater China": mainland China, Taiwan, and Hong Kong. Covers physical geography, history, and economic and political systems, with major focus on geographical issues in China's development: agriculture, population, industry and trade, and relations with Hong Kong and Taiwan. Offered: jointly with JSIS A 236.

GEOG 245 Geodemographics: Population, Diversity, and Place (5) I&S, DIV, QSR Explores the geodemographic underpinnings of societal dynamics and the spatial diversity of United States populations. Topics include immigration policy, the concept of 'race' in the census, fertility and mortality differences, political redistricting, segregation, and internal migration of populations. Examines regional and local scales of variation using geodemographic techniques and GIS. Offered: A.

GEOG 258 Digital Geographies (5) I&S Explores the use and societal impacts of contemporary digital spatial technologies. Focuses on internet mapping, handheld geographic technologies, location-based services, spatial applications of social media, the geoweb, and traditional GIS. Develops hands-on experience using online digital spatial tools for geovisual representation, and skills for evaluation/critique of digital data and maps. Offered: W.

GEOG 270 Geographies of International Development and Environmental Change (5) I&S Explores how concepts, theories and ideologies of international development and environmental issues interrelate. Approaches development and environment through several interconnected topics: population, consumption, carbon, land and water. Examines how these issues connect our lives to the lives of people living in the Third World. Offered: W.

GEOG 271 Geography of Food and Eating (5) I&S, DIV Examines development of world food economy, current responses to instabilities and crises, and issues relating to obesity, hunger, and inequality in relation to food systems. Explores political, social, and economic dimensions of food and eating in particular spaces, places, environments, contexts, and regions. Uses the theme of food and eating to examine key concepts from human geography and thereby provides an introduction to the discipline.

GEOG 272 Geographies of Environmental Justice (5) I&S, DIV Draws on political ecology and cultural geography frameworks to think through social constructions of nature: where we live, where we play, and where we work. Looks at the role of markers of difference (gender, race, nationality) in debates around equity and justice. Offered: Sp.

GEOG 276 Introduction to Political Geography (5) I&S Examines both the geography of politics and the politics of geography at a variety of spatial scales and in different global locations. Typical topics include: geographies of the state and state power; geopolitics and globalization; national and local politics, and other politics of culture, health, nature, and the body.

GEOG 277 Geography of Cities (5) I&S, DIV Explores economic, cultural, social and political dynamics of cities - their location, functions, and internal structure, including economic activities, housing, and social geography. Topics include economic restructuring; suburbanization and urban sprawl; urban planning; inner-city gentrification; and how issues of class, race, and gender are embedded in the geographies of cities.

GEOG 280 Introduction to the Geography of Health and Healthcare (5) I&S Concepts of health from a geographical viewpoint, including human-environment relations, development, geographical patterns of disease, and health systems in developed and developing countries.

GEOG 295 Special Topics in Geography (1-5, max. 10) I&S

GEOG 298 Study Abroad: Geography (1-5, max. 10) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements

but may, depending on course content, count toward various major requirements. Offered: AWSpS.

GEOG 301 Cultural Geography (5) I&S Analysis of cultural processes in the formation of landscape, environment, region, and place in their relationship to individual and group identities and activities

GEOG 302 The Pacific Northwest (3) I&S Settlement pattern in the Pacific Northwest, emphasizing economic and historical factors, including the location of resource-oriented industries, policies regarding the use of public lands, and bases of the development of major urban areas in the region. Offered: W.

GEOG 303 Contemporary European Migration (5) I&S Provides a theoretical and empirical understanding of contemporary migration processes and patterns in Europe. Introduces the different migration regimes and integration practices of selected European states. Analyzes the impact of globalization, the ever-changing role of the European Union, and the importance of international, national, and urban policy on immigrant lives. Offered: jointly with JSIS A 304; W.

GEOG 310 Immigrant America: Trends and Policies from a Geographic Perspective (5) I&S, DIV U.S. immigration trends and policies from a geographic perspective. Topics include where immigrants come from, where they settle in the United States (and why they settle in those particular places), these locations, immigrant employment enclaves, effects of U.S. immigration policy on immigrant settlement and employment patterns, unauthorized immigration, citizenship, and barriers to immigrant social and economic mobility in the United States.

GEOG 315 Explanation and Understanding in Geography (5) I&S Covers the beginning steps in the research process. Introduces the discipline of geography, the department, and current faculty through the research aims of explanation and understanding that frame social scientific inquiry. Students develop basic library and writing skills as preparation for future research methods classes and independent research.

GEOG 317 Geographic Information and Spatial Analysis (5) I&S, QSR Integrates geographic

information systems and spatial data analysis, emphasizing the appropriate selection of methods, procedures for research design, and interpretation of findings. Topics include descriptive and inferential methods, spatial patterns and statistics, and correlation and spatial autocorrelation. Applications use SPSS and ArcMap software.

GEOG 323 Globalization and You (5) I&S Offers an evidence-based analysis of globalization that addresses how individuals are affected personally as well as economically amidst the market-led processes of global integration. Offered: jointly with JSIS D 323; A.

GEOG 326 Quantitative Methods in Geography (5) I&S, QSR Introduction to quantitative methods in geography, with a primary focus on statistical techniques. Examines the basic concepts, reasoning, and procedures geographers use in developing, analyzing, applying, and presenting quantitative methods. Topics include: generating and describing data; elementary probability, hypothesis testing, comparative tests; finding relationships; and using and misusing statistics.

GEOG 330 Latin America: Landscapes of Change (5) I&S Examines operation of economic, social, and political processes across countries of Latin America - on international, national, and local scales - to understand common issues facing the region and different impacts in particular countries. Topics include internationalization of Latin American economies; agrarian and urban change; popular movements.

GEOG 331 Global Poverty and Care (5) I&S, DIV Explores the causes and patterns of global poverty, and the urgent need for studies of care in both academic work and public policy. Considers the possibilities and challenges of caring across distance, and ways to respectfully engage with people in different places.

GEOG 332 Black Feminist Geographies (5) I&S, DIV *Kemi Adeyemi* Stereotypes about blackness, gender, and sexuality are enmeshed with how we think, feel, and move about the landscapes we move through - and black people are often seen threatening presences that "need" to be policed, contained, and completely erased. This course considers how black feminist approaches to

geographic space reveal ways that these restrictive understandings of blackness, gender, and sexuality are refused and redefined. Offered: jointly with GWSS 332.

GEOG 335 Geography of the Developing World (5) I&S Characteristics and causes, external and internal, of Third World development and obstacles to that development. Special attention to demographic and agricultural patterns, resource development, industrialization and urbanization, drawing on specific case studies from Asia, Africa, and Latin America. Offered: jointly with JSIS B 335.

GEOG 336 Development and Challenge in China (5) I&S Examines the geography of China's development since 1949. Introduces China's physical geography, history, and economic and political system. Emphasizes China's uneven development in agriculture, population, industry, and trade. Also examines problems China faces in meeting its internal food demand, as well as the external processes of globalization.

GEOG 337 Migration and Development in China (5) I&S Examines patterns of China's internal migration in different periods in relation to economic development. Explores how the state-created dual structure and the household registration system enables China to have a huge class of super-exploitable migrant labor and become the world's premier low-end manufacturing center. Offered: A.

GEOG 342 Geography of Inequality (5) I&S, DIV Geographies of social, political, and economic inequality. Focus is usually on North American cities. Examines the theoretical underpinning of inequality. Explores topics such as the spatial distribution of wealth and poverty, the geographies of exclusion, and discrimination in paid employment and housing.

GEOG 343 Comparative Geographies of Youth (5) I&S Examines how three key global processes - rising levels of formal education, changing health regimes, and environmental transformation - are shaping youth in the US and South Asia. Examines ways young people rework broader structures, paying particular attention to their economic livelihoods, cultural practices, and political engagements. Offered: jointly with JSIS B 347; A.

GEOG 344 Migration in the Global Economy (5) I&S Analyzes the relationship between human mobility in the late twentieth century and changes in the global economy. Allows students to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with JSIS B 344.

GEOG 349 Geography of International Trade (5) I&S Introduces the theories and practice of international trade and foreign direct investment. Topics include: trade theory and policy; economic integration; currency markets and foreign exchange; trade operations and logistics; the international regulatory environment; and marketing, location and entry, and finance, accounting, and taxation.

GEOG 360 GIS and Mapping (5) I&S, QSR Introduction to mapping and geographic information systems. Topics include: Representation of spatial objects, their attributes, and relationships in desktop and online GIS; common spatial operations and geoprocessing in GIS; principles of cartographic visualization, communication, and critique; narrative mapping and spatial humanities; ethics, society and GIS. Offered: ASpS.

GEOG 362 GIS Presentation, Analysis, and Problem-Solving (3) Introduces students to the systems, science, and study of geographic information systems (GIS), including what gives GIS its enduring importance, its core principles, its applications, its unique analysis methods, and the practices and dilemmas that often accompany the use and communication of geographic information. Not available for credit to students who have completed GEOG 360. Credit/no-credit only.

GEOG 370 Environmental Conservation: Geographic Perspectives (5) I&S Explores how environmental conservation is shaped by scientific, political, cultural, and economic forces acting across both space and time. Specific topics include environmental history, wilderness preservation, national parks, forest management, community-based conservation, global political ecology, and environmental justice.

GEOG 371 World Hunger and Agricultural Development (5) I&S Addresses world hunger and poverty in relation to agricultural development, food security policy, the globalization of food and

agriculture and social movements. Explores the problem and historical persistence of hunger across geographic scale and examines the debates about how hunger can be eradicated.

GEOG 373 Food and Community: Cultural Practices in the Hispanic World (5) I&S *Ana M. Gomez-Bravo*
Intersections of food and community in Hispanic cultures. Past and present practices. Food and material culture, urban design, foodways and gender roles, food and race, diet and hygiene, religious, and civic celebrations, and food preparation techniques. Offered: jointly with JEW ST 362/SPAN 362; S.

GEOG 375 Geopolitics (5) I&S, DIV An introduction to both political geography and geopolitics, addressing the fundamental links between power and space. Topics covered include: theories of power, space, and modernity; the formation of modern states; international geopolitics in the aftermath of the Cold War; the post-colonial nation-state; and the geopolitics of resistance. Offered: jointly with JSIS B 375.

GEOG 377 Urban Political Geography (5) I&S
Examines how the spatial structure of cities and towns affects and is affected by political processes. Considers both traditional and newer forms of politics, as global and local issues. Special attention paid to where politics takes place within local contexts across state, civil society, home, and the body.

GEOG 378 Policing the City (5) I&S *S. HERBERT*
Investigates how and why formal and informal order is established in urban areas, how this order produces advantages and disadvantages, and possibilities of alternative visions of order. Topics include formal means of control (zoning, laws, policing, building codes) and informal means of control (gossip, ostracism, peer pressure, local politics). Offered: jointly with LSJ 378; A.

GEOG 380 Geographical Patterns of Health and Disease (5) I&S Geography of infectious and chronic diseases at local, national, and international scales; environmental, cultural, and social explanations of those variations; comparative aspects of health systems.

GEOG 381 Maps and Health (5) I&S Combines the study of maps, GIS and other geovisualization

technologies with research on the geography of health. Provides an introduction to key geovisualization tools, while also offering an opportunity to reflect intellectually on health maps through the lens of critical social theories about power and knowledge.

GEOG 395 Special Topics in Geography (1-5, max. 10) I&S

GEOG 403 Transnational Latinx Migrations (5) I&S, DIV Explores the role of gender, racial formation, and language in transnational Latin American migrations. Outlines key concepts related to power relations in nation-states, geographies of security, border enforcement, and the production of Latinidades, or multiple Latinx identities. Recommended: LSJ 329, GEOG 310, or POL S 359

GEOG 425 Qualitative Methodology in Geography (5) I&S Historical and philosophical overview of qualitative methodology and techniques such as interviewing, ethnography, archival research, participatory action research, and focus groups. Exploration of forms of interpretation and analysis such as textual interpretation, critical discourse analysis, and content analysis. Addresses questions of ethics, power relations, field notes, and research presentation.

GEOG 426 Advanced Quantitative Methods (5) I&S, QSR Introduces elementary spatial statistics and advanced statistical techniques in quantitative human geography. Methods reviewed include geographic applications of multiple regression analysis, spatial statistics and spatial autocorrelation, geographically weighted regression, factor analysis, discriminant analysis, and logistic regression. Prioritizes the interpretation and application of methods. Prerequisite: a minimum grade of 2.0 in GEOG 326; and a minimum grade of 2.0 in GEOG 360.

GEOG 430 Contemporary Development Issues in Latin America (5) I&S Contemporary development issues in Latin America, seen from a spatial perspective. Concept of development; competing theories as related to various Latin American states. Economic structural transformation, migration, urbanization, regional inequality, and related policies.

GEOG 431 Geography and Gender (5) I&S Examines theories and case studies across international, national, and regional scales in order to illustrate the impacts of social and economic processes upon the construction of gender in particular places.

GEOG 432 Geographies and Politics of Poverty and Privilege (5) I&S Examines theories and case studies across the Americas to understand geographies and politics of poverty and inequality. Outlines key concepts related to the reproduction of inequality/poverty, particularly theories of class, gender, and race and examines the mechanisms through which knowledge and action on poverty and inequality are (re) produced. Offered: Sp.

GEOG 435 Industrialization and Urbanization in China (5) I&S Examines the impacts of industrialization strategies adopted by the People's Republic of China on urbanization and rural-urban relations. Topics include: economic development strategies, industrial geography, rural industrialization, urban development patterns, migration, and urbanization policies. Offered: Sp.

GEOG 436 Social and Political Geographies of South Asia (5) I&S Introduces the social and political geographies of South Asia through reference to agrarian change in India. Outlines key concepts related to the reproduction of inequality in the region, particularly theories of caste, class, gender, and religious communalism, and examines the mechanisms through which these inequalities are reproduced in South Asia. Offered: jointly with JSIS A 438.

GEOG 439 Gender, Race, and the Geography of Employment (5) I&S Focuses on the geography of employment for men and women of different racial and ethnic backgrounds in American cities. Presents evidence on labor market inequality for different groups and explanations of these differences. Emphasizes the importance of a spatial perspective in understanding employment outcomes for women and minorities.

GEOG 442 Social Geography (5) I&S Review of concepts and methods of postwar social geography: historical roots and present orientations. Study of social spatial systems, their structures and functioning.

GEOG 445 Geography of Housing (5) I&S, DIV Focuses on the geography of housing, especially in the United States. Topics include: the American dream of home ownership; housing affordability and differential access to home ownership; homelessness; the history of public housing; housing demography; residential mobility and neighborhood change, and discrimination in the housing market.

GEOG 448 Geography of Transportation (5) I&S

GEOG 451 Cultural Geography of Latin America (5) I&S Interdisciplinary senior seminar examining how physical and social geographies are culturally constructed and interconnected with subjectivities and power in Latin America. Topics include identity formation grounded in particular territories and the social constitution of space via an interplay of material and cultural forces. Offered: jointly with JSIS D 451.

GEOG 455 Genealogical Geographies (5) I&S Research seminar in geospatial genealogy. Focuses on family genealogy and geographical analysis, rather than particular regions or eras. Explores historical and population geographies as well as disciplinary relationship with genealogy and family history. Relates individual family tree data with broader economic, political, and cultural phenomena in time and space. Prerequisite: GEOG 315.

GEOG 458 Advanced Digital Geographies (5) I&S, QSR How are emerging digital approaches changing GIS and geography generally? Students learn skills needed to critically and creatively engage with coding, collaboration, shifting geospatial webs, and interactive maps and essays. Prerequisite: GEOG 360. Offered: Sp.

GEOG 461 Urban Geographic Information Systems (5) I&S Use of geographic information systems to investigate urban/regional issues; focus on transportation, land-use and environmental issues; all urban change problems considered. GIS data processing strategies. Problem definition for GIS processing. Data collection, geocoding issues. Data structuring strategies. Prerequisite: a minimum grade of 2.0 in GEOG 360; and a minimum grade of 2.0 in either GEOG 230, GEOG 236/JSIS A 236, GEOG 245, GEOG 277, GEOG 310, GEOG 342, GEOG 377, GEOG 435, GEOG 445, GEOG 476/GWSS 476, GEOG 477, GEOG 478, GEOG 479, GEOG 490. Offered: W.

GEOG 462 Coastal Geographic Information Systems (5) I&S, QSR Combines lectures about fundamental concepts in geographic information systems with hands-on computer laboratory assignments about coastal environment-society issues. Coastal issues feature data measurement, characterization, and movement related to the land-water and environment society dynamic. Prerequisite: GEOG 360.

GEOG 464 GIS and Decision Support (5) I&S Combines lectures about geographic information systems and decision methods with hands-on computer assignments about regional and urban issues associated with such complex decision processes as planning, improvement programming, and capital project implementation. Emphasizes land, transportation, and water resources decision problems. Prerequisite: GEOG 360.

GEOG 465 GIS Database and Programming (5) I&S Explores GIS database models, database development, and database management systems used in GIS. Uses programming languages most applicable to GIS database work, particularly related to extending current commercial GIS such as ArcGIS. Prerequisite: minimum grade of 2.0 in GEOG 360.

GEOG 467 Law, Justice, and the Environment (5) I&S S. HERBERT Examines the role law plays in shaping environmental policy. Challenges student to understand how environmental concerns are translated into legal discourse, and covers several typical issues that emerge in environmental law. Centers on active discussions. Offered: jointly with LSJ 467.

GEOG 469 Geographic Information Systems Workshop (5) Practices experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format involves team-based work on GIS application project in various subfields of geography for community or university partners; encourages diverse backgrounds in various subfields of geography. Prerequisite: minimum grade of 2.0 in either GEOG 458, GEOG 461, GEOG 462, GEOG 464, GEOG 465, or GEOG 482. Offered: Sp.

GEOG 470 The Cultural Politics of Food (5) I&S Explores ways our understanding of the concepts of "food" and "eating" are culturally and spatially constructed by societal structures, power relations,

and media representations. Drawing from research in cultural geography and critical food studies, examines the connections between food, culture, the media, politics, and economics. Prerequisite: GEOG 271.

GEOG 471 Methods of Resource Analysis (5) I&S Economic and noneconomic criteria for resource analysis. Theory and methods of linear models of natural resource analysis. Includes materials-balance modeling, residuals management, constrained system optimization approaches to water quality analysis, land-use patterns and interregional energy use, and multiple objective planning techniques applied to natural resource problems.

GEOG 472 Race, Nature, and Power (5) I&S, DIV Explores the role that racial formation and power relations play in the cultural, political and spatial production of nature. Draws on geographies of nature-society relations, political ecology and environmental justice literatures to interrogate the link between nature imaginaries and conservation practices. Offered: AWSp.

GEOG 473 Geographies of Energy and Sustainability (5) I&S Examines how, where, and why energy resources are made and used and with what political, economic, and ecological implications. Investigates role of fossil fuels (coal, oil, natural gas) in neoliberal capitalism and geopolitics. Addresses multiple meanings of sustainability and explores conflicting visions of sustainable. Low-carbon futures. Recommended: either GEOG 205, GEOG 270, or GEOG 370. Offered: Sp.

GEOG 474 Geography and the Law (5) I&S S. HERBERT Examines the relationship between geography, law, and socio-legal analysis; reviews significant instances where law and geography intersect, such as the regulation of public space, the regulation of borders and mobility, and disputes over property and land use. Offered: jointly with LSJ 474.

GEOG 476 Women and the City (5) I&S, DIV Explores the reciprocal relations between gender relations, the layout of cities, and the activities of urban residents. Topics include: feminist theory and geography (women, gender, and the organization of space) ; women and urban poverty, housing and homelessness; gender roles and labor patterns;

geographies of childcare; and women and urban politics. Offered: jointly with GWSS 476.

GEOG 477 Advanced Urban Geography (5) I&S

Geographic patterns and social processes within metropolitan areas. Canvases current research topics, methods, and theoretical debates in urban geography. Issues covered range across urban economic, political, and cultural geography.

GEOG 478 Social Justice and the City (5) I&S, DIV

Provides a link between general theories of urban inequality and their specific manifestation in the United States. Explores a series of themes related to contemporary urbanization processes including the recent mortgage crisis, segregation, gentrification, enclaves, fortification, redevelopment, homelessness, and the loss of public space.

GEOG 479 Diversity and Segregation in Cities (5) I&S

Explores segregation and diversity within cities in the United States and elsewhere. Topics include the history of segregation; the measurement and dynamics of segregation and diversity; explanations for change in segregation and diversity in neighborhoods; and the effects of neighborhood segregation and diversity on social and economic outcomes for residents.

GEOG 480 Environmental Geography, Climate, and Health (5) I&S

Demonstrates and investigates how human-environment relations are expressed in the context of health and disease. Local and global examples emphasize the ways medical geography is situated at the intersection of the social, physical, and biological sciences. Examines interactions between individual health, public health, and social, biological, and physical phenomena. Prerequisite: either GEOG 280, GEOG 380, or GEOG 426.

GEOG 482 GIS Data Management (5) I&S

Examines the principles and application of geospatial database management software, including personal and enterprise geodatabase management solutions. Considers enterprise architectures for GIS relative to organizational size. Addresses collaborative uses of Internet, Intranet, and Extranet architectures. Offers case studies in database management, with a variety of dataset types and sizes. Prerequisite: GEOG 360.

GEOG 490 Field Research: The Seattle Region (5)

I&S Field methods for contemporary urban research.

Survey designs used in the analysis of transportation, land use, location of employment, shopping and housing, political fragmentation, and environmental degradation. Field report required, based on field work in the Seattle region.

GEOG 491 Professional Development for

Geographers (1-3, max. 3) Prepares students for the post-graduation job market or for an internship.

From skills assessment to resume building to interviewing, prepares students for success in the job market. Recommended: Significant coursework in Geography. Course is intended for advanced students. Offered: W.

GEOG 494 Senior Essay (3) I&S

Supervised individual research and writing of major paper during senior year. Offered: AWSp.

GEOG 495 Special Topics (*, max. 15) I&S

Topics vary and are announced in the preceding quarter. Offered: AWSpS.

GEOG 496 Internship in Geography (3/5, max. 12)

Internship in the public or private sector, supervised by a faculty member. Credit/no-credit only. Offered: AWSpS.

GEOG 497 Tutorial in Geography (1-5, max. 15) I&S

Intensive directed study and tutoring. Literature reviews, formulations of project outlines and research designs, orientation in contemporary geographic thought and trends. Directed writing. Required for Honors students. Offered: AWSp.

GEOG 498 Study Abroad: Geography (1-5, max. 10)

I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements but may, depending on course content, count toward various major requirements. Offered: AWSpS.

GEOG 499 Special Studies (*, max. 15)

Supervised reading programs, undergraduate and graduate library and field research; special projects for undergraduate Honors students. Offered: AWSpS.

GEOG 500 Geographic Thought (5)

Familiarizes entering graduate students with the research interests and publications of the geography faculty.

Through readings, weekly essays, and discussions with faculty, students develop and deepen their individual research interests within the context of the intellectual life of the department. Offered: A.

GEOG 502 Professional Writing in Geography (*, max. 6)

GEOG 505 Spatial Dimensions of Chinese Development (5, max. 10) Addresses several major spatial topics critical to present-day China's development, including: population and land relationship, the spatial structures of economic activities and governments; rural-urban relations and transition; central-local relations; the hukou system; population mobility at different spatial scales and urban centers.

GEOG 511 Contemporary Research Design in Geography (5) Reviews the key steps in designing and executing high-caliber independent research in geography. Students generate a research proposal that can further their own thesis or dissertation research.

GEOG 513 Research Grant Workshop (5, max. 10) Writing research proposals. Participants learn to identify and approach sponsors; practice the peer-review process; develop a competitive research proposal. Prerequisite: GEOG 512 or GEOG 515 or equivalent; training and experience with quantitative, qualitative, or cartographic analysis; an already-formulated research project.

GEOG 514 GIS Problem Solving (5) Introduces geospatial information technologies including geographic information systems, global positioning systems, remote sensing, and spatial decision support systems for addressing complex geospatial problems. Students gain an understanding of integrated data processing strategies including problem definition, database design, data collection, data structuring, data analysis, and information presentation. Offered: S.

GEOG 517 Geospatial Data Analysis (5) Provides a practical introduction to spatial data analysis and geographic information systems. Topics include overlay, buffer and distance fundamentals, descriptive and inferential spatial statistics, spatial pattern analysis and spatial autocorrelations, global and local spatial measures, regression analysis and

geographically weighed regression. Emphasizes comprehension and application.

GEOG 520 Research Seminar: Geographic Information Representation (5) Current issues in geographic information representation for geographic information systems (GIS) . Includes representation for visualization, databases, and analyses. Prerequisite: one course in GIS.

GEOG 521 Research Seminar: Critical GIS (5) Examines theoretical and methodological foundations and practices of critical GIS research; considers philosophical and practical considerations in mixed methods research that incorporates GIS and other spatial technologies.

GEOG 522 Research Seminar: Space, Technology, and Society (5) Examines social scientific and humanistic theorizations of space, technologies, and their interrelationships; uses these theorizations to assess social/ cultural, political, and disciplinary implications of GIS, the geoweb, and emergent online mapping technologies. Offered: W.

GEOG 525 Advanced Qualitative Methods in Geography (5) Examines why and how qualitative methods can be used to pursue research in geography. Includes consideration of theoretical, ethical, and political issues that arise with qualitative methods. Offers considerable practice in such methods as ethnography, focus groups, interviewing, discourse and content analyses, narrative analysis, and archival analysis.

GEOG 526 Advanced Quantitative Methods in Geography (5) Introduces elementary spatial statistics and advanced statistical techniques in quantitative human geography. Methods reviewed include geographic applications of multiple regression analysis, spatial statistics and spatial autocorrelation, geographically weighted regression, factor analysis, discriminant analysis, and logistic regression. Prioritizes the interpretation and application of methods. Prerequisite: GEOG 326 or equivalent.

GEOG 531 Latin American Development Seminar (5, max. 10) Evolution of development theory in Latin America from a spatial perspective. Theories and development issues, using case studies from Latin America. How geographers have conceptualized

development problems and solutions. Prerequisite: GEOG 430.

GEOG 532 Research Seminar: Advanced Topics in Agriculture and Food (5, max. 10) Examines classic and contemporary research and writing on agricultural development and food and hunger drawing from political economy, political ecology, poststructural theory, cultural studies, and feminist theory.

GEOG 541 Research Seminar: Feminist Geographies (5) Explores major research themes in feminist geographies. Particular attention to the concept that gendered identities and spaces are discursively (re) produced. Emphasizes recent feminist scholarship that emphasizes difference, as well as the intersections between gender, "race," ethnicity, sexuality, age, nationality, class, and other social identities and divisions. Offered: jointly with GWSS 541.

GEOG 542 Research Seminar: Social and Population Geography (5, max. 10) Classic and contemporary theoretical and empirical research in social and population geography. Specific focus changes annually.

GEOG 543 Research Seminar: Topics in Immigration, Ethnicity, and Race (5, max. 10) Theoretical and empirical research issues in the geographies of immigration, ethnicity, and race. Specific focus changes annually.

GEOG 553 Advanced Topics in Cultural Geography (5, max. 10) Focuses on important contemporary topics in geography and cultural studies, especially race and racism. Includes critical questions surrounding issues of representation, recognition, and redistribution. Offered: Sp.

GEOG 554 Research Seminar: Nature-Society Relations (5) Addresses key concepts and theoretical debates in nature-society relations. Provides resources for theorizing how power works on and through the natural environment. Explores geographic scholarship on scientific knowledge production, the politics of conservation, biotechnology and the environment, and the post-human and post-natural. Offered: Sp.

GEOG 555 Research Seminar: Culture, Place, and Politics (5) Explores theoretical and empirical connections between culture, place, and politics. Emphasizes contemporary critical perspectives and approaches to understanding power and meaning-making as spatial processes. Perspectives and approaches include cultural-political economy and critical place studies. Offered: W.

GEOG 560 Principles of GIS Mapping (5) Origins, development, and methods of cartographic mapping. Principles of data representation and map design for thematic mapping and spatial analysis. Introduction of principles of geographic information systems (GIS) .

GEOG 561 Urban Geographic Information Systems (5) Uses geographic information systems to investigate urban/regional issues, including transportation, land use, environment, emergency response, and public health. Spatial data acquisition, structuring, management, and analysis in a GIS environment - for urban planning, government, and research applications. Prerequisite: minimum grade of 2.0 in GEOG 560 or permission of instructor. Offered: W.

GEOG 562 Coastal Geographic Information Systems (5) Combines lectures about fundamental concepts in geographic information systems with methods in hands-on computer lab assignments about coastal environment-society issues. Includes coastal-feature data measurement, characterization, and movement related to the land-water and environment-society dynamic. Prerequisite: GEOG 560 or equivalent.

GEOG 564 GIS and Decision Support (5) Combines lectures about geographic information systems and decision methods with hands-on computer assignments about regional and urban issues associated with such complex decision processes as planning, improvement programming, and capital project implementation. Emphasis on land, transportation, and water resource decision problems. Prerequisite: GEOG 560 or equivalent.

GEOG 565 Geographic Information Systems Programming (5) Covers GIS data structures and algorithms, plus map data systems used in GIS. Examines programming languages most applicable to GIS data management, analysis, and display work; particularly related to extending current commercial

GIS methods using scripting environments as in ArcGIS.

GEOG 567 Research Seminar: Geography and Economic Development (5, max. 10) Explores ways in which economic and social changes affect the well-being and development of subnational, regional economies. Explanatory roles of such factors as labor and labor institutions, governments, technical change, corporations, capital markets, information costs, and international trade in the process of global restructuring. Specific focus changes annually.

GEOG 568 International Case Studies of GIS for Sustainability Management (5) Uses GIS and resilience thinking to explore sustainable development projects in a variety of cultural settings. Examines international, national, and regional perspectives in order to understand how different organizations view sustainability as undertaken through GIS projects. Offered: Sp.

GEOG 569 Geographic Information Systems Workshop (5) Practical experience applying geographic information system (GIS) tools to analyze spatial data. Workshop format involves team-based work on GIS application project for community or university partners; diverse background encouraged. Prerequisite: either 2.0 in GEOG 561 or 2.0 in GEOG 562. Offered: Sp.

GEOG 571 Research Seminar: Critical and Normative Ecologies (5)

GEOG 572 Research Seminar: Queer Geographies (5) Explores the relationship between queer theory and critical human geography. Covers classic themes and debates, as well as new and emerging topics. Asks how geographic thought can be queered, as well as how queer studies can be augmented or critiqued with a geographical imagination.

GEOG 573 Urban Political Geography: Research Seminar (5) Covers both classic and contemporary theoretical debates and research on the relation between power, place, and the local scale. Considers both conventional sites (e.g., the local state) as well as new forms and locations of city politics (e.g., sexuality and the body).

GEOG 574 Research Seminar: Geography, Law, and Social Control (5) Explores relationship between the

construction and enforcement of law and the landscape of lived experience; reviews major approaches in socio-legal analysis and seeks to augment these with insights from contemporary human geography research; explores various ways in which geographical variance shapes legal behavior.

GEOG 575 Advanced Political Geography (5, max. 10) Provides resources for theorizing how politics shapes and is shaped by geographical relationships. Examines how politics are situated in complex material and discursive geographies that are partly reproduced through political negotiations. Examines interrelationships of contemporary capitalism with other complex systems of social and political power relations. Offered: jointly with JSIS B 575.

GEOG 576 Research Seminar: Geographies of Racial Formations and Postcolonialism (5) Overview of key insights from ethnic and Native studies, postcolonial, and critical race theories. Focuses on how geographers can build from this literature to deepen our understanding of the relationship between race, state formations, and power relations. Offered: W.

GEOG 578 Research Seminar: Theorizing the City (5) Considers classic and contemporary writings in urban theory in the twentieth century, including social ecology (Chicago School), political economy, and contemporary theoretical debates in poststructuralism, deconstructionism, and culture as they relate to cities and space.

GEOG 580 Medical Geography (3) Geography of disease, consideration in health systems planning. Analysis of distributions, diffusion models, migration studies. Application of distance, optimal location models to health systems planning; emergency medical services; distribution of health professionals; cultural variations in health behavior. Prerequisite: familiarity with social science research; health-related issues. Offered: jointly with HSERV 586.

GEOG 581 Seminar in Medical Geography (5, max. 10) Intensive research seminar dealing with new and promising research themes in medical geography and public health. Offered: jointly with HSERV 585.

GEOG 582 GIS Data Management (5) Examines the principles and application of geospatial database management software, including personal and enterprise geodatabase management solutions.

Considers enterprise architectures for GIS relative to organizational size. Addresses collaborative uses of Internet, Intranet, and Extranet architectures. Offers case studies in database management, with a variety of dataset types and sizes.

GEOG 595 Special Topics in Geography (3-5, max. 10) Topics vary and are announced in the preceding quarter. Offered: AWSp.

GEOG 598 Geography Colloquium (1, max. 6) Participation in, and critique of, student thesis and dissertation research, faculty research, and visitor contributions. Offered: AWSp.

GEOG 600 Independent Study or Research (*-) Offered: AWSpS.

GEOG 700 Master's Thesis (*-) Offered: AWSpS.

GEOG 800 Doctoral Dissertation (*-) Offered: AWSpS.

GERMAN STUDIES

GERMAN 100 Intensive First-Year German (15) Accelerated first-year German. Speaking and listening. Secondary objectives are reading and writing. Offered: S.

GERMAN 101 First-Year German (5) VLPA The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and writing. (Cannot be taken for credit if German is language of admission). First in a sequence of three. Prerequisite: score of 0-11 on GER TL placement test if German is language of admission. Offered: AW.

GERMAN 102 First-Year German (5) VLPA The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and writing. Second in a sequence of three. Prerequisite: either GERMAN 101 or score of 12-35 on German placement test. Offered: WSp.

GERMAN 103 First-Year German (5) VLPA The methods and objectives are primarily communicative, with emphasis on speaking and listening. Secondary objectives are reading and

writing. Third in a sequence of three. Prerequisite: either GERMAN 102, GERMAN 111, or score of 36-56 on German placement test. Offered: AWSpS.

GERMAN 104 Individualized First-Year German (1-15, max. 15) Individualized approach to elementary German instruction. Students progress at their own pace. Number of credits vary. Depending upon amount of material mastered, any number of credits up to 15 may be earned per quarter. (Note: If German is the student's language of admission, only 10 credits count towards graduation.) Credit/no-credit only.

GERMAN 111 Basic German Review (5) Includes the curriculum of GERMAN 102, preceded by a review of GERMAN 101. Designed for students with a background in German. Cannot be taken for credit if student has already taken GERMAN 102, GERMAN 103, or more advanced courses. Offered: A.

GERMAN 121 First-Year Reading German (5) Special beginning course devoted exclusively to the reading objective. Offered: S.

GERMAN 122 First-Year Reading German (5) Special beginning course devoted exclusively to the reading objective; GERMAN 122 continuation of GERMAN 121. Offered: S.

GERMAN 150 Conversational German through Films (2, max. 6) Conversational practice in small groups based on films. Because series progresses through the year, beginners may enroll only Autumn Quarter. May be taken concurrently with other Germanics courses. Cannot be taken for credit if GERMAN 250 previously taken. Offered: AWSp.

GERMAN 195 Popular Film and the Holocaust (5) VLPA, DIV Introduces films about the Holocaust with particular emphasis on popular films. Develops the requisite tools for analyzing films, a historical perspective of the Holocaust, and the problems involved in trying to represent a historical event whose tragic dimensions exceed the limits of the imagination. Offered: jointly with JEW ST 175.

GERMAN 199 Supervised Study (1-10, max. 10) Study in German language and culture.

GERMAN 200 Intensive Second-Year German (15)

VLPA Accelerated second-year German. Systematic review of German grammar. Intensive practice in conversation, reading and writing.

GERMAN 201 Second-Year German (5) VLPA

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. First in a sequence of three. Offered: AWSpS.

GERMAN 202 Second-Year German (5) VLPA

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Second in a sequence of three. Offered: AWSp.

GERMAN 203 Second-Year German (5) VLPA

Systematic review of German grammar. Intensive practice in conversation, reading, and writing. Third in a sequence of three. Offered: AWSp.

GERMAN 210 Classics of German Literature and Thought (5) VLPA

Introduction to major figures of German culture from the Reformation to the present, their contribution to the intellectual life of the Western world. Luther, Kant, Goethe, Schopenhauer, Marx, Freud, Nietzsche, Kafka, Brecht, and Mann. In English.

GERMAN 220 Origins of the Germanic Languages (5)

VLPA Introduction to basic grammatical concepts, terminology, and linguistics with emphasis on German-English relationship. Overview of phonology, morphology, syntax, and history of Germanic languages and people, both ancient and modern. Languages covered include Old, Middle, and New High German; English, Frisian, Dutch, Old Saxon, and Gothic. Taught in English. Offered: jointly with LING 220.

GERMAN 221 The German Express: Second Year

(10) VLPA Combines in one quarter the contents of GERMAN 201 and GERMAN 202, with special emphasis on reading and speaking skills. Limited to students who have demonstrated exceptional skills in first-year German. Offered: A.

GERMAN 243 Fairy Tale and Fantasy (5) VLPA

Studies of the Grimm brothers' fairy tales, their reception in different cultural frameworks, and their influence on fantasy literature from the nineteenth century to the present, including discussions of their

sociological, psychological, and psychoanalytical implications and gender issues. In English.

GERMAN 250 Advanced Conversational German through Films (2, max. 6) VLPA

Conversational practice in small groups based on films. May be taken concurrently with other Germanics courses. Offered: WSp.

GERMAN 275 Crime Scenes: Investigating the

Cinema and Its Cultures (5) VLPA Teaches how to analyze film by closely studying crime scenes from historical and contemporary German and Scandinavian cinema. Directors studied include Fritz Lang, Carl Th. Dreyer, Billy Wilder, and Lars von Trier. Offered: jointly with SCAND 275.

GERMAN 285 Representation and Diversity (5) I&S,

DIV E. WIGGINS Studies of culture and ethics with aesthetic, literary, and philosophical tools of analysis, with special attention to issues of identity, diversity, civil rights, environmental justice, and multiculturalism. Readings and discussions in English.

GERMAN 293 Introduction to Contemporary German Culture (5) VLPA/I&S

DIV Introduction to culture of today's German-speaking world through readings from various media and discussion of diverse manifestations of both high and popular culture, its underlying beliefs and values, and its institutions and historical background. Readings and discussions in English.

GERMAN 295 The Contributions of German Jews to German Culture (5) VLPA/I&S, DIV

Contribution, assimilation, and alienation of German-speaking Jews - such as Karl Marx, Sigmund Freud, and Franz Kafka - emphasizing the multi-cultural nature of that which is understood as "German culture." Offered: jointly with JEW ST 295.

GERMAN 298 Topics in Literature and Culture (5,

max. 10) VLPA Introduces literary works and cultural artifacts from a variety of different traditions, cultures, and periods. Helps students to acquire basic tools for analyzing literature and culture.

GERMAN 299 Supervised Study (1-5, max. 10)

GERMAN 300 Studies in Germanics (5, max. 15)

VLPA Topics or figures of German literature or language.

GERMAN 301 Conversation and Writing Skills (3-5)

VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Offered: AW.

GERMAN 302 Conversation and Writing Skills (3-5)

VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Offered: WSp.

GERMAN 303 Conversation and Writing Skills (3-5)

VLPA Language skill development (speaking, writing) using materials selected to broaden understanding of German-speaking countries. Offered: Sp.

GERMAN 304 Contemporary German Play (5, max. 15)

VLPA Reading, analysis, and performance of one play by a contemporary German author. Taught in German. Performance scheduled for last week of quarter. Prerequisite: GERMAN 203. Offered: Sp.

GERMAN 307 Third-Year Composition (3-5) VLPA

GERMAN 311 Introduction to German Literary Studies (5) VLPA Introduction to major critical concepts and basic methodological issues of literary studies. Diverse reading strategies plus special emphasis on analytical writing about literature. Readings from eighteenth- to twentieth-century literature.

GERMAN 312 Historical Approaches to German Literature (5) VLPA

German literature from the Middle Ages to the present: Medieval Courtly period, Baroque, Enlightenment, Sturm und Drang, Classicism, Romanticism, Realism, Neoromanticism, Expressionism.

GERMAN 313 Major Figures of German Literature (5) VLPA

Focus on major figure such as Goethe, Schiller, Kleist, Fontane, Thomas Mann, Kafka. Emphasis on his/her cultural and sociopolitical contexts. Literary and nonliterary texts, including film, art, political, historical, and philosophical texts.

GERMAN 322 Introduction to German Cultural Studies (5) VLPA

Questions addressed include: What

is "German culture," how has it been defined and contested, and how and why do we study it? Interdisciplinary methods and readings. Prerequisite: GERMAN 203.

GERMAN 323 Institutions and Their Ideas (5)

VLPA/I&S Analysis of central institutions of contemporary Germany in their historical development.

GERMAN 330 Conversational German (3-5) VLPA

For participants in special summer programs only.

GERMAN 340 Friedrich Nietzsche in English (5)

VLPA/I&S Analysis of Friedrich Nietzsche's chief works and the discussion of his position within modern German literature and thought.

GERMAN 341 Franz Kafka in English (5) VLPA

Short stories and novels of Franz Kafka; emphasis on philosophical relevance and esthetic significance.

GERMAN 342 Thomas Mann in English (5) VLPA**GERMAN 345 Bertolt Brecht in English (5) VLPA**

GERMAN 346 The Contemporary German Novel in English (5) VLPA Major novels of the postwar period (1945 to present) discussed in their historical context.

GERMAN 349 Goethe in English (5) VLPA Selected major works (especially Faust) of Goethe, whose literary, philosophical, and scientific achievements are examined as integral parts of his quest for meaning, wholeness, and universality, and whose impact on Western thinking is traced up to Thomas Mann and C. G. Jung.

GERMAN 350 The German Drama in English (5)

VLPA German drama from the eighteenth to the twentieth centuries. German history and culture as reflected in the plays. Discussion of major themes.

GERMAN 351 Vienna 1900 in English (5) VLPA/I&S

Interdisciplinary study of Vienna at the turn of the century. Discussion of literary texts with emphasis on other intellectual and cultural trends of this very rich and complex period.

GERMAN 352 Literature and Society in Weimar and National Socialist Germany in English (5) VLPA/I&S

Literature, theater, and film, with adjunct consideration of art and architecture, in relation to the German social and cultural situation circa 1918 to circa 1947.

GERMAN 353 Postwar Germany (5) VLPA/I&S Study of culture, society, and politics in Germany since 1945. Readings include literary and nonliterary texts devoted to culture and everyday life. In English.

GERMAN 355 German Literature and Film in English (5) VLPA Relationship between literature and film in the German tradition. Content varies; focus may be on a particular time period, director, or theme. Special attention paid to developing critical and analytical skills.

GERMAN 360 Women in German Literature in English (5) VLPA/I&S Investigates the changing social roles of women in German society on the example of various literary texts from different periods.

GERMAN 370 History of German Cinema (5) VLPA/I&S History of German cinema emphasizing the cultural and political contexts. Films by Lang, Murnau, Riefenstahl, and Fassbinder, among others. Readings and discussions in English.

GERMAN 371 Special Topics: German Cinema (5, max. 10) VLPA Covers one or more German film directors, a specific genre, or a chosen theme. Topics vary. Readings and discussions in English.

GERMAN 385 Rhetoric and Social Justice (5) I&S, DIV E. WIGGINS Analyzes the rhetoric of social justice, with special attention to the advancement of civil rights, tolerance, diversity, and environmental justice, and multiculturalism. Readings and discussions in English.

GERMAN 390 Germanic Studies in English (5, max. 15) VLPA Topics or figures of German literature or language.

GERMAN 395 Proctoring of First-Year German Film Course (2, max. 6) VLPA Restricted to upper-division students of German who have demonstrated sufficient proficiency in speaking German to lead discussion groups in GERMAN 150. Leaders may

participate one or two hours per week and receive 1 credit for each hour in class with 6 credits allowed in 3 quarters. Credit/no-credit only. Offered: AWSp.

GERMAN 396 Proctoring of Second-Year German Film Course (2, max. 6) VLPA Restricted to upper-division students of German who have demonstrated sufficient proficiency in speaking German to lead discussion groups in GERMAN 250. Leaders may participate one or two hours per week and receive 1 credit for each hour in class with 6 credits allowed in three quarters. Credit/no-credit only. Offered: WSp.

GERMAN 397 Foreign Studies in German Literature (1-6, max. 15) VLPA

GERMAN 398 Foreign Studies in German Language (1-6, max. 15) VLPA

GERMAN 399 Foreign Studies in German Culture (1-6, max. 15) VLPA/I&S

GERMAN 401 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. First in a sequence of three. Offered: A.

GERMAN 402 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. Second in a sequence of three.

GERMAN 403 Advanced Writing and Conversation (3-5) VLPA Texts and exercises, both grammatical and stylistic, to develop vocabulary, stylistic awareness, and the practical application of grammatical rules in written German. Third in a sequence of three.

GERMAN 411 Studies in Medieval Literature and Culture (5) VLPA Rotating special topics in literature and culture of the Middle Ages, such as particular movements, authors, genres, themes, or problems.

GERMAN 421 Studies in Eighteenth-Century Literature and Culture (5) VLPA Rotating special

topics in literature and culture of the eighteenth century, such as particular movements, authors, genres, themes, or problems. Offered: A.

GERMAN 422 Studies in Nineteenth-Century Literature and Culture (5) VLPA Rotating special topics in literature and culture of the nineteenth century, such as particular movements, authors, genres, themes, or problems. Offered: W.

GERMAN 423 Studies in Twentieth-Century Literature and Culture: (5) VLPA Rotating special topics in literature and culture of the twentieth century, such as particular movements, authors, genres, themes, or problems. Offered: Sp.

GERMAN 430 Advanced Conversational German (3-5, max. 10) VLPA For participants in special summer programs only. Cannot be taken for credit by those who have already taken GERMAN 401, GERMAN 402, or GERMAN 403.

GERMAN 444 Undergraduate Thesis in Germanics (5) VLPA Supervised research leading to the writing of a research thesis.

GERMAN 446 Internships and Service Learning (2-5, max. 10) Prerequisite: 6 credits of upper-level German language courses. Credit/no-credit only.

GERMAN 447 Undergraduate Research (1-5, max. 15) Supervised research with faculty member.

GERMAN 451 Linguistic Analysis of German (5) VLPA Offered: A.

GERMAN 452 History of the German Language (5) VLPA Traces the history of the German language from early Germanic to the present. Offered: jointly with LING 415; W.

GERMAN 479 Special Topics in the Teaching of Foreign Languages (3, max. 9) VLPA Intensive workshop for in-service and pre-service teachers of all foreign languages on some aspect of foreign-language teaching methodology.

GERMAN 490 Contemporary German Literature (5) VLPA Interpretation of selected works by contemporary German authors.

GERMAN 493 Special Topics in German Culture (5) VLPA/I&S

GERMAN 494 Studies in German Poetry (5) VLPA Introduction to various methods of analysis and interpretation.

GERMAN 495 Proseminar in German Literature (5, max. 15) VLPA Special topics, the subject matter and depth of which are not included in other literature courses, arranged through consultation among students and faculty members.

GERMAN 496 History of Germanic Philology (5) VLPA Introduction to the works of outstanding scholars in the field of Germanics.

GERMAN 497 Studies in German Literature (1-6, max. 15)

GERMAN 498 Studies in the German Language (1-6, max. 15)

GERMAN 499 Studies in German Culture (1-6, max. 15)

GERMAN 500 Literary Theory, Methodology, and Bibliography (5) Historical survey and analysis of criticism (Methodengeschichte) and modern trends in contemporary theory. Methods of research and bibliography, as well as theoretical aspects of practical interpretation.

GERMAN 501 Proseminar in Methods and Writing (5) Introduction to research methods, presentation of research, scholarly writing, and general poetological issues. Each year a different special topic is chosen as a focus for students' research in the course.

GERMAN 503 Contemporary German Literature (5, max. 15) Seminar analyzing the esthetic movements and thought of contemporary German literature, the social and political problems dealt with in the works of representative authors, and major experimental concepts. Some previous exposure to German literature and civilization after 1945 is expected.

GERMAN 504 Special Studies in Literary Criticism and Theory (5, max. 15) Literary criticism and theory, focusing on special topics proposed by the

instructor. Taught in English. Prerequisite: GERMAN 500 or equivalent.

GERMAN 510 Studies in Medieval Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the Middle Ages, such as particular movements, authors, genres, themes, or problems.

GERMAN 511 Studies in Renaissance and Baroque Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the Renaissance and Baroque, such as particular movements, authors, genres, themes, or problems.

GERMAN 512 Studies in Eighteenth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the eighteenth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 514 Studies in Nineteenth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the nineteenth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 516 Studies in Twentieth-Century Literature and Culture (5, max. 15) Seminar on rotating special topics in literature and culture of the twentieth century, such as particular movements, authors, genres, themes, or problems.

GERMAN 518 Foreign Language Teaching Methodology (2) *Brandl* Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with SCAND 518/SLAVIC 518; A.

GERMAN 525 Seminar in Romanticism (5, max. 15)

GERMAN 526 Seminar in Nineteenth-Century Drama (5, max. 15)

GERMAN 527 Seminar in Nineteenth-Century Prose (5, max. 15)

GERMAN 528 Nineteenth-Century Poetry (5, max. 15) Representative selections from Holderlin, the late Goethe, and from prevalent trends in nineteenth-century poetry, such as romanticism, "Young Germany," poetic realism, and the experimental poetry of naturalism.

GERMAN 529 Studies in Literature 1870-1920 (5, max. 15) Seminar on rotating special topics drawn from the period 1870-1920, such as particular movements, authors, genres, themes, or problems.

GERMAN 533 Seminar in Eighteenth-Century Literature (5, max. 15) Study of one or more of the literary movements: Enlightenment, sentimentalism, anacreontics, storm and stress, classicism, early romanticism, and works by principal authors such as Gottsched, Bodmer, Gellert, Lessing, Wieland, Klopstock, Herder, Lenz, Goethe, Schiller, Jean Paul.

GERMAN 534 Storm and Stress (5, max. 15) Extensive investigation of poetological and esthetic concepts advanced by initiators and exponents of German storm and stress. Analyses of narrative and dramatic works of storm and stress reveal reflections and implementations of the new theoretical concepts.

GERMAN 535 Classicism: Goethe, Schiller (5, max. 15)

GERMAN 537 Studies in Literature 1770-1830 (5, max. 15) Seminar on rotating special topics drawn from the period 1770-1830, such as particular movements, authors, genres, themes, or problems.

GERMAN 540 Twentieth-Century Poetry (5, max. 15) Development of German poetry from Rilke, Hofmannsthal, and George through Trakl, Benn, the Expressionists and the Dadaists, Brecht, and Enzensberger, to such contemporaries as Eich, Heissenbuttel, the concrete poets, Celan, and Bachmann.

GERMAN 541 Twentieth-Century German Drama (5, max. 15) Selection from modern German drama representative of the concern with the human condition, of social criticism, and of experimentation with the new dramatic forms.

GERMAN 542 Twentieth-Century Prose (5, max. 15)

Selected modern German novels, short novels, and short stories by representative authors dealing with the social and political problems of Germany as well as with individual problems of existence and identity.

GERMAN 550 Gothic (5)**GERMAN 551 Seminar in Germanic Philology and Linguistics (5, max. 15)**

Topics vary. Prerequisite: basic knowledge of German and at least one elementary linguistics course.

GERMAN 552 Old High German (5)**GERMAN 555 Old Saxon (5)****GERMAN 556 Middle High German (5)****GERMAN 558 Middle High German Literature (5)****GERMAN 560 Modern Dialects (5)**

GERMAN 565 Seminar in Courtly Epic (5) Aspects and methods of literary analysis pertaining to the study of medieval courtly epics.

GERMAN 566 Late Middle High German Narrative (3)

GERMAN 567 Minnesang (3) In-depth study of medieval German lyrics in the context of German and European literary and intellectual development. Poems of the period from Kurenberger through Walther are analyzed with stress on grammatical, formal, stylistic, and ideological interpretation. Prerequisite: adequate knowledge of Middle High German.

GERMAN 568 Seminar in Heroic Epic (5) Literary and historic problems of the German heroic epic, with special emphasis on the Nibelungenlied and the Dietrichsepik.

GERMAN 575 Teaching of German Literature and Civilization (5) Teaching of German language and literature on the advanced level in secondary schools and colleges. Credit/no-credit only.

GERMAN 576 Modern Methods and Materials in Teaching German (3)

Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials. Credit/no-credit only. Offered: A.

GERMAN 577 Principles of Second Language Learning (2)

GERMAN 580 Seminar in German Literature (5, max. 15) Open topics seminar with varying content.

GERMAN 581 Seminar in Poetry (5, max. 15) Open topics seminar with varying content.

GERMAN 582 Seminar in Drama (5, max. 15) Open topics seminar with varying content.

GERMAN 583 Seminar in Prose (5, max. 15) Open topics seminar with varying content.

GERMAN 590 Philosophical Issues in German Culture (5, max. 15) Seminar on rotating special topics dealing with the impact of particular thinkers, movements, or philosophical problems in German culture.

GERMAN 591 Studies in German Intellectual History (5, max. 15) Seminar on rotating special topics dealing with interactions of history, literature, and culture in the German tradition.

GERMAN 592 Cultural Studies (5, max. 15) Seminar on rotating special topics dealing with periods, themes, or particular problems in German life and culture.

GERMAN 600 Independent Study or Research (*-)**GERMAN 700 Master's Thesis (*-)****GERMAN 800 Doctoral Dissertation (*-)****HISTORY****HISTORY ANCIENT AND MEDIEVAL HISTORY**

HSTAM 111 The Ancient World (5) I&S Origins of Western civilization to the fall of Rome.

HSTAM 112 The Medieval World (5) I&S Political, economic, social, and intellectual history of the Middle Ages. Cannot be taken for credit toward a history major if HSTAM 331 or 332 or 333 previously taken.

HSTAM 203 Introduction to the Middle Ages: Medieval People (5) I&S Introduction to the Western Middle Ages through a study of social roles and statuses as seen through documents and imaginative literature. The groups studied are rulers, aristocracy, peasants, townspeople, clergy, outcasts, and outsiders.

HSTAM 205 Military History of the Ancient World (5) I&S Military history from prehistoric times to the fall of the Roman Empire, with special emphasis on the Greco-Roman period and the campaigns of Alexander the Great, Hannibal, Scipio Africanus, and Julius Caesar.

HSTAM 215 Tudor England (5) I&S Covers the political, social, and cultural history of England from Wars of the Roses to reign of Elizabeth I; themes include social order, economy and society; imposition of order after a change of dynasty; political propaganda; English Reformation and Renaissance; literature and culture; witch beliefs and witch trials; and political rebellion.

HSTAM 231 Race, Identity, and the Ancient Mediterranean World (5) I&S, DIV M. *Green, K. Topper* Explores ancient authors' perceptions of others (foreigners, "barbarians," people on the margins of their known-worlds, slaves, etc.) alongside current scholarship on ancient perceptions of race and identity. Also examines how different groups/nations in nineteenth/twenty-first centuries used their views of Greek and Roman societies to make modern claims about race, white privileges, and power. Offered: jointly with CLAS 231.

HSTAM 235 Myths and Mysteries of the Middle Ages (5) I&S Introduces the basics of the historian's craft by focusing on some enduring mysteries of the European middle ages, including bog bodies, druids, King Arthur, Robin Hood, the Templars, the Holy Grail, the Shroud of Turin, and Joan of Arc.

HSTAM 250 The Mongols: Empire and Resistance in Medieval Eurasia (5) I&S *M. Mosca, J. Walker* Under the leadership of Genghis Khan (d. 1227), Mongol

armies established the largest land-based empire in world history. Traces the history of the Mongol Empire, with attention to the geography and cultures of the regions it conquered. Examines how diverse communities across Eurasia responded to the rise of Mongol power, and listens carefully to voices of those who fought, fled, or collaborated with Mongol forces.

HSTAM 276 Celtic Civilizations of the European Middle Ages (5) VLPA/I&S *R. Stacey* Introduction to the history and pseudo-history of medieval Ireland, Wales, Scotland, and Gaul. Topics include "Celtic" religion, mythology, social institutions, nationalism, and the relationship between history and myth. Particular attention to how historians "do" history in the absence of straightforward historical sources.

HSTAM 290 Topics in Ancient/Medieval History (5, max. 10) I&S Examines special topics in ancient/medieval history.

HSTAM 302 Ancient Roman History (5) I&S *Mira Green* Political, social, economic, and cultural development of Rome from the beginnings in the eighth century BC to the beginning of the Middle Ages. Offered: S.

HSTAM 312 The Roman Republic (5) I&S Political, social, economic, and cultural history, with emphasis on the development of the constitution and territorial expansions.

HSTAM 313 The Roman Empire (5) I&S Political, social, and cultural history, with special emphasis on the period of Cicero and Caesar.

HSTAM 314 The World of Late Antiquity (5) I&S Examines the transformation of the ancient world from the third-century crisis of the Roman Empire to the rise of Islamic civilization. Explores the manifold political, cultural, and social changes that transformed Europe, the Mediterranean, and the Near East between the third and the eighth centuries CE.

HSTAM 315 The Byzantine Empire (5) I&S Political, social, economic, and cultural history of the eastern Roman Empire from the fourth to fifteenth centuries.

HSTAM 320 Reacting to the Past: Religion and Politics in the European Middle Ages (5) I&S Role-playing-based class focusing on religion and politics in the Middle Ages. Students take on identities and pursue game-structured strategies centered on key historical moments such as the struggle between church and state and the mission and trial of Joan of Arc.

HSTAM 325 Empires in Ancient Iran (5) I&S Explores the history of ancient and early medieval Iran, from the teachings of the prophet Zoroaster to the Islamic conquest of the Sasanian Empire. Focuses on the two dominant imperial phases of pre-Islamic Iranian history: the Achaemenid Empire created by Kings Cyrus and Darius, and the Sasanian Empire.

HSTAM 330 The Age of Augustus (5) VLPA/I&S *Gowing* Detailed study of the history and culture of the reign of Augustus, the first Roman emperor (31 BC-AD 14). Includes readings in Augustan authors such as Vergil, Ovid, and Horace as well as the study of Augustan art and architecture. Offered: jointly with CLAS 330.

HSTAM 331 Early Middle Ages (5) I&S The Dark Ages, feudalism, emergence of the medieval order of civilization, and the development of Romanesque culture.

HSTAM 332 Central Middle Ages (5) I&S Europe in the central Middle Ages: culture of cathedrals and universities, formation of national states, development of urban society.

HSTAM 333 Late Middle Ages (5) I&S Disintegration of the medieval order under the impact of the national state, the secularization of society, and the decline of the church. Movements of reform and revolution. The culture of late gothic Europe.

HSTAM 335 The Age of Nero (5) VLPA/I&S *C. Connors, A. Gowing, S. Levin-Richardson, S. Stroup* Detailed study of the history and culture of the reign of the Roman Emperor Nero (AD 54-68). Includes readings in the historian Tacitus' account of Nero, as well as in authors such as Petronius, Lucan, and Seneca, and consideration of the artistic and architectural achievements of the period. Recommended: HSTAM 111, HSTAM 302, HSTAM 312, or HSTAM 313; CLAS 122, CLAS 320, CLAS 329, or CLAS 330 Offered: jointly with CLAS 335; AWSpS.

HSTAM 340 Medieval Women (5) I&S, DIV The experiences of women in medieval society: public and private power, changing concepts of family and the domestic sphere, ideal and reality in courtly love, women in religious life, women in the workplace, the querelle des femmes and the beginnings of "feminist" thought.

HSTAM 360 Medieval Christianity (5) I&S Development of Christianity in the medieval west circa 400 to 1500. Emphasis on the forms of religious life: monasticism, the papacy, friars, hermits, mystics, and reformers; and on the emergence of new modes of piety, both lay and clerical.

HSTAM 365 Medieval England, 1042-1485 (5) I&S Upper level survey of English history from the Norman conquest until 1485. Emphasis on political, social, and economic history, with special attention to the peculiarities of English development as these had emerged by 1485.

HSTAM 367 Medieval Jewish History (5) I&S Social and intellectual history of the Jews in western Europe to the fifteenth century. Jews under Islam and Christianity; the church and the Jews; the Crusades and their legacy; intellectual achievements; conflict and cooperation. Offered: jointly with JEW ST 367.

HSTAM 370 The Vikings (5) VLPA/I&S Vikings at home in Scandinavia and abroad, with particular emphasis on their activities as revealed in archaeological finds and in historical and literary sources. Offered: jointly with SCAND 370.

HSTAM 401 Early Greece (5) I&S Bronze and Dark Age Greece: realities of the heroic age of ancient Greece.

HSTAM 402 Classical Greece (5) I&S The classical civilization of ancient Greece, with special emphasis on the legacy of Greece to Western civilization.

HSTAM 403 Alexander the Great and the Hellenistic Age (5) I&S Rise of Macedonia, conquest of Near East by Alexander, and division into lesser kingdoms after Alexander's death. Special emphasis on fusion of cultures and change from city-state to world-state.

HSTAM 420 Freedom in Ancient Rome and the Modern World (3/5) VLPA/I&S, DIV A. *Gowing*

Examination of the concept of 'freedom' in Ancient Rome, from its founding in the eighth century BC to the fourth century AD. Special attention to comparing the Roman perspective with some modern views of 'freedom', including (but not limited to) the United States from its founding to the present day. Recommended: HSTAM 111, 302, 312, or 313; CLAS 122, 320, or 329 Offered: jointly with CLAS 420; AWSpS.

HSTAM 443 Medieval Russia: 850-1700 (5) I&S

Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with JSIS A 443.

HSTAM 490 Topics in Ancient/Medieval History (5, max. 10) I&S Examines special topics in ancient/medieval history.

HSTAM 501 Greek History Field Course (3-6, max. 6)

Examines various topics and themes in Greek history. Content varies.

HSTAM 505 Ancient Greece and Rome: Writings and Interpretations (3-6, max. 6) Study of historians, development of historical study as a distinct pursuit, focus of attention in historical scholarship in the ancient world and comparison with modern interpretation of antiquity.

HSTAM 506 Medieval Europe: Writings and Interpretations (3-6, max. 6) Study of historians, schools of history, and interpretations of medieval European history.

HSTAM 511 Roman History Field Course (3-6, max. 6) Examines various topics and themes in Roman history. Content varies.

HSTAM 512 Seminar in Ancient History ([3-6]-, max. 12) Detailed study of special topics in ancient history.

HSTAM 513 Seminar in Ancient History (-[3-6], max. 12) Detailed study of special topics in ancient history.

HSTAM 518 Topics in Late Antiquity (3-6, max. 18) Examines various topics in the transformation of the

ancient world from the third-century crisis of the Roman Empire to the rise of Islamic civilization. Serves as the field course for masters and Ph.D. students.

HSTAM 530 Early Middle Ages (3-6, max. 6) Field course. Survey of early European history through the times of tribal migrations and invasions from Asia. Problems and methods of research.

HSTAM 531 Medieval European History (3-6, max. 6)

HSTAM 532 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 533 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 534 Medieval European Seminar (3-6, max. 12) Prerequisite: reading knowledge of Latin.

HSTAM 535 Later Medieval Europe (3-6, max. 6) Field course. Surveys European history from ca. 1250 to 1500, with particular attention to historiography.

HSTAM 536 Topics in Early Medieval History (3-6, max. 12) Graduate level study of specific topics in early medieval history. Topics vary from quarter to quarter; for information, please see instructor.

HSTAM 590 Topics in Ancient and Medieval History (5, max. 15) Seminar on selected topics in ancient and medieval history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HSTAM 591 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

HSTAM 592 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

HSTAM 593 Advanced Medieval and Renaissance Seminar (3-6, max. 12)

COMPARATIVE AND TRANSREGIONAL HISTORY

HSTCMP 200 Ten Events That Shook the World (5)

I&S Offers introduction to history by examining ten events of great importance for both past and present. The ten events, which vary from quarter to quarter, come from diverse times and places, thereby encouraging a sweeping view of world history. (See department advisor for the current quarterly list of the ten events.)

HSTCMP 202 World Wars I and II (5) I&S

Laurie Marhoefer The First and Second World Wars, human-made catastrophes that engulfed the globe, killed upwards of eighty million people, including tens of millions of civilians. Each war remade the world. Their aftershocks reverberate today, still shaping politics around the world. History of the wars, focusing on military technology, ethics, racism, gender and sexuality, and social history. Offered: A.

HSTCMP 204 Europe and America in the Era of the World Wars (5) I&S

Declining role of Europe in the world and rise of the United States from 1914 to 1945.

HSTCMP 205 Filipino Histories (5) I&S, DIV

Vicente L. Rafael Introduction to histories, cultures and politics of Filipinos and the Philippines. Examines pre-colonial societies, Spanish colonial rule, nationalism and Revolution, Filipino-American war, U.S colonial rule, Japanese occupation, postcolonial period to Martial Law, continuing rebellions, and the Filipino diaspora. Offered: jointly with JSIS A 205.

HSTCMP 207 Introduction to Intellectual History (5)

I&S Ideas in historical context. Comparative and developmental analysis of Western conceptions of "community," from Plato to Freud. Offered: jointly with CHID 207.

HSTCMP 209 History of Christianity (5) I&S

Twenty centuries of the history, thought, and culture of Christianity.

HSTCMP 210 Catholic Classics in Historical Context (5) I&S

James R Felak Examines some of the most significant works in the two thousand-year Catholic tradition, paying special attention to the historical context in which the work was produced, the life of

the author, and the content of the writing. The featured authors include major theologians such as Saints Thomas Aquinas and John Henry Newman, spiritual writers such as Saints. Benedict and Catherine of Siena, and literary figures such as G. K. Chesterton.

HSTCMP 211 Introduction to the History of Science (5) I&S

Introduction to major themes in the history of science. Investigation of historical and scientific methods through the study of particular historical cases.

HSTCMP 212 Indigenous Leaders and Activists (5)

I&S, DIV J. REID By focusing on historic indigenous leaders and activists globally, students will examine issues of power, sovereignty, identity, and the role of the individual in shaping history. Additionally, students will examine contemporary, global issues that indigenous communities face and collaboratively contribute to a wiki of indigenous leaders and activist movements. Offered: jointly with AIS 212.

HSTCMP 215 The History of the Atomic Bomb (5)

I&S History of the atomic bomb from the beginning of nuclear physics to the security hearing of J. Robert Oppenheimer. Includes a study of the scientific achievements that made the bomb possible, the decision to deploy the bomb, the moral misgivings of the scientists involved.

HSTCMP 217 The Space Age (5) I&S

Explores the history of ideas, events, and practices associated with the Space Age from the late nineteenth century through the twentieth. Emphasizes intellectual, cultural, and political/military history in the development of rockets and space technology in the United States, Germany, and the Soviet Union.

HSTCMP 220 At the Top of the World: Arctic

Histories (5) I&S *Elena Campbell* History of human understanding of and relationship to the Arctic by tracing the social, economic, political, and environmental transformations of the Earth's northernmost region, from earliest settlements to the end of the twentieth century (the creation of the Arctic Council in 1996) , as well as shifts in ideas that accompanied these changes. Offered: jointly with ARCTIC 220.

HSTCMP 221 Global Environmental History, Feast and Famine (5) I&S, DIV *Purnima Dhavan* Examines how consumption in societies such as China, India, Japan, Africa, Europe, and the Americas developed from 1500 to the present. Broad patterns of global history and how they fit into debates about environmental history. Offered: Sp.

HSTCMP 225 The Silk Road (5) I&S *Waugh* History of cultural and economic exchange across Eurasia from the early Common Era to modern times. Spread of religions such as Islam and Buddhism, overland trade in rare commodities, interaction between nomadic and sedentary cultures, role of empires, culture of daily life, and the arts.

HSTCMP 245 Exploration and Empire: The Art and Science of Global Power, 1300-1800 (5) I&S, DIV *B. Schmidt* Explores key moments in the history of exploration and empire, 1300-1800. Taking an interdisciplinary approach, focuses on scientific and artistic aspects of exploration, their implications for imperialism, and legacies in the post-colonial world.

HSTCMP 247 Global Health Histories: Colonial Medicine, Public Health, and International Health in the Global South (5) I&S, DIV *Adam W Warren* Traces the roots of the modern global health movement by examining the history of overseas interventions in medicine and public health from the fifteenth century to the present. Focuses primarily on Latin America while including case studies on Africa, Asia, Australia, and the Pacific. Offered: A.

HSTCMP 248 The AIDS Epidemic: A Global History (5) I&S, DIV *Lynn M Thomas, Laurie Marhoefer* Examines global AIDS epidemic as key episode in twentieth-century. Begins with first AIDS patients in 1980s, moves back in time, considering histories of illness and inequality enabling epidemic to have devastating and uneven effects. Explores how politics of sexuality, class, citizenship and race shaped responses to epidemic by governments and communities, and, how HIV/AIDS gave rise to new forms of activism, research, and philanthropy.

HSTCMP 249 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role of

labor in the modern world. Offered: jointly with POL S 249/SOC 266.

HSTCMP 250 Introduction to Jewish Cultural History (5) I&S Introductory orientation to the settings in which Jews have marked out for themselves distinctive identities as a people, a culture, and as a religious community. Examines Jewish cultural history as a production of Jewish identity that is always produced in conversation with others in the non-Jewish world. Offered: jointly with JEW ST 250.

HSTCMP 258 Slavery and Slave Trading in the 21st Century (5) I&S, DIV Examines the forms that slavery and slave trading have taken in contemporary times.

HSTCMP 259 Race and Slavery Across the Americas (5) I&S, DIV *S. SMALLWOOD* Surveys development of racial slavery across North and South America and the Caribbean from 1500-1880s. Comparative examination of slavery exploring how slavery supported colonization making European settlement across Americas viable; how ideas about racial difference developed, operated differently; how enslaved peoples' resistance to bondage helped abolish slavery in Americas by late 1880s.

HSTCMP 260 Slavery in History: A Comparative Study (5) I&S Slavery as a universal historical phenomenon lending itself to a comparative analysis is studied in terms of its philosophical justifications, economic importance, and local practices. The following historical periods are surveyed: the ancient Near East, Greece, Rome, Islam, Africa, Latin America, and North America.

HSTCMP 265 Modern Revolutions Around the World (5) I&S Introduces the causes, processes, and legacies of modern revolutions. Cases included the American, French, Mexican, Russian, and Chinese Revolutions. Special attention given to how these and other revolutions have shaped the modern world.

HSTCMP 269 The Holocaust: History and Memory (5) I&S, DIV Explores the Holocaust as crucial event of the twentieth century. Examines the origins of the Holocaust, perpetrators and victims, and efforts to come to terms with this genocide in Europe, Israel, and the United States. Offered: jointly with JEW ST 269.

HSTCMP 270 From the Mediterranean to America: Jewish, Christian, and Muslim Migrations in Global Context (5) I&S, DIV *Devin E Naar* Migration of "Middle Easterners" - Jews, Christians, and Muslims - from the Ottoman Empire to the United States in the twentieth century. How their experiences shaped, and were shaped by, the development of racial categories, definitions of citizenship and national belonging, and broader political, religious, and cultural dynamics linking the Mediterranean world to the Americas. Offered: jointly with JEW ST 270.

HSTCMP 281 Queer and Trans History (5) I&S, DIV *Laurie Marhoefer* Histories of queer, gay, lesbian, bisexual, transgender, genderqueer, intersex, and a host of other identities. Explores these identities, focusing on Europe and the United States in the nineteenth and twentieth centuries; on German and African American history; and on analyzing race, class, and gender.

HSTCMP 283 Introduction to Women's History (5) I&S Includes units on American, European, and Third World women that examine centers of women's activities, women's place in male-dominated spheres (politics), women's impact on culture (health, arts), and the effect of larger changes on women's lives (technology, colonization). Offered: jointly with GWSS 283; A.

HSTCMP 284 History of Sex (5) I&S *Laurie Marhoefer* Examines how sex changed dramatically from the nineteenth century to the late twentieth century in Europe and its colonies. Attention to related transformations in how people thought about religion, race, class, and gender.

HSTCMP 290 Topics in Comparative/Global History (5, max. 10) I&S Examines special topics in history.

HSTCMP 292 Exploring History through New Media and Technologies (5) I&S Practice history through hands-on work with new media technologies: web, podcast, video, online maps. Students work together to build project site, focusing on specific historical theme chosen by instructor. Students exercise common historical skills - source-based research, analysis, and narrative presentation - while also developing and demonstrating new technical competencies. No prior technical expertise required.

HSTCMP 309 Marx and the Marxian Tradition in Western Thought: The Foundations of Modern Cultural Criticism I (5) I&S Critically examines the formation of modern Western culture, politics, and society through an historical analysis of the work of Karl Marx and the thinkers, artists, and activists who assimilated and transformed Marxian concepts from the late nineteenth century to the present. Offered: jointly with CHID 309.

HSTCMP 310 Science and Religion in Historical Perspective (5) I&S Scientific and religious ideas have been two of the major forces shaping our modern view of the world. Often regarded as being in conflict, they can equally well be seen as complementary and interdependent. Study of the relationship between scientific and religious ideas with focus on particular episodes of history from ancient to modern times.

HSTCMP 311 Science in Civilization: Antiquity to 1600 (5) I&S From pre-classical antiquity to the end of the Middle Ages, stressing the growth of scientific ideas, the cultural context in which they take shape, and their relationship to other movements of thought in the history of civilization.

HSTCMP 312 Science in Civilization: Science in Modern Society (5) I&S Growth of modern science since the Renaissance, emphasizing the scientific revolution of the seventeenth century, the development of methodology, and the emergence of new fields of interest and new modes of thought.

HSTCMP 313 Science in Civilization: Physics and Astrophysics Since 1850 (5) I&S/NW Organization and pursuit of the physical and astrophysical sciences, focusing on the major unifying principles of physics and astronomy and the social and cultural settings in which they were created. Offered: jointly with ASTR 313.

HSTCMP 314 The Psychoanalytic Revolution in Historical Perspective (5) I&S Genesis and evolution of Freudian theory in context of the crisis of liberal-bourgeois culture in central Europe and parallel developments in philosophy, literature, and social theory. Emergence and division of the psychoanalytic movement. Transformation of psychoanalysis in British, French, and especially American cultural traditions. Offered: jointly with CHID 314.

HSTCMP 315 History of Technology to 1940 (5) I&S

Technology since the Middle Ages, in its social and historical contexts. From the medieval foundations of metal working, its social consequences and the establishment of a class of engineering practitioners, to the transformation of American rural life, domestic technology, and industry before World War II.

HSTCMP 319 Nietzsche and the Nietzschean Legacy in Western Thought: Foundations of Modern Cultural Critique II (5) I&S

Critically examines the formation of modern Western politics, society, and cultures through a historical analysis of the thought of Friedrich Nietzsche and the thinkers, artists, and activists who assimilated and transformed the Nietzschean perspective during the twentieth century. Offered: jointly with CHID 319.

HSTCMP 320 Greek History: 7000 BC to Present (5) I&S

History of Greece from its Neolithic village origins to the present. Examines the different forms of one of the most resilient cultures in the human story. Offered: jointly with JSIS A 320.

HSTCMP 340 The Cold War: Realities, Myths, Legacies (5) I&S

Provides an interdisciplinary introduction to the Cold War (1947-1991), a global conflict, with political, cultural, and military tensions, between the two post-World War II superpowers: the USA and its "Western" allies, and the USSR and its "Eastern" allies. Attention given to diplomatic, military, and cultural ramifications. Offered: jointly with JSIS B 340.

HSTCMP 345 War and Society (5) I&S

Analysis of the techniques of war from the Renaissance to the present with consideration of the social, political, and economic consequences of war in the Western world.

HSTCMP 346 Images of War in History, Literature, and Media (5) I&S/VLPA

Explores images of war generated by historians, writers, artists, filmmakers, television producers, and journalists, analyzing the perspectives on 19th and 20th century wars adopted by various observers to see what motivates their representations. Focuses on ways in which various media shape images of war and the effect of this shaping on human consciousness.

HSTCMP 367 Southeast Asian Activism and Social Engagement (5) I&S

Rafael Investigates how Southeast Asian activism is tied to the histories of political struggle within Southeast Asia and to questions of diasporic Asian American identity. Engages in group research projects exploring the meaning of social activism within local communities. Offered: jointly with JSIS A 367.

HSTCMP 368 Jewish Thought (5) I&S

N. PIANKO Explores the historical context of major shifts in modern Jewish thought. Topics include the impact of the Enlightenment, Emancipation, the Holocaust, and the founding of the State of Israel on conceptions of Jewish theology, identity, and religious practice. Offered: jointly with JEW ST 358; Sp.

HSTCMP 369 The Jewish Twentieth Century in Film (5) I&S/VLPA, DIV

Stein Surveys twentieth-century Jewish history in its European, American, and Middle Eastern contexts by examining films produced in these settings. Considers central events that shaped modern Jewish culture: the changing geography of Europe and the Middle East, mass migrations, the Holocaust, shifting meanings of race, culture, and religion. Offered: jointly with JEW ST 369.

HSTCMP 406 Issues in World History to 1500 (5) I&S

Explores important questions about development of civilizations. Topics include the spread of peoples and languages; the significance of technologies such as agriculture, writing, and the stirrup; links between trade and the spread of religions and diseases; and primary and secondary state formation.

HSTCMP 407 The Making of the Modern World: World History Since 1500 (5) I&S

A. Yang Focus on how world historians approach the past, particularly how they conceptualize, research and teach modern world history. Emphasis on understanding and (de) constructing historical narratives about modern world and on examining intellectual assumptions and theoretical and methodological frameworks of world history. Provides basic understanding of scope and methods of modern world history, scholarly and pedagogical concerns and interests.

HSTCMP 408 Topics in the History of Capitalism (5, max. 10) I&S

Mark Metzler Selected topics in the history of capitalism in a global, multi-century perspective. Recommended: either JSIS 200, or

equivalent courses in global history. Offered: jointly with JSIS B 408.

HSTCMP 410 Medicine, History, and Society (5) I&S

Investigates the origins of aspects of contemporary life from vitamins, to giving birth in a hospital, bringing a historical perspective to topics including the politics of pharmaceuticals, the emergence of genetic determinism, and bioethics.

HSTCMP 412 Science and the Enlightenment (5) I&S

The role of science in relation to intellectual, social, economic, and religious forces in the eighteenth century, and growth of the international community in science during the same period.

HSTCMP 425 History of the British Empire and Commonwealth Since 1783 (5) I&S

Britain in the Caribbean, Africa, India, Southeast Asia, and the Pacific; and the settlement, economic development, and political evolution of Canada, Australia, New Zealand, and South Africa.

HSTCMP 440 The Communist Experience Around the World (5) I&S *Young* Communism from its origins in Bolshevik faction of Russian social democracy to the present, treating the development of the ideology, the various communist parties, and the communist states. Offered: jointly with JSIS B 440.

HSTCMP 446 History, Memory, and Justice (5) I&S *Giebel* Focuses on the complex interactions between history and historical representation, remembrance and commemoration, memory and identity, and notions of justice and reconciliation. Addresses these issues on methodological, theoretical, and practical grounds, drawing on examples from various genres, periods, and world regions. Offered: jointly with JSIS B 446.

HSTCMP 449 Issues in Comparative Labor History (5) I&S Role of labor in the modern world. Emphasis on the centrality of workers' struggles in the evolution of national societies on the conceptual, research, and expository strategies of contemporary students of the labor movement and on differences and relationships between labor in developed and underdeveloped countries.

HSTCMP 457 Topics in Labor Research (5, max. 10) I&S Analysis of the post-World War II decline of

national labor movements and strategies employed to reverse this trend. Requires a major research project on organizing, bargaining, or another question in labor studies. Prerequisite: either POL S 249, HIST 249, or SOC 266. Offered: jointly with POL S 457.

HSTCMP 466 Sport and the British Empire in Asia, Africa, and the Middle East (5) I&S Examines British imperialism in Asia, Africa, and the Middle East through the prism of sport. Explores the rise of sport in Victorian England, its use to discipline and control colonized peoples, and its role in the rise of nationalism throughout the British Empire.

HSTCMP 467 Nations and States in the Modern World (5) I&S Development of national consciousness in the "old nations" of Europe before the French Revolution. Replacement by new nationalism, spreading into East Central Europe, Russia, Ibero-America, Asia, and Africa. Offered: jointly with JSIS B 467.

HSTCMP 468 Theatre as a Site of History and Memory (5) VLPA/I&S *Sears* Explores Asian theatre traditions as sites of memory, testimony, and archive using ethnographic and historiographical approaches. Includes service-learning components and collaborative performance projects. Offered: jointly with JSIS B 468.

HSTCMP 469 The Sephardic Diaspora: 1492-Present (5) I&S, DIV Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with JEW ST 466.

HSTCMP 483 Technology and Culture in the Making of Contemporary Empires (5) I&S *Benitez, Rodriguez-Sliva* Explores struggles shaping organization of US empire in the early twentieth century, focusing on sites where empire's material, cultural, and ideological boundaries were drawn and contested. Includes race, gender and class as colonial formation; technologies of imperial governance such as public health, citizenship, and territory. Offered: jointly with JSIS A 483.

HSTCMP 484 Colonial Encounters (5) I&S History of European colonialism from the 1750s to the present, with an emphasis on British and French colonial encounters. Offered: jointly with CHID 484.

HSTCMP 485 Comparative Colonialism (5) I&S, DIV *Vicente L. Rafael* Explores the historic roots and practices of colonialism throughout the world, focusing on the roles of nationalism, cosmopolitanism, and imperial domination. Treats colonialism as a world event whose effects continue to be felt and whose power needs to be addressed. Offered: jointly with CHID 485.

HSTCMP 490 Advanced Topics in Comparative/Global History (5, max. 10) I&S Examines special topics in history.

HSTCMP 504 Comparative Ethnicity and Nationalism (5) Theoretical approaches to, and historical case studies of, the phenomena of ethnicity, nationalism, and ethnic conflict in the modern world. Emphasis on Europe and Asia.

HSTCMP 506 Issues in World History to 1500 (5) Explores important questions about development of civilizations. Topics include the spread of peoples and languages; the significance of technologies such as agriculture, writing, and the stirrup; links between trade and the spread of religions and diseases; and primary and secondary state formation.

HSTCMP 507 The Making of the Modern World: World History since 1500 (5) Focuses on how world historians approach the past, particularly how they conceptualize, research, and teach modern world history. Emphasizes as much on understanding and (de) constructing historical narratives about the modern world as on examining the intellectual assumptions and theoretical and methodological frameworks of world history.

HSTCMP 508 Topics in the History of Capitalism (5, max. 10) *Mark Metzler* Selected topics in the history of capitalism in a global, multi-century perspective. Offered: jointly with JSIS B 508.

HSTCMP 509 Foucault and History (5) *V. Rafael* Addresses the usefulness of Foucault for thinking about history and thinking historically. Discusses questions of method, politics and ethics of critique, and overview relationships among power,

knowledge, and subjectivity in context of modernity that undergirds Foucault's writings. Focuses on a set of Foucault's lectures on war, race, security, biopolitics, and on ethics of truth-telling in lectures he gave at the College de France. Offered: A.

HSTCMP 511 History of Science (3-6, max. 6)

HSTCMP 512 Seminar in the History of Science ([3-6]-, max. 12)

HSTCMP 513 Seminar in the History of Science (-[3-6]-, max. 12)

HSTCMP 514 Seminar in the History of Science (-[3-6], max. 12)

HSTCMP 515 Field Course in the History of Technology (5) Introduces students to the literature, methodology, and problems of the history of technology, and prepares them for independent study in the field.

HSTCMP 520 Britons and Others (5) Provides an overview of major themes and recent scholarship in modern British and imperial history. Emphasizes the ways in which ideas about class, gender, and race have influenced Britain's relationship to the wider world.

HSTCMP 530 Comparative Colonialisms: Methodological and Conceptual Approaches (5) Introduces students to the historiography of modern European/American colonialisms, focusing on Africa, Asia, and/or the Americas. Addresses methodological and conceptual issues by examining relationship between capitalism and colonialism; violence and routinization of colonial power; colonial categories of race, ethnicity, class, and gender; and resistance movements and nationalist politics.

HSTCMP 566 Sport and the British Empire in Asia, Africa, and the Middle East (5) Examines British imperialism in Asia, Africa, and the Middle East through the prism of sport. Explores the rise of sport in Victorian England, its use to discipline and control colonized peoples, and its role in the rise of nationalism throughout the British Empire.

HSTCMP 568 Jewish Thought (5) *N. PIANKO* Explores the historical context of major shifts in modern

Jewish thought. Topics include the impact of the Enlightenment, Emancipation, the Holocaust, and the founding of the State of Israel on conceptions of Jewish theology, identity, and religious practice. Offered: jointly with JEW ST 558; Sp.

HSTCMP 569 The Sephardic Diaspora: 1492-Present (5) *Devin E Naar* Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with JEW ST 569.

HSTCMP 580 Gender and History (5) Introduction to gender as category of historical analysis, examining the impact of feminist theory within the discipline of history. Course traces historiographical debates in women's and gender history and explores, through cross-cultural comparisons, how scholars have conceived the relationship between gender and categories such as class, race, ethnicity, and sexuality.

HSTCMP 581 Queer and Trans History (5) *L. MARHOEFER* Studies development of queer and trans history as subfields and interdisciplinary thought that has shaped them (critical race theory, queer theory, trans studies) . Surveys foundational works of theory that have influenced historians (and other scholars) as well as important books and articles in the two interrelated historical subfields. Examines the role of intersectional analysis in the subfields as well as generative debates among historians. Offered: jointly with GWSS 581.

HSTCMP 586 Seminar in Comparative Colonial History ([3-6]-, max. 12)

HSTCMP 587 Seminar in Comparative Colonial History (-[3-6], max. 12)

HSTCMP 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HISTORY OF AFRICA AND THE MIDDLE EAST

HSTAFM 151 Africa in the Era of the Atlantic Slave Trade (5) I&S, DIV S. *SMALLWOOD* Explores the African past from c. 1400 through the end of the nineteenth century. Uses the emerging evidence of historical, linguistic, and archaeological analysis to think critically about lingering notions that Africa and its peoples are static and unchanging, primitive and simple, and best understood in terms of racial difference.

HSTAFM 152 Introduction to African History, c. 1880 - Present (5) I&S, DIV Examines Africa's pasts from approximately 1880 to the present. Through the theme of the politics of wealth, explores the history of European colonization, African social and cultural life under colonial rule, anti-colonial movements and decolonization, and the changes and challenges of the post-colonial present.

HSTAFM 161 Survey of the Muslim Near East (5) I&S The Middle East (the Arab countries, Israel, Turkey, Iran, and Afghanistan) from the emergence of Islam in AD 622 to the present: culture, economics, politics.

HSTAFM 163 The Modern Middle East (5) I&S, DIV Provides an introduction the politics, society, and culture of the Middle East since the 19th century and through the present. Aims to foster an understanding of imperial power and anti-imperialism, ethnicity and sectarianism, religious and secular sociopolitical movements, authoritarianism, and the transformations wrought by modernity and economic development.

HSTAFM 261 The Crusades: Middle Eastern Perspectives (5) I&S Examines the impact of European Christians on the Middle East, from the establishment of the County of Edessa (1097) to the fall of Accon (1291) . Explores how Muslims understood, reacted, and adapted to the crusades and how the close encounter with the "Franks" transformed medieval Middle Eastern societies.

HSTAFM 263 Identity and Politics in the Modern Middle East (5) I&S, DIV *Arbella Bet-Shlimon* Explores how people in the modern Middle East think about nation, religion, ethnicity, and the role of identity in politics. Examines topics in the social and

political history of the modern Middle East, including Islamism, Zionism, anticolonialism, pan-Arab nationalism, Middle Eastern encounters with the West, resistance to authoritarianism, and oil modernity.

HSTAFM 268 Wars in the Modern Middle East (5)

I&S Examines the political, social, and cultural impact of war on Middle Eastern societies. Focuses on how the preparation for, conduct of, and aftermath of wars have affected the region. Examines the 1948 Arab-Israeli War, the Algerian War of Independence, the Lebanese Civil War, and the First Gulf War (1991).

HSTAFM 278 Modern North Africa (5) I&S, DIV

History of Morocco, Algeria, Tunisia, and Libya since the seventeenth century. Includes imperialism and local responses, development of national identities, the evolving role of Islam in politics and society, experiences of religious and ethnic minorities, impact of and on French culture, North African diaspora communities, and connections with the rest of Africa and the Middle East.

HSTAFM 288 Introduction to the Horn of Africa (5)

I&S, DIV *Joel T Walker, Hamza M. Zafer* Explores history, culture, and peoples of the Horn of Africa. By placing Ethiopia, Eritrea, and Somalia at the center of inquiry, invites reconsideration of standard narratives of world history that all too often ignore or marginalize the region. Includes a broad range of assignments examining art, literature, and societies of the Horn, including vibrant Diaspora communities in America. Offered: jointly with NEAR E 288; A.

HSTAFM 314 History of Modern Israel/Palestine (5)

I&S, DIV Cultural, social, and political histories of Palestine, the Land of Israel, and the State of Israel; Zionist and Palestinian nationalist movements, in their larger regional, transnational, and global contexts. Offered: jointly with JSIS A 314.

HSTAFM 361 Middle Eastern History, 1453-1800 (5)

I&S *Schwarz* Introduction to the early modern period in the Middle East, including an exploration of the political, economic, and cultural dominance of the Ottoman Empire and Safavid Iran. Explores the political and social dynamics and economic transformations of the two empires.

HSTAFM 451 Eastern and Central Africa Since 1500

(5) I&S Explores the history of Eastern and Central Africa from the period prior to the slave trade through European colonialism to the post-colonial present. Focuses on political, economic, and social change and continuity. Emphasis on understanding how various historical actors and historians have interpreted these processes.

HSTAFM 452 Southern Africa Since 1500 (5) I&S,

DIV Explores the history of Southern Africa from pre-colonial social institutions through European colonialism and industrialization to the post-apartheid present. Focuses on the interplay between race, class, ethnicity, and gender in the structuring of political relations. Emphasis on understanding how various historical actors and historians have interpreted these processes.

HSTAFM 453 Health and Illness in Africa (5) I&S

Explores health and illness in Africa from the nineteenth century to the present. Focuses on the influence of colonial and post colonial history on patterns of health and health care in sub-Saharan Africa. Analyzes Western representations of health and illness in Africa.

HSTAFM 459 History of Jewish-Muslim Relations (5)

I&S, DIV Topics include Jews' and Muslims' linked encounters with empire, westernization, and nationalism; Jewish culture and identity in Islamic contexts migration and diasporic identities; the impact of Zionism, European Jewish settlement in Palestine, and the State of Israel on Jewish-Muslim relations in the Middle East and beyond; Islamophobia and antisemitism. Offered: jointly with JEW ST 459.

HSTAFM 461 History of the Middle East: 622-1300

(5) I&S Political and economic analysis of the period circa AD 600, preliminary to rise of Islam, to arrival of the Turks. Muhammad's teaching and impact; Islamization and Arabization.

HSTAFM 462 History of the Middle East: 1258-1798

(5) I&S Conquests by successors of Ghengis Khan; creation in Egypt, Syria, and Iran of cavalry-based states; domination of political, social, and economic history by Ottoman and Safavid empires. The Napoleonic invasion.

HSTAFM 463 Modern Persian Gulf (5) I&S, DIV A. *Bet-Shlimon* Introduction to the histories of Arabian Peninsula states, Iraq, Iran, and their linkages since the eighteenth century. Topics to be covered include imperialism and its legacies, political economy of oil, governmental structures and political transitions, identify formation, political ideologies, urbanization, and relations with the broader Middle East and Indian Ocean.

HSTAFM 465 Iran, Afghanistan and Central Asia, 1750-2001 (5) I&S Introduction to the modern history of the Islamic republics of Iran and Afghanistan and the secular republics of Central Asia from 1750 to 2001. Includes discussion of colonialism, the role of the U.S., and diaspora and exile in these predominantly Muslim societies.

HSTAFM 490 Topics in African and Middle Eastern History (5) I&S Examines special topics in African and Middle Eastern history.

HSTAFM 552 Field Course in African History (5) Methodological and conceptual issues in African historiography, focusing on 1500 to the present. Examines topics including pre-colonial politics and economics, slavery and the slave trades, European conquest and colonization, resistance movements and nationalist politics, and post-colonial debates and dilemmas. Special attention to issues of gender, race, ethnicity, and class.

HSTAFM 559 History of Jewish-Muslim Relations (5) Topics include Jews' and Muslims' linked encounters with empire, westernization, and nationalism; Jewish culture and identity in Islamic contexts migration and diasporic identities; the impact of Zionism, European Jewish settlement in Palestine, and the State of Israel on Jewish-Muslim relations in the Middle East and beyond; Islamophobia and antisemitism. Offered: jointly with JEW ST 559.

HSTAFM 561 Islamic History (3-6, max. 6) Field course. Introduction to advanced study in the major periods and problems of Islam. Bibliographical guidance is stressed.

HSTAFM 562 Ottoman History (3-6, max. 6) Field course. Introduction to the major periods and problems of Ottoman history, 1300-1914, by acquainting the student with the major works in at least two languages. An attempt is made to teach

some use of Ottoman materials. A minor problem is investigated in detail by every student. Prerequisite: knowledge of at least one major language besides English (French, German, Russian, or other) .

HSTAFM 563 Modern Near East (3-6, max. 6) Field course introducing the student to the major periods and problems of Near Eastern history, 1798 to the present.

HSTAFM 570 Readings in Israel/Palestine Studies (5) Survey of significant scholarly texts on Israel and Palestine during the 19th-21st centuries. Topics may include: Jewish and Middle East context; medical and environmental history; economic history; intellectual history of Zionism and Palestinian nationalism; cultural history. Offered: jointly with JSIS A 570.

HSTAFM 590 Seminar on Special Topics and Middle Eastern and African History (5, max. 15) Seminar on selected topics in the history of the Middle East and Africa.

HISTORY OF ASIA

HSTAS 108 International Baccalaureate (IB) History of Asia (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

HSTAS 201 Introduction to South Asian History, pre-history to 1500 (5) I&S Religions, literature, philosophy, politics, arts, and history of India from earliest times to the Mughal empire.

HSTAS 202 Introduction to South Asian History, 1500 - present (5) I&S The Islamic impact, British conquest, and contemporary India. Emphasis on the rise of nationalism, social organization, and contemporary life and history. Offered: jointly with JSIS A 202.

HSTAS 211 History of Chinese Civilization (5) I&S Intensive survey of Chinese civilization from earliest times to today. Introduces all students, including East Asian history majors, to the general sweep of Chinese history. Social, cultural, and intellectual developments.

HSTAS 212 History of Korean Civilization (5) I&S

From earliest times to the present. Development of Korean society and culture in terms of government organization, social and economic change, literature, and art. Offered: jointly with JSIS A 212.

HSTAS 214 Modern Korean History through Film (5) I&S

Analyzes South and North Korean films as well as films produced when Korea was a Japanese colony (1910-1945) as historical documents on Korean history, society, and culture during the twentieth century. Through films and other cultural products, it examines processes of nation-building in Korea, paying special attention to formations of gender, class, and national identities.

HSTAS 221 History of Southeast Asia (5) I&S, DIV

Surveys Southeast Asian civilizations at the outset of Western colonial rule; the colonial impact on the traditional societies of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, and the Philippines; nineteenth- and twentieth-century nationalist and revolutionary movements; emergence of Southeast Asia as a region in the modern world. Offered: jointly with JSIS A 221.

HSTAS 235 History of Modern Taiwan (5) I&S

Social, cultural, political, and economic history of modern Taiwan from approximately 1600 to the present. Places Taiwan within global historical changes and explores Taiwan-centric issues in depth. Covers migration, colonialism, race and identity, urban and rural development, the Cold War, capitalism and industrialization, science, religion, labor, and gender. Offered: jointly with JSIS A 235.

HSTAS 241 Japanese Civilization (5) I&S

Japan's civilization, including its origins, government, literature, economic institutions, material culture, social organization, and religions, in relation to the development of Japan as a society and nation. Cannot be taken for credit if SISEA 341 previously taken. Offered: jointly with JSIS A 241.

HSTAS 242 Christianity in Asia (5) I&S *Hajin Jun*

Christianity in East Asia, sixteenth century to present. Shared experiences that transcended national boundaries. Also traces divergent paths Christianity took in China, Korea, and Japan. What propelled missionary expansion? Why did people convert? What are lasting legacies of Christianity? Attention to shifting meanings of faith, identity, and

religious community across the region. Offered: jointly with RELIG 242.

HSTAS 244 Imperialism and Anti-Colonialism in Asia (5) I&S, DIV

Introduction to Western imperialism expansion, conquest, and colonial rule in Asia; the anti-colonial, nationalist resistances they engendered; and the resultant cultural, political, economic, and intellectual transformations in Asian societies. Covers post-1800 violence, racial hierarchies, human rights abuses, post-colonial memories, persistent strategies of domination, and structural inequities. Offered: jointly with JSIS A 244.

HSTAS 245 Human Rights in Asia (5) I&S, DIV

Callahan, Giebel Introduction to recent and ongoing human rights issues in South, Southeast, and East Asia. Focuses on how human rights politics have played out in domestic political arenas. Provides exposure to views/insights into the historical context in which human rights claims, abuses, and debates arise. Offered: jointly with JSIS A 245.

HSTAS 254 Modern China: Three Revolutions (5) I&S

Y. Dong Surveys Chinese history from the late nineteenth century to the end of the twentieth century. Examines how "modern China" took shape by focusing on the transformations and changes in the political system, economic structure, social organization, and intellectual trends. In particular, examines the three revolutions of modern China -- the Republican, Nationalist, and Communist revolutions. Offered: jointly with JSIS A 254.

HSTAS 264 Violence, Race, and Memory (5) VLPA/I&S, DIV

Explores how images and ideas of power, race, violence, and global modernity circulate in memories and discourses about US relations with Vietnam, the Philippines, and Indonesia. Topics include foundations myths, colonial and postcolonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with JSIS B 264; Sp.

HSTAS 265 The Viet Nam Wars (5) I&S *Giebel*

Recent Vietnamese history and struggles for independence and national unification vis-a-vis French colonialism, Japanese occupation, American intervention, and internal divisions. Covers historical roots and contemporary contexts of revolution and war, objectives and motivations of participants, and the

enormous human costs. Emphasizes socio-cultural changes and wars' legacies. Offered: jointly with JSIS A 265.

HSTAS 290 Topics in Asian History (5, max. 10) I&S
Examines special topics in Asian history.

HSTAS 303 Divided Lands/Divided Lives: An Environmental History of South Asia (5) Focuses on the mobilization of South Asian tribal, peasant, and ethnic communities around ecological issues to secure social equity in the colonial and post-colonial period. Examines how the complex interactions of states and peoples have changed the ways in which nature itself is conceptualized. Offered: jointly with JSIS A 303.

HSTAS 317 History by Bollywood: Colonial India through Film (5) I&S, DIV *Anand A Yang* Through popular cinema, specifically Hindi-language films produced by Bombay-based film industry for mass market, explores colonial history of South Asia beginning with British takeover of Indian subcontinent in late eighteenth century to emergence of independence and partition in 1947. Focuses specifically on Bollywood films that have shaped popular (mis) understandings of key episodes and developments in history of modern India. Offered: jointly with JSIS A 317.

HSTAS 327 China and the West in Historical Perspective, 1500-1976 (5) I&S *M. MOSCA* Examines relations between China and the West in historical perspective. Covers the period from 1500 to 1976, including political interactions as well as intellectual, religious, and cultural contact. Investigates how and why these relations changed over time, and how this historical legacy is relevant today. Offered: jointly with JSIS A 327.

HSTAS 348 Alternative Routes to Modernity (5) I&S
Routes to modernity followed by non-Western societies between 1600 and 1900. Historical experiences of non-Western societies seen in the context of European history and of development theory. Emphasizes primary sources and techniques for posing theoretical questions of historical data. Offered: jointly with JSIS A 346.

HSTAS 354 Modern China: From Empire to Republics (5) *Dong* Surveys the major historical events and discourses of twentieth century China

and lays a foundation for understanding contemporary China. Themes include reforms; revolutions; colonialism and imperialism; state and society; and social and cultural changes. Offered: jointly with JSIS D 354.

HSTAS 401 History of Ancient India (5) I&S India in ancient times; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 402 History of Medieval and Mughal India (5) I&S Medieval India; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 403 History of Modern India to 1900 (5) I&S
Modern India; emphasis on forms of political organizations and economic life, social organizations, and cultural developments.

HSTAS 404 History of Twentieth-Century India (5) I&S *A. Yang* Analysis of the problems in the fields of social life, international and domestic politics, education, economics, and other areas that confront India today. Offered: jointly with JSIS A 409; A.

HSTAS 408 Fabulous Gurus and Fake Fakirs: Religious Reform in Colonial India (5) I&S Focuses on efforts by Hindu, Muslim, and Sikh reformers in British India to transform many aspects of religious practice and identity. Investigates the impacts such social movements had on politics, nationalism, family structure, education, and the role of women in society then and now.

HSTAS 421 History of Pre-Modern Japan (5) I&S
Introduces the early years of Japan's political, socioeconomic, and cultural history, culminating in the emergence of the early modern state around 1600.

HSTAS 423 Origins of Modern Japan (5) I&S *Mark Metzler* Course surveys Japan's early modern age, from the end of the warring-states period in the late 1500s through the Meiji revolution and creation of a modern state in the late 1800s. Japan's history since the early 20th century is continued in a second class, JSIS A 424/HSTAS 424. Offered: jointly with JSIS A 423.

HSTAS 424 The Emergence of Postwar Japan (5)

I&S Pyle The making of modern Japan; World War II and surrender; American occupation; postoccupation rebuilding; emergence as an industrial power. Offered: jointly with JSIS A 424.

HSTAS 440 Japanese History in Ecological

Perspective (5) I&S M. Metzler Survey of Japanese history in ecological perspective, from early times to the present. Topics include ancient Japanese lifeways; climate and history; agriculture, population, and resources; Buddhist and animist views of outer and inner nature; urbanization from ancient capitals to megacity Tokyo; industrialization and energy; and future visions. Readings include influential scholarly works and Japanese sources in English translation. Offered: jointly with JSIS A 440; W.

HSTAS 441 Economic and Social History of Japan to

1900 (5) I&S Lecture-seminar on Japanese economic and social history from 700 to 1900. Analyses of the rise and decline of the shoen system, the rise of commerce, social change, changes in the living standard, demographic changes, and the early phases of industrialization. Political and cultural developments as related to economic and social change.

HSTAS 451 Chinese History: Earliest Times to 221 BC (5) I&S

Pre-imperial China.

HSTAS 452 Chinese History from Earliest Times to

1276 (5) I&S Traces the development of Chinese civilization from earliest times through the Song dynasty. Examines social, cultural, political, and economic history.

HSTAS 453 Chinese History from 1276-1895 (5) I&S

Political, social, economic, and intellectual history from the time of the Mongol conquest of China to the Sino-Japanese war. Focus on the evolution of the late imperial Chinese state and the "early modern" era in China.

HSTAS 454 History of Modern China (5) I&S

Offered: jointly with JSIS A 454.

HSTAS 456 Topics in Chinese Social History (5) I&S

Surveys major issues and approaches to the study of the role of the Chinese people in China's historical

development. Historical focus of course varies with instructor. Offered: jointly with JSIS A 456.

HSTAS 457 Women in China to 1800 (5) I&S, DIV

Gender in Chinese culture, women's situations in the patrilineal family system, and the ways women's situations changed as other dimensions of China's political system, economy, and culture changed from early times through the nineteenth century. Offered: jointly with GWSS 457.

HSTAS 458 Youth in Modern China (5)

I&S Madeleine Y. Dong Emergence of youth in Modern China as a social category; a distinctive stage of life; from most dominated group in society to driving force of history. Explores how young people experienced history of modern China as individuals, members of family, and society. Youth as shaped in post-socialist consumer culture, new nationalism, cosmopolitanism. Offered: jointly with JSIS A 451.

HSTAS 459 Gender Histories of Modern China, Eighteenth to Twentieth Centuries (5) I&S

Emergence of modernist social, political, intellectual gender formations in social activism, revolutionary writing, scientific ideologies, economic globalization. Stresses gender difference in colonial modernity, revolutionary movement, communism, post-socialist market society. Relates modern Chinese women to global flows, new division of labor, local and regional experience. Offered: jointly with GWSS 459.

HSTAS 460 Cities in China: Past and Present (5)

I&S Dong Economic, political, social, and cultural functions of the city in modern Chinese history. Changes in China's urban system. The city as cultural center and focus of literary and cinematic representation. Attention to architecture, commerce, urbanization, the role of capital cities in the power of the state. Offered: jointly with JSIS A 460.

HSTAS 462 Southeast Asian History to 1800 (5) I&S

Absorption and modification of cultures (Indian and Chinese), religions (Islam, Buddhism, Catholicism), and peoples (northern European) by island- and mainland-Southeast Asians. Main themes are cultural contact and the growth of states and peoples.

HSTAS 463 Southeast Asian History from 1800 to the Present (5) I&S Post-eighteenth-century history of the present countries of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Singapore, Brunei, Indonesia, and the Philippines. Deals with colonial rule, emerging nationalism, and political independence. Investigates broad themes of social, economic, and cultural history.

HSTAS 466 Islam, Mysticism, Politics and Performance in Indonesian Culture (5) VLPA/I&S Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influences from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with JSIS A 462.

HSTAS 481 History of Pre-Modern Korea (5) I&S Examines political, socioeconomic, intellectual, and cultural development of Korea from the earliest times through the nineteenth century.

HSTAS 482 Modern Korean History (5) I&S *Hajin Jun* Traces complex social, cultural, and political developments that transformed Korea during the late nineteenth and twentieth centuries. Topics include late Choson reforms, changing gender norms, national identity, colonial state and society, territorial division, and democratization. Attention to diversity of Korean experiences, as well as the interplay of local dynamics and global forces in the peninsula. Offered: jointly with JSIS A 446.

HSTAS 484 Korea in the Japanese Empire (5) I&S, DIV Korean colonial history in the context of Japanese imperial expansion from the 1870s to 1945. Analyzes the Korean quest for modernization and nation-building, colonial industrialization and colonial modernity, assimilation and resistance, wartime mobilization and collaboration, Manchurian experiences, social movements, and cultural developments. Offered: jointly with JSIS A 484.

HSTAS 490 Topics in Asian History (5, max. 10) I&S

HSTAS 501 Indian History (3-6, max. 6) Prerequisite: permission of instructor.

HSTAS 502 Seminar: History of India (3-6, max. 12) Seminar on selected topics and problems in the

history of medieval and modern India. Prerequisite: HSTAS 501 and permission of instructor.

HSTAS 503 Seminar: History of India (3-6, max. 12) Seminar on selected topics and problems in the history of medieval and modern India. Prerequisite: HSTAS 501 and permission of instructor.

HSTAS 520 Premodern Japanese History (5) Field course; Japanese history prior to 1868. Prerequisite: HSTAS 421 and HSTAS 422, or SISEA 441 and SISEA 541, or permission of instructor.

HSTAS 521 Modern Japanese History (3-6, max. 6) Field course. Prerequisite: HSTAS 422, HSTAS 423, or permission of instructor.

HSTAS 523 Seminar in Modern Japanese History (3-6, max. 12)

HSTAS 524 Seminar in Modern Japanese History (3-6, max. 12)

HSTAS 530 Field Course in Southeast Asian History (5) Introduces major English-language works on Southeast Asian history and to the major historiographical issues of the era. Offered: jointly with JSIS A 580.

HSTAS 532 Seminar in Southeast Asian History (5) Selected topics in Southeast Asian history and historiography. Includes preparation for theses and doctoral dissertations on Southeast Asian History. Offered: jointly with JSIS A 582.

HSTAS 534 Indonesian Histories, Oral Traditions, and Archives (5) Explores the inscription of Indonesian histories and stories. Focuses on oral traditions, oral testimonies, and archives. Investigates how oral and written testimonies enter historical archives. Explores theoretical work on literary and performance traditions as they relate to nationalism and Islam in Indonesia. Offered: jointly with JSIS A 534.

HSTAS 540 Japanese History in Ecological Perspective (5) *M. Metzler* Survey of Japanese history in ecological perspective, from early times to the present. Topics include ancient Japanese lifeways; climate and history; agriculture, population, and resources; Buddhist and animist

views of outer and inner nature; urbanization from ancient capitals to megacity Tokyo; industrialization and energy; and future visions. Readings include influential scholarly works and Japanese sources in English translation. Offered: jointly with JSIS A 539; W.

HSTAS 541 Economic and Social History of Japan to 1900 (5) Analyses of landholding systems, the rise of commerce, demographic changes, urbanization, early industrialization, and social change. Prerequisite: previous course work in Japanese history or economic history, or permission of instructor. Not open to students who have taken HSTAS 441.

HSTAS 551 Field Course in Chinese History: Pre-Sung Period (3-6, max. 6) *Ebrey* Introduction to the English-language literature on Chinese history through the Song dynasty.

HSTAS 552 Seminar in Chinese History: Earliest Times to 1276 ([3-6]-, max. 12) Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese. Instructors: Ebrey

HSTAS 553 Seminar in Chinese History: Earliest Times to 1276 (-[3-6]-, max. 12) Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese. Instructors: Ebrey

HSTAS 554 Seminar in Chinese History: Earliest Times to 1276 (-[3-6], max. 12) Methods and materials for research in early imperial Chinese history. Prerequisite: reading knowledge of classical Chinese. Instructors: Ebrey

HSTAS 555 Core Research Seminar in Chinese History (5-, max. 10) I&S An introduction to research practices in Chinese history and exemplary recent works.

HSTAS 556 Core Research Seminar in Chinese History (-5, max. 10) I&S An introduction to research practices in Chinese history and exemplary recent works.

HSTAS 560 Field Course in Chinese History: 1276-1895 ([3-6]-, max. 6) *Guy* Introduction to the English-

language literature on the Yuan, Min, and Qing dynasties.

HSTAS 561 Field Course in Chinese History: 1276-1895 (-[3-6], max. 6) *Guy* Introduction to the English-language literature on the Yuan, Ming, and Qing dynasties.

HSTAS 562 Seminar in Chinese History: 1268-1895 ([3-6]-, max. 12) Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese. Instructors: Guy

HSTAS 563 Seminar in Chinese History: 1268-1895 (-[3-6]-, max. 12) Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese. Instructors: Guy

HSTAS 564 Seminar in Chinese History: 1268-1895 (-[3-6], max. 12) Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese. Instructors: Guy

HSTAS 566 Islam, Mysticism, Politics, and Performance in Indonesia (5) Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influence from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with JSIS A 586.

HSTAS 572 Seminar in Twentieth Century Chinese History (-[3-6], max. 12) Materials and methods for research in imperial Chinese history. Prerequisite: reading knowledge of Chinese. Instructors: Dong

HSTAS 573 Seminar in Twentieth Century Chinese History ([3-6]-, max. 12) Materials and methods for research in twentieth-century Chinese history. Prerequisite: knowledge of Chinese and permission of instructor. Instructors: Dong

HSTAS 574 Seminar in Twentieth Century Chinese History (-[3-6]-, max. 12) Materials and methods for research in twentieth-century Chinese history. Prerequisite: knowledge of Chinese and permission of instructor. Instructors: Dong

HSTAS 575 Seminar in Chinese History: Modern Period (-[3-6], max. 12) Research seminar in modern

Chinese history. Training in the materials and methods of research, and preparation of extended research papers. Prerequisite: HSTAS 571-572 or permission of instructor and reading knowledge of Chinese.

HSTAS 579 Modern Chinese History (5) Introduction to the major English-language literature on modern Chinese history and to the major historiographical issues of the period. Prerequisite: HSTAS 454 or equivalent, and permission of instructor. Offered: jointly with JSIS A 576.

HSTAS 581 Modern Korean History (5) *Hajin Jun* Traces complex social, cultural, and political developments that transformed Korea during the late nineteenth and twentieth centuries. Topics include late Choson reforms, changing gender norms, national identity, colonial state and society, territorial division, and democratization. Attention to diversity of Korean experiences, as well as the interplay of local dynamics and global forces in the peninsula. Prerequisite: permission of instructor. Offered: jointly with JSIS A 583.

HSTAS 582 Seminar in Korean History ([3-6]-, max. 12) Selected topics in Korean history and historiography.

HSTAS 583 Seminar in Korean History (-[3-6]-, max. 12) Selected topics in Korean history and historiography.

HSTAS 584 Seminar in Korean History (-[3-6], max. 12) Selected topics in Korean history and historiography.

HSTAS 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HISTORY OF LATIN AMERICA AND THE CARIBBEAN

HSTLAC 185 Race, Gender, and Class in Latin America and the Caribbean (5) I&S, DIV Explores the power struggles generated by imperial expansion, colonialism, and processes of nation-formation (1400 to the present) in the forging of Latin America

and the Caribbean. Examines how gender, race, sex, and class became crucial means to sustain, navigate, and challenge domination as well as to imagine alternative futures.

HSTLAC 280 Drug Wars in Latin America (5) I&S, DIV *Ileana M. Rodriguez-Silva* Analyses "War on Drugs" in Latin America as political, economic, and socio-cultural construct. Investigates local, regional and global dynamics rendering some mood-altering substances as legal while subjecting others to prohibitionist policies at different historical times. Explores racial, class and gender logics shaping these processes. Examines how informal economies are well entrenched within longstanding, transnational institutions.

HSTLAC 282 History of Mexico: Culture, Identity, and the Politics of Rule from the Aztecs to the Present (5) I&S Overview of Mexican history from late Aztec times until the twenty-first century. Emphasizes how women, campesinos, indigenous populations, free and enslaved Afro-Mexicans, and the urban poor experienced the past, challenged colonial and post-colonial rule, and shaped modern Mexican society and culture.

HSTLAC 285 Latin American History through Film (5) VLPA/I&S Critical analysis of Latin American films as historical documents. Subjects include Iberian conquest and colonialism, the struggle for independence in the nineteenth century, social revolutions of the twentieth century, and problems of contemporary development. Readings and lectures place each film in the context of the historiography of the subject matter.

HSTLAC 289 Cuban Revolution (5) I&S, DIV *Ileana M. Rodriguez-Silva* The Cuban Revolution as a site of convergence and contestation of different projects and visions on how to build a more equitable future. Course covers conventional issues (U.S. interventions, charismatic political leadership, Soviet influences, the state apparatus) but will privilege the making of the revolution from the ground up.

HSTLAC 325 Modern Mexico: Culture, Politics and Society (5) I&S *V. Freije* Provides an historical survey of Mexican politics, culture, and society. Explores debates about the role of violence and foreign intervention in Mexico's political development. Topics include revolution, U.S.-Mexico relations, race

and gender politics, student movements, cultural production, neoliberalism, and the war on drugs. Offered: jointly with JSIS A 325.

HSTLAC 384 Latin America: Inter-American and Intra-Continental Relations (5) I&S Inter-American relations, focusing on the United States' diplomatic and military responses to the problems of Latin America since 1776. Intra-Latin American relations and regional organizations (e.g., the Organization of American States) .

HSTLAC 385 Colonial Society and the Negotiation of Rule in Latin America and the Caribbean (5) I&S, DIV Examines the transition to Spanish and Portuguese rule in Latin America and the establishment, and eventual demise, of colonial systems linking Latin America to Europe and Africa. Asks how "colonized" groups mediated forms of colonial oppression and contributed to the development of colonial political culture.

HSTLAC 386 The Challenges of Post-Coloniality in Latin America and the Caribbean (5) I&S, DIV Explores the legacies of, and ruptures from, colonialism and the new challenges Latin American and Caribbean peoples faced throughout the years after their struggles for independence from direct European rule. Emphasis on analysis of the negotiations and challenges entailed in the dynamic processes of national state formation in comparative perspective.

HSTLAC 481 History of Peru and the Andean Region (5) I&S Traces the history of Peru specifically and the Andean highlands generally, from Inca times to the present, examining the shifting relationship between peasants, indigenous peoples, and the state. Analyzes historically why modern forms of peasant and indigenous political power differs radically between Peru, Bolivia, and Ecuador.

HSTLAC 482 The History of Brazil: Colonial Period to the Present (5) I&S Colonial foundations; the first and second empires; the old and new republics; current problems; prospects for the future.

HSTLAC 488 History of the Caribbean and Central America (5) I&S Political, social, and economic history of principal countries in the Caribbean and Central America from their discovery to the present.

HSTLAC 490 Topics in Latin American and Caribbean History (2-5, max. 15) I&S Topics in Latin American and Caribbean history.

HSTLAC 581 Latin American History: Colonial Period (3-6, max. 6)

HSTLAC 582 Latin American History: National Period (3-6, max. 6)

HSTLAC 583 Seminar in Latin American History ([3-6]-, max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

HSTLAC 584 Seminar in Latin American History (-[3-6]-, max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

HSTLAC 585 Seminar in Latin American History (-[3-6], max. 12) Problems of historical research in the history of Latin America from colonial beginnings to the present.

HISTORY OF MODERN EUROPE

HSTEU 100 Advanced Placement (AP) European History (5) I&S Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

HSTEU 108 International Baccalaureate (IB) History of Europe (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

HSTEU 113 Europe and the Modern World (5) I&S Political, economic, social, and intellectual history of modern Europe. Cannot be taken for credit toward a history major if HSTEU 302 or 303 previously taken.

HSTEU 140 Russia from the Tenth Century to the Present (5) I&S Russian political, social, and economic history from the tenth century to the present. Offered: jointly with JSIS D 140.

HSTEU 210 Paris (5) VLPA/I&S

HSTEU 211 France: A Portrait (5) I&S Thematic approach to the history of France. Abandons the conventional chronological format in favor of a constellation of topics and themes - architecture, science, sex, cities, barricades, etc. - that, taken together and in historical perspective, make up a portrait of France.

HSTEU 219 Science and the Arts in Early Modern Europe (5) I&S Explores the role of artisanal craft practice and knowledge in the Scientific Revolution. Examines the artisanal world and its traditions of craft knowledge and follows the transmission of artisanal practice into the scholarly world of natural philosophy in the seventeenth century. Assesses the consequences for scientists and artisans.

HSTEU 220 Introduction to East European Studies (5) I&S *Felak* Introduction to the history of post-1945 Eastern Europe focusing on political, economic, social, cultural, and diplomatic issues. Countries surveyed include Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Offered: jointly with JSIS A 220.

HSTEU 234 History of Nazi Germany and the Holocaust (5) I&S, DIV L. *Marhoefer* History of Nazi Germany and Holocaust from Weimar Republic through rise of Nazis and creation of Nazi state and society to war and genocide. Focuses on social, political, and gender history. Includes transnational examination of Holocaust (especially Eastern Europe); memory and history after 1945; perspectives of outsiders in Nazi Germany, including Jews, Afro-Germans, gay men, communists; examination of debates in historiography of Holocaust.

HSTEU 240 From Rurik to Putin: Russian History through Biography (5) I&S/VLPA Introduces Russian history from ninth century to present through biographies, paintings, films, and music on Russian historical figures such as Catherine the Great and Josef Stalin. Placed in historical context, these life stories allow exploration of major themes in Russian history such as autocracy, serfdom, religion, modernization, reform, revolution. Offered: W.

HSTEU 245 St. Petersburg/Leningrad: City as History (5) I&S Introduction of political, social, and cultural history of St. Petersburg from 1703-1991. Uses St. Petersburg as a window to explore major themes in

Imperial Russian and Soviet history, including westernization and questioning of Russia's national identity, urbanization, industrialization, revolution, multinational empire, World War II, Stalinism, and socialistic reformism.

HSTEU 250 Rome (5) VLPA/I&S Focuses on Rome as an historical, intellectual, and artistic world center. Literary and historic documents, visual arts, architecture, film, and opera used to explore the changing paradigms of the Eternal City. In English. Offered: jointly with ART H 250/ITAL 250; W.

HSTEU 251 Events That Shook Modern Europe: From the French Revolution to the EU (5) I&S J. *Felak* Examines major events that shaped Europe, from French Revolution in 1789 to the foundation of the European Union in 1993. Wars, revolutions, social transformations, toxic ideologies, and liberation movements as milestones in the course of developments in Europe over the past two centuries. Lectures and analysis of documents from these time periods. Offered: jointly with JSIS A 251; Sp.

HSTEU 252 The Bloodlands: East Central Europe under Hitler and Stalin (5) I&S J. *Felak* From 1933-1945, 14 million people were killed, in cold blood, by Nazi Germany and Soviet Union regimes between central Poland and western Russia, including those starved in the Soviet Ukraine famine, victims of Stalin's Great Terror and Hitler's Holocaust, Soviet citizens starved by Nazis during World War II & Poles murdered under joint Nazi-Soviet occupation. Course investigates these fateful events through study of history, literature & film. Offered: jointly with JSIS A 252.

HSTEU 273 Women and Gender in Modern Europe (5) I&S Examines European women's changing social role and competing views of femininity from the Enlightenment to the end of the cold war. Special focus on the relationship of gender and politics and on the female body in bourgeois society, industrialization, imperialism, the welfare state, fascism, and the cold war.

HSTEU 274 European History and Film from the 1890's to the Present (5) VLPA/I&S Introduces the histories of world war, the rise and fall of fascism and communism, postwar migrations, the Cold War and decolonization, and the making of the European Community through film. Historical content unified

by methodological focus on the social and political function of film.

HSTEU 275 Life in England (5) I&S Social history of England from the Norman conquest to the present, seen through letters, autobiographies, novels, and plays of the time. Life of the ordinary inhabitant-in the village and the manor house.

HSTEU 276 Postwar: European History and Film after 1945 (5) VLPA/I&S, DIV Explores efforts to reconstruct Europe and European identity after 1945. Assesses the successes and failures of these efforts. Addresses themes of poverty and affluence, postwar justice, Americanization, expansion and collapse of communism, decolonization, migration, and ongoing ethnic tensions that threatened new forms of warfare. Explores the history uses of film.

HSTEU 290 Topics in European History (5, max. 10) I&S Examines special topics in European history.

HSTEU 301 Early Modern European History: 1450-1648 (5) I&S Political, social, economic, and cultural history from the late Renaissance to the Peace of Westphalia.

HSTEU 302 17th - 18th Century Europe: Enlightenment and Revolution (5) I&S M. O'Neil Political, social, economic, and cultural history from the Peace of Westphalia to the fall of Napoleon.

HSTEU 303 Contemporary European History Since 1815 (5) I&S Political, social, economic, and cultural history from the fall of Napoleon to the present.

HSTEU 304 Cultural History of Renaissance Europe (5) VLPA/I&S Examination of Medicean Florence, late sixteenth-century France, Elizabethan England, and the baroque courts of the early seventeenth century as cultural centers. Includes analysis of painters such as Botticelli and Rubens; poets such as Ronsard and Donne; philosophers such as Pico and Montaigne; and playwrights such as Marlowe, Shakespeare and Lope de Vega.

HSTEU 305 European Witch Trials (5) I&S Witchcraft and magical beliefs in Europe considered as a problem in intellectual, social, and legal history. Medieval background, systematization of witchcraft theory in fifteenth century; comparison of learned

and popular beliefs; mechanisms of witch trials and inquisitorial procedure; the Faust legend; growth of skepticism and decline of witchcraft in seventeenth century.

HSTEU 323 France Since 1814 (5) I&S Political, economic, and social history since the Congress of Vienna. Special emphasis upon the continuity of the revolutionary tradition.

HSTEU 334 Germany 1871-1989 (5) I&S Society and politics from Germany's first unification to its reunification; domestic and foreign policy; political, economic, social, and cultural developments; high emphasis on German society's self-perception and on the variety of interpretations of this period's history

HSTEU 361 Spain and Its Golden Age, 1469-1700 (5) I&S History and culture of Spain and its empire from the late Middle Ages through the seventeenth century.

HSTEU 364 Modern Greece: 1821 to the Present (5) I&S Politics and society of Greece from War of Independence to the present. Emergence and development of the Greek state; Greece in the world wars; civil war and post-war politics; military dictatorship; transition to democracy; recent developments. No prior study of Greece assumed. Offered: jointly with JSIS A 364.

HSTEU 368 Modern European Jewish History (5) I&S, DIV Surveys European Jewish history from the Spanish expulsion (1492) to World War I (1914). Considers diversity of European Jewries and the factors that cohered them. Examines how European Jewries ordered their lives, shaped gender and class norms, and interacted with the societies in which they lived. Offered: jointly with JEW ST 368.

HSTEU 370 J.R.R. Tolkien: A Mythology for England (5) VLPA/I&S Explores J.R.R. Tolkien in historical context. Influence of the nineteenth-century philosophy and folklore, World War I, Germanic mythology, Oxford Christianity, and the Inklings. Primary themes include language as a source of myth, fate and free will, religion, technology and nature, heroism and war, race and evil.

HSTEU 376 Modern Irish History (5) I&S, DIV Political and social history from 1800 to the present;

the Irish Question after the Act of Union; development of Irish nationalism in the Home Rule and Sinn Fein periods; the Irish Free State and Northern Ireland since 1921; current problems in Northern Ireland.

HSTEU 378 The Making of Contemporary France (5) I&S Historical origins and subsequent development of nine contemporary problems and characteristics of French government and politics, economy, and society.

HSTEU 380 History of Scandinavia to 1720 (5) I&S Scandinavian history from the Viking Age to 1720, with an emphasis on the political, social, and economic development of Denmark, Norway, Sweden, Finland, and Iceland from the Middle Ages to the Enlightenment. Offered: jointly with SCAND 380.

HSTEU 381 History of Scandinavia Since 1720 (5) I&S Scandinavian history from the Enlightenment to the Welfare State with emphasis on the political, social, and economic development of the modern Scandinavian nations of Denmark, Norway, Sweden, Finland, and Iceland. Offered: jointly with SCAND 381.

HSTEU 401 The Italian Renaissance: (5) I&S Conditions of Renaissance culture: Italian republics and despots, humanism, the classical ideal of the arts, Machiavelli and the foundations of modern political thought; the end of an era.

HSTEU 402 The Reformation (5) I&S Origins of the disunity of Europe in the crisis of the sixteenth century with emphasis on the relations between religion and politics.

HSTEU 405 European Intellectual History: Eighteenth Century (5) I&S/VLPA Development of the social sciences, moral theory, political theory, and religious thought in eighteenth-century Europe. Rationalism, empiricism, utilitarianism, and the sources of idealism.

HSTEU 406 European Intellectual History: Nineteenth Century (5) VLPA/I&S Selected topics in intellectual history up to 1890. The philosophical consequences of the French Revolution, the development of idealism, conservatism, romanticism, and early socialist theory; positivism,

the problems of historicism, new forms of Christian apologetics, utilitarianism in decline, liberalism as philosophy, the early Marx.

HSTEU 407 European Intellectual History: Twentieth Century (5) VLPA/I&S Selected topics in the intellectual history of the late nineteenth and early twentieth centuries. The aftermath of Darwinism, the problems of methodology in modern social science, historicism and moral relativism, irrationalism in philosophy and social theory, revisionism in secular and orthodox religions.

HSTEU 409 The Catholic Church in Europe, 1914-present (5) I&S Examines the Catholic Church in the context of European history since World War I. Explores politics and diplomacy as well as Catholic thought and culture in Europe. Major themes include challenges presented to the Church by Nazism, Communism, secularization, and Islam.

HSTEU 411 Europe: 1814-70 (5) I&S Development of Europe during the age of Metternich, the revolutions of 1848, and the emergence of new national states.

HSTEU 412 Europe in the Age of the Masses: 1870-1914 (5) I&S Impact of population increase and technological change on European society; stresses and strains in European life and outlook.

HSTEU 413 Europe: 1914-45 (5) I&S Politics and society of Europe in the age of the concentration camp.

HSTEU 414 Europe Since 1945 (5) I&S Political, economic, and military developments in Europe under the impact of the Cold War.

HSTEU 415 The Second World War (5) I&S, DIV Our world was created by the Second World War. It emerged from the nexus of mass mobilization, industrialized warfare, and racialized extremism. Its end ushered in the atomic age, the Cold War, and the United Nations. This course explores why the Second World War happened, how it unfolded, how it was experienced on battlefield and home-front; how it affected minorities (like Jews, gay men, Japanese-Americans); and how it has shaped our own time.

HSTEU 422 The French Revolution and Napoleon: 1789-1815 (5) I&S Transformation of France under the Revolution of 1789; the Reign of Terror and Napoleon; the impact of the revolution and Napoleon upon Europe.

HSTEU 432 Germany: 1914-1945 (5) I&S Politics and society from the collapse of the Bismarckian empire to the collapse of Hitler's empire.

HSTEU 435 World War I (5) I&S European society on the eve of the war. War experience of the Europeans. Long term consequences of the war on European social, political, and economic institutions. Impact of the war on non-European world. The war in European literature.

HSTEU 444 Imperial Russia: 1700-1900 (5) I&S Development of Russia from Peter the Great to Nicholas II. Offered: jointly with JSIS A 444.

HSTEU 445 The Rise and Fall of the Soviet Union (5) I&S Russia and the USSR from Nicholas II to the present. Offered: jointly with JSIS A 445.

HSTEU 451 East-Central Europe Since 1342 (5) I&S Explores the history of the lands and peoples of East Central Europe (Poles, Czechs, Slovaks, and Hungarians) .

HSTEU 452 Eastern Europe Since 1918 (5) I&S Explores the history of Poland, the Czech Republic, Hungary, and Slovakia from the end of World War I to the present.

HSTEU 453 History of the Balkans, 1400 to the Present (5) I&S Centuries of Ottoman rule that produced a new basis for the reemergence of independent states in the nineteenth and twentieth centuries; history of these new states until the present.

HSTEU 454 Baltic History (5) I&S Overview of the history of the area occupied by the Baltic countries of Latvia, Lithuania, and Estonia. Emphasizes their emergence as modern European nation-states. Era from World War I to present treated in depth, including the historical role and present situation of non-Baltic peoples, particularly Russians. Offered: jointly with SCAND 454.

HSTEU 464 The Jews in Spanish History (5) I&S Sephardic Jews in Spanish politics, economy, and culture, emphasizing the medieval Golden Age and the Inquisition. Offered: jointly with JEW ST 468.

HSTEU 465 The Jews of Eastern Europe (5) I&S Jewish society in Poland, Russia, the Hapsburg Lands, and Romania from the late Middle Ages to the Holocaust. Offered: jointly with JEW ST 465.

HSTEU 470 The Jacobethan Age: England 1580-1630 (5) I&S Emphasizes arts and society instead of traditional kings, battles, and politics; the way people at all levels of society lived, in towns and in the countryside, within the bounds of the royal court or outside in the political wilderness. Poetry, drama, music, architecture, painting, interior decoration, some of the minor arts. Demography and some of the traditional historical subjects. Not open for credit to students who have taken 471 or 472.

HSTEU 471 England in the Sixteenth Century (5) I&S Political, administrative, and social history from Henry VII to Elizabeth I, with emphasis on the Reformation and its effects and on conditions of life in Elizabethan England. Not open to students who have taken HSTEU 470.

HSTEU 472 England in the Seventeenth Century (5) I&S Political, administrative, and social history from the accession of James I to the Glorious Revolution. Not open to students who have taken HSTEU 470.

HSTEU 474 Britain at its Imperial Peak (5) I&S G. *Behlmer* Political, social, and cultural transformations in the world's first industrial nation; the rise of parliamentary democracy; "Victorian" sexuality;" utilitarianism and laissez-faire theory; Britain's enormous empire; and the stubborn "Irish Problem."

HSTEU 475 Britain in the Twentieth Century (5) I&S From the Boer War to the present; conservatism, liberalism, and socialism; Britain in two world wars; the decline of British imperialism.

HSTEU 482 Fascism in Europe (5) I&S History of the fascist era in modern Europe from 1919 to 1945. A study of the principal examples of national fascism and fascist-like movements coupled with a general theoretical consideration of the phenomenon.

HSTEU 490 Topics in European History (5, max. 10)

I&S Examines special topics in European history.

HSTEU 501 Renaissance Field Course (3-6, max. 6)

Topics in the cultural, political, and social history of the Renaissance era.

HSTEU 502 Reformation Field Course (3-6, max. 6)

Topics in the religious, political, and social history of the Reformation era.

HSTEU 505 Early Modern European History (3-6,

max. 18) Select topics in early modern European history. Topics vary from quarter to quarter.

Prerequisite: permission of instructor.

HSTEU 506 Modern Europe: Writings and

Interpretations (3-6, max. 6) Study of historians, schools of history, and interpretations of modern European history.

HSTEU 510 Core Seminar in the History of Modern

Europe (5-) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 511 Core Seminar in the History of Modern

Europe (-5-) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 512 Core Seminar in the History of Modern

Europe (-5) An introduction to historiographical classics and exemplary new works in the various fields of modern European history. Members of the seminar choose research topics and present the results of their research to the seminar.

HSTEU 513 Europe and the Modern World I (5)

Provides an acquaintance with some of the themes, problems, and events in the history of modern Europe, 1789-1914, including Europe's larger global engagements. Offers foundation for advanced thematic or regional study, a basis for comparative historical study within Europe and beyond, and preparation for teaching entry-level and advanced undergraduate surveys.

HSTEU 515 Modern European Intellectual History

(3-6, max. 6)

HSTEU 516 Seminar: European Intellectual History

([3-6]-, max. 6)

HSTEU 517 Seminar: European Intellectual History (-

[3-6], max. 6)

HSTEU 521 Modern European History: France (3-6,

max. 6)

HSTEU 522 Seminar in French History ([3-6]-, max.

12)

HSTEU 523 Seminar in French History (-[3-6]-, max.

12)

HSTEU 524 Seminar in French History (-[3-6], max.

12)

HSTEU 531 Modern European History: Germany (3-

6, max. 6)

HSTEU 532 Seminar in Modern European History:

Germany ([3-6]-, max. 12)

HSTEU 533 Seminar in Modern European History:

Germany (-[3-6]-, max. 12)

HSTEU 534 Seminar in Modern European History:

Germany (-[3-6], max. 12)

HSTEU 542 Imperial Russia Historiography (5)

Familiarizes students with the historiographical traditions and trends in the field of Imperial Russian history. Focuses on approaches, major issues, and debates in historical writing.

HSTEU 543 Empire and Nationalism in Russian

History (5) Explores cultural diversity in Imperial Russian history. Examines the role of nationality, cultural diversity, and "Russianness" through issues of identity, nationality policies, and ideologies. Pay particular attention to the development of the nationalistic discourse in Imperial Russia.

HSTEU 544 Modern Russian History (3-6, max. 6)

HSTEU 545 Seminar in Modern Russian History ([3-6]-, max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 546 Seminar in Modern Russian History (-[3-6]-, max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 547 Seminar in Modern Russian History (-[3-6], max. 12) Prerequisite: reading knowledge of Russian and either French or German.

HSTEU 548 Field Course in Soviet History (3-6, max. 6) Specialized course for graduate history students in the scholarly literature of Russian history since 1917. Intended for graduate students preparing for MA or Ph.D. field examination in Russian history of the Soviet period.

HSTEU 551 History of Eastern Europe: 1772-1939 (5) Study of the east-central European region: Poland, Czechoslovakia, Hungary, Romania, and the Balkan countries, from their rebirth to World War II. Prerequisite: reading knowledge of German, French, Russian, or one East European language.

HSTEU 552 History of Eastern Europe: 1939 to the Present (5) Prerequisite: reading knowledge of one major European or one East European language.

HSTEU 553 Seminar in Modern East European History ([3-6]-, max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 554 Seminar in Modern East European History (-[3-6]-, max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 555 Seminar in Modern East European History (-[3-6], max. 6) Study and research involving special methods dealing with the histories of the East European countries in the modern period.

HSTEU 571 English History: Tudor and Stuart (3-6, max. 6)

HSTEU 572 English History (3-6, max. 6)

HSTEU 573 Seminar in Modern English History ([3-6]-, max. 6)

HSTEU 574 Seminar in Modern English History (-[3-6], max. 6)

HSTEU 575 Seminar in Tudor-Stuart History ([3-6]-, max. 12) History of England under the Tudors and the Stuarts. Prerequisite: HSTEU 571 or permission of instructor.

HSTEU 576 Seminar in Tudor-Stuart History (-[3-6], max. 12) History of England under the Tudors and the Stuarts. Prerequisite: HSTEU 571 or permission of instructor.

HSTEU 590 Topics in History (5, max. 15) Seminar on selected topics in general history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HISTORY OF NORTH AMERICA (USA AND CANADA)

HSTAA 100 Advanced Placement (AP) US History (5) I&S Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

HSTAA 101 Survey of the History of the United States (5) I&S Supplies the knowledge of American history that any intelligent and educated American citizen should have. Objective is to make the student aware of his or her heritage of the past and more intelligently conscious of the present.

HSTAA 105 The Peoples of the United States (5) I&S, DIV History of diverse peoples who have come together through conquest and immigration since 1500, including Native Americans, Europeans, Africans, Asians, and Latin Americans. Explores contributions of many peoples with special attention to changing constructions of race and ethnicity and evolving understandings of what it means to be American.

HSTAA 108 International Baccalaureate (IB) History of the Americas (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the

Admissions Exams for Credit website for more information.

HSTAA 110 History of American Citizenship (5) I&S, DIV Examines how, when, and why different groups of people (e.g., white men, white men without property, peoples of color including one-time slaves, women, immigrants) became eligible for citizenship throughout American history. Explores how and why for many peoples, at many times, citizenship did not confer equal rights to all.

HSTAA 150 Introduction to African American History (5) I&S Introductory survey of topics and problems in African American history with some attention to Africa as well as to America. Basic introductory course for sequence of lecture courses and seminars in African American history. Offered: jointly with AFRAM 150.

HSTAA 202 American Foreign Policy, 1776 -Present (5) I&S Surveys the history of American foreign relations.

HSTAA 203 American Presidents in the Twentieth Century (3/5) I&S

HSTAA 205 Asian American History (5) I&S, DIV Introductory history of Asian Indians, Chinese, Filipinos, Japanese and Koreans in the United States from the 1840s to the 1960s. Major themes include imperialism, labor migration, racism, community formation, and resistance.

HSTAA 208 The City: People, Place, and Environments (5) I&S Surveys the history of cities in North America and around the globe from 1800 to the present. Considers economic and technological change; politics and government; city planning and landscaping design; migration and immigration, race, gender, and class; suburbanization; popular culture; and natural environments and natural disasters.

HSTAA 209 The Unsettling of the Red Continent: American Indian History to 1815 (5) I&S, DIV J. REID Course examines the histories of indigenous peoples of North America through the War of 1812. Topics include the peopling of the Americas; early encounters and exchanges; and strategies American Indians used to confront expanding European, American, and indigenous powers. Offered: jointly with AIS 209.

HSTAA 210 Inconvenient Indians and the "American Problem": American Indian History since 1815 (5) I&S, DIV As part of a two-quarter survey of American Indian history, this course examines the histories of indigenous peoples of North America from the nineteenth century to today. Students will explore a range of topics, including settler colonialism, indigenous power, American Indian - US relations, and Native governance and activism. Offered: jointly with AIS 210.

HSTAA 212 The Military History of the United States From Colonial Times to the Present (5) I&S Development of American military policies, organizational patterns, tactics, and weaponry, from beginnings as a seventeenth-century frontier defense force to the global conflicts and military commitments of the twentieth century. Interaction and tension between need for an effective military force and concept of civilian control of that force.

HSTAA 213 History of the American Presidency (5) I&S M. O'Mara Examines the American presidency and those who have occupied it, from George Washington to the current president.

HSTAA 221 Environmental History of the U.S. (5) I&S Linda Nash Surveys the relationship between nature and human history, including the impact of the non-human environment on American history and the environmental effects of colonization, urbanization, and consumerism; the cultural construction of nature in different eras and its social implications; the sources and limits of modern environmental politics. Offered: jointly with ENVIR 221; A.

HSTAA 225 American Slavery (5) I&S, DIV Explores the making of American slavery from beginnings on the African coast to the plantations of the southern United States. Includes slave life, pro-slavery thought, slave management, representations of slavery then and now, abolitionism, and debates about slavery.

HSTAA 230 Race and Power in America, 1861-1940 (5) I&S, DIV Explores race and the shaping of American society between the Civil War and World War II. Topics include reconstruction, segregation and lynching, immigration and naturalization, imperialism, and movements for social justice.

HSTAA 231 Race and American History (5) I&S, DIV Surveys United States history, by exploring how race has enabled conceptions of the American nation and shaped everyday practices and interactions among different peoples. How have racial concepts, representations, and practices fundamentally defined power dynamics in American culture? From slave revolts to the Black Lives Matter movement, how have organizations and individuals struggled to pursue racial justice?

HSTAA 235 The American People and Their Culture in the Modern Era: A History of the United States Since 1940 (5) I&S Through study of documents, personal testimony, and other source materials, through written reports on historical problems, and through discussions, lectures, films, and audiovisual presentations, students are encouraged to examine evidence and to think "historically" about persons, events, and movements within the memory of their own generation and that immediately preceding theirs. Primarily for first-year students.

HSTAA 270 The Jazz Age (5) I&S, DIV *Walter* Interdisciplinary study of period after World War I to Great Crash. African American and Anglo American currents and impulses that flowed together in the Roaring Twenties. Covers politics of normalcy, economics of margin, literature of indulgence and confusion, transformation of race relations, and cultural influence of jazz. Offered: jointly with AFRAM 270.

HSTAA 273 Women of the American West (5) I&S Women of the Trans-Mississippi West, from the time of European contact to World War II, studied in all their multifarious roles. Explores ethnicity, class, work, family, suffrage, politics, reform, women's groups, arts and entertainment, religion, civilizing and resistance, and gender ideology.

HSTAA 290 Topics in American History (5, max. 10) I&S Examines special topics in American history.

HSTAA 301 Colonial North America (5) I&S Surveys the land and peoples that became the United States from the sixteenth century to 1787. Themes include: interactions between Europeans, Africans, and indigenous peoples, regional and economic growth, the development of racial slavery, religious growth, the War of Independence, and the transition from colonies to nationhood. Offered: A.

HSTAA 302 Everyday Life in Nineteenth-Century America (5) I&S, DIV Explores the history of everyday Americans (women, slaves, working people, farmers) of a variety of races, ethnicities, and citizenships in the context of the major cultural, social, and political changes that dramatically transformed their lives over the course of the nineteenth century.

HSTAA 303 Modern American Civilization From 1877 (5) I&S Emergence of modern America, after the Civil War; interrelationships of economic, social, political, and intellectual developments.

HSTAA 308 American Indians and the Environment (5) I&S, DIV *J. Reid* Examines the historical relationships American Indians have possessed with local environments, with special attention to the ways these peoples have adapted to altered environments and new conditions, including migrations, involvement with markets of exchange, overhunting, dispossession, conservation, and mainstream environmentalism. Offered: jointly with AIS 308/ENVIR 308.

HSTAA 311 The Indigenous History and Environment of the Salish Sea (5) I&S, DIV *Joshua L Reid* Uncovers the indigenous history and environment of the Salish Sea. Examines the "Salish Sea" concept and uncovers the history of the Salish Sea, from an indigenous perspective. Topics include pre-encounter indigenous settlement; early encounters; and contestations over resources, waters, and lands; contemporary issues. Taught at the Friday Harbor Labs. Offered: jointly with AIS 311; Sp.

HSTAA 312 Early History of the North American West (5) I&S *J. Reid* Includes the peopling and settling of North America, arrival and expansion of Europeans; comparative colonial encounters; and initial encroachments of United States people, industry, government, and ideology into the region.

HSTAA 313 African Americans in the American West (5) I&S, DIV Explores pre-1848 Spanish-speaking black settlers, slavery, post-civil war migration, buffalo soldiers. 19th and 20th century black urban settlers, World War II migration, the civil rights movement in the West, the interaction of African Americans with other people of color. Particular focus on Seattle and the Pacific Northwest.

HSTAA 315 Researching Indians' History (5) I&S A.

HARMON Finding and interpreting sources of information about American Indians' history. Offered: jointly with AIS 370.

HSTAA 316 History of American Science (5) I&S

History of science in the United States, including migration of European science, development in colonial America, growth of an American scientific community, and expansion of American science in the twentieth century. Issues of scientific attitudes to the natural world, race, ethnicity, and gender are included.

HSTAA 317 History of the Digital Age (5)

I&S *Margaret O'Mara* Provides concrete historical knowledge about the evolution of the American computer hardware and software industries from the 1940s to the present day, situating today's debates about digital technologies and platforms in a longer political, social, and economic perspective.

HSTAA 321 Becoming Black Americans (5) I&S, DIV

History of Africans in America from slave trade through the Civil War, with emphasis on how gender informed African-American experience. Topics include slave trade, middle passage, life in plantation south, culture, family structure and resistance, and the experience of free blacks, North and South.

HSTAA 322 African-American History, 1865 To The Present (5) I&S, DIV

African-American experience from Reconstruction to the present, emphasizing the variety of African-American political expression. Gender and class differences closely examined, as well as such constructs as "community," "race," and "blackness."

HSTAA 331 American Indian History I to 1840 (5)

I&S, DIV A. *HARMON* History of indigenous peoples and their descendants in the area that now constitutes the United States, from the eve of European discovery of the Americas to 1840. Emphasis on relations between indigenous peoples and immigrants. Offered: jointly with AIS 331.

HSTAA 332 American Indian History II Since 1840 (5)

I&S, DIV A. *HARMON* History of American Indians in the United States from 1840 to the present. Emphasis on relations between Indians and non-Indians, government policies, and Indian strategies of survival. Offered: jointly with AIS 332.

HSTAA 334 Civil Rights and Black Power in the United States (5) VLPA/I&S, DIV

Steptoe Examines the politics and culture of the modern African American freedom struggle, which began after WWII and continued into the 1970s. Interrogates political strategies associated with nonviolent direct action, armed self-reliance, and black nationalism, as well as the cultural expression that reflect these political currents. Offered: jointly with AFRAM 334.

HSTAA 336 American Jewish History Since 1885 (5)

I&S Political, social, economic, religious history of American Jewish community from great eastern European migration to present. Integration of immigrant community into general American community; rise of nativism; development of American socialism; World War I and II; and reactions of American Jews to these events. Offered: jointly with JEW ST 336.

HSTAA 337 The Holocaust and American Life (5)

I&S, DIV In most accounts, "the Holocaust" is told as a European story, but it was also transatlantic. Incorporates film, literature, journalism, social scientific writing, diaries, court cases, and other primary sources to examine how events in Europe affected and were affected by developments in United States history. Offered: jointly with JEW ST 337.

HSTAA 338 The United States and Vietnam (5) I&S

American involvement in Vietnam, including: the complex of negotiations; strategies and objectives of both sides; military, political, and economic operations of the United States; efforts at pacification; impact of Vietnam on American affairs.

HSTAA 345 US Political and Economic History, 1920

- present (5) I&S M. *O'Mara* Places modern America in historical perspective, using primary and secondary historical sources to examine key people and events who made this history from the 1920s to the present. Themes include: changing role of government; electoral and partisan change; populism and grassroots activism; markets and corporations; labor force trends; and the social and political impact of technology. Cannot be taken for credit if credit received for HSTAA 235.

HSTAA 351 American Constitutional History: From

Colonial Times to the Present (5) I&S European origins; the constitution-making of the American

Revolution; the growth of government; Civil War and Reconstruction as constitutional crises; reform and the new federalism; the Supreme Court and civil rights; Congress, the presidency, and modern American constitutionalism.

HSTAA 353 Class, Labor, and American Capitalism (5) I&S, DIV The history of workers and class formation from early industrialization to the present. Emphasizes the interaction of class with race, ethnicity, gender, and political culture within the context of American economic development. Explores the role of unions, labor politics, and radical movements.

HSTAA 365 Culture, Politics, and Film in Twentieth Century America (5) VLPA/I&S, DIV Explores relationship between film and twentieth century U.S. cultural, social, and political history. Examines the ways that films responded to, participated in, and helped shape understandings of modernity, national identity, political power, race and ethnic relations, gender, and crises such as economic depression and war.

HSTAA 371 Consumption and Consumerism in the Modern U.S. (5) I&S Surveys the rise of consumer society in the late-nineteenth-and twentieth-century United States including theories of consumption, the experience of consumer culture by different social groups, the role of the state in fostering consumption, the material impacts of consumer society in the U.S. and beyond, and critiques of consumerism.

HSTAA 373 Social History of American Women to 1890 (5) I&S, DIV Yee A multi-racial, multicultural study of women in the United States from the seventeenth century to 1890 emphasizing women's unpaid work, participation in the paid labor force, charitable and reform activities, and nineteenth century social movements. Uses primary materials such as diaries, letters, speeches, and artifacts. Offered: jointly with GWSS 383; W.

HSTAA 374 Social History of American Women in the Twentieth Century (5) I&S Analyzes major themes in the history of women in North America from 1890 through the 1990s. Themes include family and community formation, social activism, education, paid and unpaid labor patterns, war, migration, and changing conceptions of womanhood

and femininity in the twentieth century. Offered: jointly with GWSS 384.

HSTAA 377 History of Canada (5) I&S General survey and analysis of political, economic, social, and cultural aspects of Canadian history from the foundation of New France to present; Canadian-American relations, the rise of Quebec nationalism, and the development of the Canadian West. Offered: jointly with JSIS A 375.

HSTAA 401 American Revolution and Confederation (5) I&S Causes of separation of the United States from the British empire; political theory of the Revolution; its military history; diplomacy of the Revolution; the Revolution as a social movement; intellectual aspects; readjustment after independence; the formation of the American union; the Constitution.

HSTAA 402 Witchcraft in Colonial New England (5) I&S Provides an in-depth look at the Salem witchcraft crisis of 1692 as part of a larger examination of seventeenth century New England history. Themes include: settlement, the intellectual and religious foundations of New England society, the role of politics, economics, and Indian wars, witchcraft trials, and why most of the accused were women.

HSTAA 404 New England: From the Foundings to the Civil War (5) I&S New England from colonial beginnings to the region's emergence to national leadership in the mid-nineteenth century. Emphasis on Puritanism, the New England town, adjustment to empire, revolution and constitution making, the growth of party, abolitionism, the flowering of a regional culture, and the personalities who embodied these key themes and periods.

HSTAA 406 Asian American Activism (5) I&S, DIV Explores the multiple political traditions forged by Asian Americans, from the earliest challenges to racist laws and unequal wages to the latest debates over affirmative action and racial profiling. Examines Asian American communities organized to oppose and to perpetuate social inequalities. Offered: jointly with AAS 406.

HSTAA 407 Andrew Jackson's United States (5) I&S In-depth examination of the U.S. from 1820 to 1850,

including changes which affected American politics, society, and culture.

HSTAA 409 American Social History: The Early Years

(5) I&S Survey of American society and institutions from the colonial era through the Civil War, with special attention to reform, labor, immigration, education, law enforcement and the city.

HSTAA 410 American Social History: The Modern Era

(5) I&S, DIV Survey of American society and institutions from Reconstruction to the present with special attention to reform, poverty, social mobility, immigrant and ethnic groups, the city and law enforcement.

HSTAA 411 The United States During the Era of Civil War and Reconstruction

(5) I&S Conflicting interests, ideologies, and ways of life in the United States from the 1840s to the 1870s.

HSTAA 412 The Westward Movement, 1700-1850

(5) I&S Anglo-American advance into interior continental United States culminating in Far West occupation. Rivalry with New France and Spain in colonial period; role of federal government in westward expansion; land policy and distribution; migration, settlement, and pioneering; federal Indian policies and implementation; political evolution, urbanization, and economic development of trans-Appalachian West; shaping national character and institutions.

HSTAA 413 The American West in History and Film

(5) I&S, DIV J. Findlay Examines emergence of American West since 1840 by looking at colonization processes; Native-white relations; economic and demographic changes; environmental issues; urbanization; western politics and the role of the state. Historians' evolving interpretations of the western past are considered alongside those in film in order to appreciate why the West has loomed so large in 20th-century American culture and identity.

HSTAA 414 The Canadian West, 1670-1990

(5) I&S Examines the history of colonization and settlement of Canada's four westernmost provinces with emphasis on their economic, social, and Native history.

HSTAA 415 History of Indian-White Relations in Anglo-America

(5) I&S Explores the wide variety of

interactions in North America, ranging from close alliances to outright warfare, between Native Americans and Europeans and their descendants from contact through the removal of most of the remaining eastern Indians to land west of the Mississippi River during the 1830s.

HSTAA 417 Indians in Western Washington History

(5) I&S, DIV A. HARMON Relations of Indians and non-Indians in the Puget Sound region, from the 1790s to the present, with emphasis on evolving ideas about Indian identity. Offered: jointly with AIS 425.

HSTAA 426 American Urban History Since 1870

(3/5) I&S Development of American cities for the past century. Topics include physical development, immigration, politics, and changes in society and culture.

HSTAA 431 American Politics and Society Since 1920

(5) I&S Political, social, economic, and intellectual developments in the United States from 1920 to the present.

HSTAA 432 History of Washington and the Pacific Northwest

(5) I&S Exploration and settlement; economic development; growth of government and social institutions; statehood.

HSTAA 433 A Documentary History of Pacific Northwest Identity

(5) I&S Findlay Considers cultural construction of Pacific Northwest region through more than two centuries of narratives, including Native American stories; travel literature from early explorers to modern tourists; accounts by newcomers from pioneer to modern era; aggressive regionalism of 1890-1945; Northwest literature of the post-war period. Offered: S.

HSTAA 446 American Indian Economic History

(5) I&S Harmon Surveys and analyzes the history of American Indians' economic challenges and strategies. Topics include the economic cultures of indigenous North American societies, the impacts of European colonization and U.S. government policies, and tribal strategies aimed at improving Indians' economic circumstances. Offered: jointly with AIS 446.

HSTAA 454 The Intellectual History of the United States

(5) VLPA/I&S Lectures and discussions

devoted to the development of the American mind, from historical beginnings to the present.

HSTAA 458 Education in the Forming of American Society (5) I&S *Beadie* Covers the development of American education in cultural context; history of schools and non-school learning from colonial period to the twentieth-century; apprenticeship and learning societies; community and market-based schooling; liberal learning and the rise of the university; and schools as agencies of economic and political integration and mediators of culture and social status. Offered: jointly with EDLPS 458.

HSTAA 459 History of American Education Since 1865 (3) I&S Development of American education in cultural context: progressive education, recent criticism, continuing issues and trends. Offered: jointly with EDLPS 459.

HSTAA 461 Diplomatic History of the United States, 1776-1901 (5) I&S Foreign policy of the United States government prior to the twentieth century. Emphasis on international wars, territorial expansion, and the peculiarities of the American position in world politics.

HSTAA 462 Diplomatic History of the United States, 1901-Present (5) I&S Foreign policy of the United States government during the twentieth century. International wars and the other major episodes in diplomacy are emphasized.

HSTAA 465 The Sixties in America: Kennedy to the Counterculture (5) I&S Examines American politics, society, and culture during the 1960s. Also touches on 1945-1959 and 1970-1975. Topics include the Cold War; Vietnam; JFK, LBJ, and their critics; MLK, Malcolm X, race, gender, and social movements; mass culture, pop culture, and the counterculture.

HSTAA 473 Homefront: American Cultures and Society in the 1940s (5) I&S An exploration of the impact of WWII on American culture and social thought. Topics include the effects of war on civil liberties and civil rights, the uses of nationalism, patriotism, and racial ideology, the internment of Japanese-Americans, responses to the Holocaust, and the effects of war on social life.

HSTAA 490 Topics in American History (5, max. 10) I&S Examines special topics in American history.

HSTAA 501 American History: Early (3-6, max. 6)

HSTAA 503 Seminar in American History, Early ([3-6]-, max. 12) Research seminar in early American History, 1600-1875.

HSTAA 504 Seminar in American History, Early (-[3-6], max. 12) Research seminar in early American History, 1600-1875.

HSTAA 506 Slavery in the Americas (5) Explores the rise of American slavery beginning with the development of the Atlantic slave trade between southern European powers and coastal African traders. Topics include cultures of slavery in the Americas, comparative racial formations, cultural change, and the role of gender in slave societies.

HSTAA 508 American Urban History (5) Covers major themes and scholarly literature in American urban history.

HSTAA 512 American History: Western (3-6, max. 6)

HSTAA 513 Seminar in American History: Western ([3-6]-, max. 12)

HSTAA 514 Seminar in American History: Western (-[3-6], max. 12)

HSTAA 516 Hispanics of the United States (3-6, max. 6)

HSTAA 517 Field Course in American Indian History (5) Field-reading course. Survey of major problems and literature concerning indigenous peoples of North America and their descendents.

HSTAA 519 Asian American History (5) Introduces students to the field of Asian American history, with an emphasis on historiographical shifts and debates. Includes a broad range of topics and methodologies that often cross disciplinary boundaries.

HSTAA 521 American History: Writings and Interpretations, 1770-1870 (4-6)

HSTAA 522 American History: Writings and Interpretations Since 1870 (4-6)

HSTAA 524 American Social History Before 1860 (3-6, max. 6) Field course. Survey of major problems and literature in American social history before 1860.

HSTAA 525 American Social History after 1860 (3-6, max. 6) Field course. Survey of major problems and literature in American social history after 1860.

HSTAA 531 American History: Twentieth Century (3-6, max. 6)

HSTAA 532 Seminar in American History: Recent Period ([3-6]-, max. 12)

HSTAA 533 Seminar in American History: Recent Period (-[3-6]-, max. 12)

HSTAA 534 Seminar in American History: Recent Period (-[3-6], max. 12)

HSTAA 540 African American Urban History: 1700-2000 (5) Examines the growth and evolution of African-American urban communities from the colonial era to the present, with particular emphasis on cities of the West.

HSTAA 549 Culture, Politics, and Power in Nineteenth-Century Black America (5) Canonical issues, problems, and topics in nineteenth-century black social history. Traces major developments during the period; engages historiographical debates; and explores methodological questions such as the intersection of social and cultural history, and the challenges and possibilities of writing the history of a people with few written records.

HSTAA 550 African-American History to Reconstruction (5) Comprehensive introduction to the major topics and writings in African-American history from the colonial era to 1900, including the inception of slavery, free Blacks, slave revolts, Black abolition, Blacks in the Civil War and Reconstruction, and the Black female role in the struggle for freedom.

HSTAA 551 African-American History Since Reconstruction (5) Comprehensive introduction to the major topics and writings in African-American history in the twentieth century, including Jim Crow era, Black Women's Movement, Harlem

Renaissance, legal origins of Civil Rights Revolution, Second Reconstruction, and Politics of Cultural Pluralism.

HSTAA 552 Graduate Seminar in African-American History (5-) Research experiences and opportunities in African-American history. Provides students with skills and methodology to pursue advanced research in the field.

HSTAA 553 Graduate Seminar in African-American History (-5) Research experiences and opportunities in African-American history. Provides students with skills and methodology to pursue advanced research in the field.

HSTAA 554 American History: Intellectual (3-6, max. 6)

HSTAA 555 Seminar: American Intellectual History ([3-6]-, max. 12) Develops research and writing competence in American intellectual history. Prerequisite: permission of instructor or graduate program coordinator.

HSTAA 556 Seminar: American Intellectual History (-[3-6], max. 12) Develops research and writing competence in American intellectual history. Prerequisite: permission of instructor or graduate program coordinator.

HSTAA 561 History of American Foreign Policy (3-6, max. 6)

HSTAA 562 Seminar in American Diplomatic History ([3-6]-, max. 12)

HSTAA 563 Seminar in American Diplomatic History (-[3-6], max. 12)

HSTAA 570 American Environmental History (5) Readings in environmental history emphasizing theory, methodology, and principal themes in the field. Readings emphasize the environmental history of North America and the United States.

HSTAA 590 Topics in American History (5, max. 15) Seminar on selected topics in American history, with special emphasis on preparation for field examinations. Topics vary according to interests of students and instructor.

HISTORY SEMINARS AND INDEPENDENT STUDIES

HSTRY 100 Advanced Placement (AP) History (5) I&S Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

HSTRY 108 International Baccalaureate (IB) History (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

HSTRY 199 Foreign Study (3-5, max. 10) I&S Lower-division history courses, for which there are no direct University of Washington equivalents, taken through the University of Washington Foreign Study Program.

HSTRY 201 History Lecture Series Colloquium (2, max. 8) Students attend weekly lectures through the History Lecture Series, then discuss themes generated from the lectures. Students write reflective papers comparing, contrasting, and expanding upon themes presented. Credit/no-credit only. Offered: W.

HSTRY 288 Seminar: Topics in History (5, max. 15) I&S Introduction to the discipline of history. Emphasizes the basic skills of reading, analysis, and communication (both verbal and written) in history. Each seminar discusses a different subject or problem.

HSTRY 388 Colloquium: Introduction to History (5, max. 10) I&S Introduction to the discipline of history for new or prospective majors. Emphasizes the basic skills of reading, analysis, and communication (both verbal and written) that are central to the historian's craft. Each seminar discusses a different subject or problem.

HSTRY 390 Colloquium in History and Science (5) I&S Study in the history of science to bridge the gap between the natural sciences and the humanities. Students should have a strong background both in history and in a natural science.

HSTRY 395 Modern Historical Writing, Honors Seminar (5) I&S New types of problems examined by historians and new techniques that have evolved for

solution. Brief historiographical introduction, reaching back to the "scientific" historians of the mid-nineteenth century; continues by examining the impact on historians of new disciplines such as psychology, sociology, and economics, and of new techniques such as statistics and prosopography. Readings in the theorists and in those who followed their lead.

HSTRY 399 Advanced Foreign Study (3-5, max. 15) I&S Upper-division history courses, for which there are no direct University of Washington equivalents, taken through the University of Washington Foreign Study Program.

HSTRY 489 Digital History (5) I&S *Raymond Jonas* Offers a grounding in some key technologies relevant to research and teaching in the humanities and humanistic social sciences. Introduces an array of relevant technologies, including close and distant readings of texts, mapping and visualization, digital storytelling, content management and migration, and social media.

HSTRY 491 Honors Historical Method (5-) I&S The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

HSTRY 492 Honors Historical Method (-5) I&S The purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. For honors students.

HSTRY 493 Senior Thesis in the History of Science (5, max. 10) I&S Preparation of the senior thesis for the History and Science emphasis.

HSTRY 494 Colloquium in Historiography (5, max. 15) I&S Advanced seminar examining central issues in historiography. Emphasizes reading, discussion, and writing.

HSTRY 495 History Internship (1-5, max. 10) Off-campus independent fieldwork with a community agency in an apprenticeship or internship situation. Work to be jointly supervised by a member of the History Department and an on-site field supervisor.

HSTRY 498 Colloquium in History (5, max. 15) I&S Each seminar examines a different subject or

problem. A quarterly list of the seminars and their instructors is available in the Department of History undergraduate advising office.

HSTRY 499 Undergraduate Research (1-5, max. 15)

HSTRY 500 Perspectives on History (5)

HSTRY 570 Topics in Teaching History (3) Topics include active learning, teaching writing, assessment, and course design. Designed for history graduate students working or planning to work as TAs or instructors. Students produce a teaching portfolio and conduct peer observations. Credit/no-credit only.

HSTRY 571 History as a Profession (3) Prepares history graduate students for both non-academic and academic careers. Course required for second year graduate students in the department of history. Credit/no-credit only. Offered: W.

HSTRY 572 Dissertation Prospectus Workshop (3)

Students will craft their dissertation prospectuses with their respective PhD chairs and committees, that must approve the prospectus before it is presented to the History Department. In addition to fulfilling a departmental requirement, students can use the prospectus as a component for future funding and employment applications. Credit/no-credit only.

HSTRY 595 Historical Practices (5) Emphasizes the interrelatedness of theoretical issues and historical research. Students read works that encourage the rethinking of sources and their historical meaning and experiment with sources, methods, and questions in a set of practical assignments.

HSTRY 596 History Research Seminar (5-, max. 10)

Advanced historical research seminar. First in a series of two.

HSTRY 597 History Research Seminar (-5, max. 10)

Advanced historical research seminar. Second in a series of two.

HSTRY 598 Methods of Historical Research (5)

Exploration of new historical and scholarly techniques employed in historical research. Use of social science methodology and literary theory in the

evaluation and interpretation of historical sources. Use of feminist theory, deconstruction, critical theory, and orality/literacy studies. Student research paper is based upon a chosen theoretical approach.

HSTRY 600 Independent Study or Research (*-)

HSTRY 800 Doctoral Dissertation (*-)

HISTORY AND PHILOSOPHY OF SCIENCE

HPS 400 Colloquium in the History and Philosophy of Science (5) I&S/NW *L. HANKINSON NELSON, B. HEVLY, A. WOODY* Examines issues from the perspectives of both history and philosophy. Prerequisite: either HSTCMP 311, HSTCMP 312, HSTCMP 313, HSTCMP 314, HSTCMP 315, HSTCMP 317, HSTCMP 318, or HSTCMP 412; either PHIL 350, PHIL 360, PHIL 450, PHIL 460, PHIL 464, PHIL 466, PHIL 473, PHIL 481, PHIL 482, or PHIL 483.

INTEGRATED SCIENCE

INTSCI 197 Special Topics in Integrated Sciences (1-5, max. 15) NW Selected topics in integrated sciences.

INTSCI 200 Controversies in Science and Society (3) NW/I&S Exploration of controversies in science and society that benefit from an integrated sciences perspective. Topics vary from quarter to quarter, but may include cases from science communication, science education, science policy, and science research.

INTSCI 301 Integrated Sciences Careers Seminar (1, max. 3) Introduces students to scientists and science educators who are actively engaged in careers that require an integrative science perspective. Classroom guests vary from quarter to quarter, but may include individuals working in formal and informal science education, science organizations, science writing, and science policy.

INTSCI 401 Integrated Sciences Practicum (2-4, max. 6) I&S Exploration of professions in formal or informal science education, science writing, science policy, and other areas that require an integrated science perspective. Examples include weekly visits to a science classroom, organization, or museum.

Analysis of practicum experiences through discussion of scientific communication, human learning, and classroom engagement and equity.

INTSCI 402 Nature of Science (5) NW Case study examination of scientific methods and elements of scientific practice including observation, data, statistics, interpretations, hypothesis, theory, and law. Asks how does science change; how does data support theories; and how are theories verified, falsified, or modified?

INTSCI 403 Science in Context (5) I&S/NW Case study examination of how science operates within broad social, political, and ethical contexts. Considers the growth of multidisciplinary and interdisciplinary research, societal impacts, ethical responsibilities, censorship, complex mechanisms of funding, and the power inherent in claims to knowledge.

INTSCI 491 Introduction to Research (2) NW Preparation for intensive "hands-on" science experience. Discussion of what constitutes scientific research; development of a research proposition; meeting with potential research supervisors; signed agreement with supervisor and capstone instructor on scope and details of research

INTSCI 492 Reflections on Research (2, max. 6) NW Reflections on an on-going science research experience through discussion, short papers, and oral presentations, with emphasis on the challenges and dilemmas that arise in data collection and analysis. Offered: AWSp.

INTSCI 493 Communicating Research (3) NW Preparation of oral and written presentations of research, under guidance of the capstone instructor. Presentation on research in class and in another venue, such as a scientific meeting or an on-campus symposium. Prerequisite: minimum of four credits of INTSCI 492. Offered: AWSp.

INTSCI 498 Independent Study (1-5, max. 10) Faculty-supervised independent study on a topic related to integrated sciences.

INTEGRATED SOCIAL SCIENCES

ISS 301 Social Science Theory in Context (5) I&S Provides an introduction to the concepts of social theory, interdisciplinarity, and the thematic areas of the integrated social sciences major. Explores how social sciences study what people do, how people understand their world, and how that understanding shapes social practice. Offered: ASp.

ISS 302 Survey of Social Science Methods (5) I&S Provides an inclusive survey of methods used across the social sciences. Introduces statistics, survey research, and data visualization techniques. Also covers qualitative research methods ranging from participant observation to archival textual analysis. Students develop skills in both quantitative and qualitative reasoning using real-world evidence. Offered: A.

ISS 350 Introduction to Integrated Social Sciences Portfolio (2) I&S Begins the process of online learning portfolio development to define learning goals, refresh research skills, explore academic interests, and build a collection of work in the social sciences. Offered: ASp.

ISS 355 Integrated Social Sciences Portfolio Studio (3) I&S Continues the integrative and reflective work begun in ISS 350, developing online learning portfolio content and interdisciplinary knowledge in the social sciences in preparation for the capstone. Prerequisite: ISS 350. Offered: AWSp.

ISS 381 Advanced Research Writing in the Social Sciences (5) C M. CARNEY, P. MYERS Concentration on the development of advanced research-based writing skills in the social sciences. Recommended: 100-level English course.

ISS 401 Integrated Social Sciences Portfolio Capstone (5) I&S Focuses on the transformation of the online learning portfolio into a showcase portfolio suitable for an external audience identified by the student. Builds on the reflective and integrative work done over the past quarters. Prerequisite: ISS 355. Offered: AWSpS.

JACKSON SCHOOL OF INTERNATIONAL STUDIES

COMPARATIVE RELIGION

RELIG 101 A Life Worth Living: Meaning, Morals and Money (5) I&S *J. Wellman* Investigates how to create meaning in religious and humanistic traditions, how to develop ethical traditions that enable trust and a thriving social order, and the relationship between money and meaning. Students ask what makes life worth living and discover sources of meaning and ethical maxims, as well as tools to navigate decision-making and fashion a flourishing life.

RELIG 104 International Baccalaureate (IB) World Religions (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

RELIG 120 Yoga: Past and Present (5) VLPA/I&S, DIV Studies yoga and its history, practice, literature, and politics. From the ancient past to modern yoga, studies essential texts and ideas, as well as the effects of class, religion, gender, nationalism, development, Marxism, colonialism, and physical culture on yoga. Offered: jointly with CHID 120; A.

RELIG 145 Introduction to Judaism (5) I&S Explores Judaism's sacred texts, holidays, and beliefs. Addresses Judaism's impact on society, culture, and politics. Through the lens of the Jewish experience, grapples with fundamental questions about the role of individuals and members of larger communities in an increasingly multicultural, religious, and interconnected world. Offered: jointly with JEW ST 145.

RELIG 155 Heroes, Heretics, and Radicals: The Origins of Judaism and Christianity (5) I&S Investigates the heroes, heretics, and radical pioneers of religious movements around the beginning of the Common Era (150 BCE-150 CE). Students learn to analyze primary sources, engage critically with secondary sources, and author their own historical narrative. Offered: W.

RELIG 199 Study Abroad: Comparative Religion (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do

not automatically apply to major/minor requirements.

RELIG 201 Introduction to World Religions: Western Traditions (5) I&S *Wellman* History of religions, concentrating on religious traditions that have developed west of the Indus. Primary attention to the Semitic religions (Judaism, Christianity, Islam) and to their ancient world background with emphasis on basic conceptual and symbolic structures.

RELIG 202 Introduction to World Religions: Eastern Traditions (5) I&S *Novetzke, Pauwels* History of religions, concentrating on religions that have developed in South Asia and East Asia. Primary attention to Hinduism and Buddhism; other important Asian religions are discussed in relation to them, with emphasis on basic conceptual and symbolic structures.

RELIG 205 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with HUM 205/NEAR E 285; W.

RELIG 211 Introduction to Muslim Beliefs and Practices (5) VLPA/I&S Examines the origins and development of central beliefs in various Muslim traditions; such as monotheism, prophecy, divine judgment, and predestination. Looks at ritual and socio-cultural practices in Muslim societies in Asia, Africa, and Europe. Offered: jointly with NEAR E 230.

RELIG 212 Introduction to the Quran (5) VLPA/I&S A literary, historical, and theological introduction to the Quran. Looks at the historical circumstances of the text's compilation; its collection and redaction; its narrative structure; its rhetorical strategies; its major themes; its connections to and departures from the Hebrew Bible and the New Testament; commentary and exegesis; translation; and its impact on political and religious thought. Offered: jointly with NEAR E 231.

RELIG 220 Introduction to the New Testament (5) VLPA/I&S Introduction to the writings in the New

Testament, their nature and origins as explored in modern scholarly research, and the first decades of the Christian religion.

RELIG 240 Introduction to the Hebrew Bible: Old Testament (5) VLPA/I&S Examines the Hebrew Bible (Old Testament) in translation and its relationship with literatures of ancient Near East. Comparisons drawn between Biblical text and literary works of Canaan, Egypt, Greece, Mesopotamia. Emphasis on the sophisticated literary techniques employed by Biblical writers. Cannot be taken for credit if credit earned in NEAR E 240. Offered: jointly with NEAR E 202.

RELIG 242 Christianity in Asia (5) I&S Hajin Jun Christianity in East Asia, sixteenth century to present. Shared experiences that transcended national boundaries. Also traces divergent paths Christianity took in China, Korea, and Japan. What propelled missionary expansion? Why did people convert? What are lasting legacies of Christianity? Attention to shifting meanings of faith, identity, and religious community across the region. Offered: jointly with HSTAS 242.

RELIG 254 American Religions (5) I&S, DIV Wellman Seeks to understand religious diversity in the American context and the varieties of religions in the American historical horizon including religious minorities, American Protestants, public religious expressions, and new American religions.

RELIG 264 Sacred Music in the European Tradition (5) VLPA Surveys European and American sacred music from the twelfth to twentieth centuries, examining the important role of music in religious worship. Considers the means composers used to make musical works sound the way they do to convey the messages of the texts through music. Offered: jointly with MUSIC 264.

RELIG 305 Religious Thought Since the Middle Ages (5) I&S Development of religious thought in the West from the Middle Ages to the twentieth century. History of focal ideas: God, man, knowledge, and authority during this period and the relation of changes in these ideas to the ways in which basic issues in religious thought have been conceived.

RELIG 306 The History of Biblical Interpretation (3) VLPA/I&S Traces Biblical interpretation and translation technique from the earliest translations of the Hebrew Bible (Old Testament) to the various historical literary, deconstructionist, and holistic strategies of more recent times. Adopts a "hands-on" approach to the material and explores various hermeneutics by applying them in class. Offered: jointly with NEAR E 306.

RELIG 307 Religion and World Politics (5) I&S A. GILL Explores the intersection of religion and politics in various regions of the world, including the United States, Europe, Middle East, Latin America, and other regions. Presents an historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with POL S 307.

RELIG 315 The Biblical Prophets (3) VLPA/I&S Explores the Biblical prophets (in translation) within their Near Eastern contexts. Historicity, literary and rhetorical sophistication, and ideological agendas. Seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible required. Offered: jointly with NEAR E 305.

RELIG 320 Comparative Study of Death (5) I&S Death analyzed from a cross-cultural perspective. Topics include funerary practices, concepts of the soul and afterlife, cultural variations in grief, cemeteries as folk art, and medical and ethical issues in comparative context. American death practices compared to those of other cultures. Offered: jointly with ANTH 322.

RELIG 321 Comparative Religion (3/5) I&S Anthropological approaches to religious experience and belief with emphasis on conceptual issues such as ritual, symbolism, identity, ecstatic experience, and revitalization movements in the context of globalization. Also addresses the diversity of religious expression in American culture and how that compares with other societies. Offered: jointly with ANTH 321.

RELIG 322 The Gospels and Jesus of Nazareth (5) I&S Modern scholarly approaches to gospels included within and outside the Christian Bible. Surveys issues and methods in modern 'historical Jesus' research.

RELIG 329 Religion, Identity, and Cultural Pluralism

(5) I&S, DIV The role of religion in shaping personal and communal identity in a pluralistic society. Themes include current dimensions of American pluralism, effects of ethnicity, immigration, and electronic communication on building religious communities, and issues of conflict, violence, and reconciliation. Offered: jointly with ANTH 330.

RELIG 334 Gender, Sex, and Religion (5) I&S, DIV M.

AHUVIA The Bible and its interpreters invented the gender categories and hierarchies that readers take for granted. Employs academic approaches that illuminate the construction of those categories and explores the debates within Judaism and Christianity as well as within academia today about gender, sex, sexuality, and religion. Offered: jointly with GWSS 334; Sp.

RELIG 352 Hinduism (5) I&S *Novetzke, Pauwels*

Varieties of Hindu religious practice; the diverse patterns of religious thought and action among contemporary Hindus. Includes ritual behavior, village Hinduism, tantrism, sadhus, yoga, sects, the major gods and their mythologies, religious art, and the adjustments of Hinduism to modernity.

RELIG 354 Buddhism (5) I&S *Cox, Tokuno*

Buddhism as a religious way and as a way of thinking; the forms of Buddhism known in South Asia (India, Sri Lanka) and those introduced from there to Tibet and other parts of Central Asia. Includes the "Three Jewels" (i.e., the Buddha or Awakened Person, the Teaching [Dharma], and Community [Sangha]) around which Buddhism is traditionally articulated.

RELIG 356 Buddhism and Society: The Theravada Buddhist Tradition in South and Southeast Asia (5)

I&S Religious tradition of Theravada Buddhism (as practiced in Sri Lanka, Burma, Thailand, Laos, and Cambodia). Variations in ethical orientations developed through Theravada Buddhist ideas. Offered: jointly with ANTH 352.

RELIG 380 Theories In the Study of Religion (5)

I&S *C. NOVETZKE, J. WELLMAN* Provides a variety of approaches to the study of religion centered on examining the relationship between religion and modernity in the tradition of post-enlightenment, Euro-American scholarship. Examines theories of religion across disciplines: history, anthropology, sociology, Marxism, feminism, postmodernism,

political theology, and Freudian psycho-analytical theory. Offered: jointly with CHID 380.

RELIG 399 Study Abroad - Comparative Religion (1-5, max. 15) I&S

For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

RELIG 408 Emerging Christian Religion (5) I&S

Focus on the formative period of what would become the 'Christian religion', 100-300 CE. Exploration of diversity in doctrines and practices including those viewed as 'orthodox' and those viewed as 'heretical'

RELIG 409 The Age of St. Augustine (5) I&S

Christian church in the fourth and fifth centuries as a major institution in the Roman Empire. Great figures of patristic theology, such as Athanasius, Gregory Nazianzus, Gregory of Nyssa, and Augustine.

RELIG 412 Creation Myths and Early Christianity (5)

I&S Study of alternative views, from early centuries of the Christian religion, regarding the origin of the cosmos and its implications for human behavior and ultimate values. Examination of documents often classified as 'gnostic' and their significance for the development of Christianity.

RELIG 413 Modern Christian Theology (5) I&S

Modern Protestant and Catholic thought since the nineteenth century: Kierkegaard, Barth, Bultmann, Rahner, Lonergan, and other major figures.

RELIG 430 Muslim Scripture, Historiography, and

Exegesis (3) VLP/I&S Examines the origins and development of early and classical Muslim thought. Provides an in-depth survey of the three key genres of early and classical Muslim writing: scripture (Quran), historiography (Maghazi, Sira, and Tabaqat), and exegesis (Tafsir and Ta'wil). Offered: jointly with NEAR E 430.

RELIG 440 Angels: From the Bible to American

Spirituality (5) I&S *M. Ahuvia* Surveys conceptions of angels in foundational texts from the Bible through the Quran and explores the significance of angels in contemporary American spirituality. Though often neglected in the study of religion, angels are integral to the faith and practice of Jews, Christians, and Muslims, transcending religious boundaries in their popularity.

RELIG 445 Greek and Roman Religion (5)

VLPA/I&S *Hollmann, Levaniouk* Religion in the social life of the Greeks and Romans, with emphasis placed on their public rituals and festivals. Attention is given to the priesthoods, personal piety, rituals of purification and healing, and the conflict of religions in the early Roman Empire. Many lectures illustrated by slides. Offered: jointly with CLAS 445.

RELIG 452 Art, Religion, and Politics in the Early Christian Period, 300-700 AD (3) VLPA/I&S *Kartsonis*

Evolution of the art of the early Christian period (300-700 AD) in the context of contemporary religious, political, and cultural developments. Offered: jointly with ART H 452.

RELIG 454 Seminar: Topics and Issues in Buddhism (5) *K. TOKUNO* Topics vary.

RELIG 455 Seminar on East Asian Religions (5) I&S *K. Tokuno* Examines dynamic new religious movements in PRC, Taiwan, Korea, and Japan that combine or adapt ancient Asian faiths (such as Buddhism, Confucianism, Daoism, and Shinto) .

RELIG 456 Perceptions of the Feminine Divine in Hinduism (5) VLPA, DIV *Pauwels* Explores implications of the perception of a feminine divine for gender issues in South Asia. Includes historical overview of goddess worship in South Asia, mythologies, philosophical systems, cults, and rituals associated with the major goddesses, the phenomena of suttee, goddess possession, and women's goddess rituals at the village level.

RELIG 459 Topics in the Buddhism of Tibet (3) I&S Topics in the development of Buddhism of Tibet. Includes the relationship between reasoning and religious thought; the concept of a person; the formation of the different schools of Tibetan Buddhism; the notion of lineage; the master-disciple relationship in the tantric tradition.

RELIG 472 Seminar: Topics in Early Christianity (5) I&S *Williams* Topics vary.

RELIG 490 Special Topics in Comparative Religion (1-5, max. 15) I&S Topics vary with each offering.

RELIG 491 Seminar: Topics and Issues in Judaism (5) I&S Topics vary.

RELIG 493 Honors Thesis (5) I&S Required course for Comparative Religion honors students.

RELIG 497 Field Archaeology (1-10, max. 20)

Professionally-guided archaeological fieldwork at a recognized archeological dig in the United States or abroad. Offered: S.

RELIG 501 Religion Theorized: Approaches to the Study of Religion (5) Covers the major approaches to modern scholarship in the study of religion, which includes multiple approaches from history, phenomenology, anthropology, sociology, psychology, gender and sexuality studies, Marxism, and political theory. Class discusses which theories are most helpful in describing, understanding and explaining religion, enabling students to prepare their own research. Prerequisite: admission to the comparative religion MAIS program or permission of instructor. Offered: A.

RELIG 502 Religion in Comparative Perspective (5, max. 15) Analysis of selected theme or symbols in relation to several different religious traditions. Topics vary. Prerequisite: admission to the comparative religion MAIS program or permission of instructor. Offered: W.

RELIG 504 Religion and Culture (5) Study of the relations between religion and culture, with attention to the role of religion in defining conceptions of order and grounding socio-political and artistic traditions.

RELIG 520 Seminar On Early Christianity (5) *Williams* Problems in the history and literature of early Christianity.

RELIG 528 Christian Theology (5) Study of exemplary figures in the history of Christian religious thought. Prerequisite: JSIS B 413.

RELIG 534 Gender, Sex, and Religion (5) *M. AHUVIA* Delves more deeply into foundational texts of the Bible, Judaism, and Christianity, while paying closer attention to historiographic trends in the field of gender and feminist studies of religion. With JSIS C 334/GWSS 334. Offered: jointly with GWSS 534; Sp.

RELIG 554 Seminar: Topics and Issues in Buddhism (5, max. 10) *K. TOKUNO* Topics vary.

RELIG 555 Seminar on East Asian Religions (5) K.

Tokuno Examines dynamic new religious movements in PRC, Taiwan, Korea, and Japan that combine or adapt ancient Asian faiths (such as Buddhism, Confucianism, Daoism, and Shinto) .

RELIG 580 Seminar in Hinduism Studies (5) Pauwels

Introduction to the academic study of Hinduism for graduate students. Examines major problems currently addressed in the academic study of Hinduism and the methods used. Provides a historical perspective on past scholarship. Offered: jointly with ASIAN 580.

RELIG 590 Special Topics (2-5, max. 15) Offered occasionally by visitors or resident faculty. Course content varies.

RELIG 598 Colloquium in Comparative Religion (1, max. 6) Required colloquium for graduate students in comparative religion program. Introduction to faculty research and to major methods and disciplines in the study of religion. Credit/no-credit only.

CORE AND GATEWAY COURSES

JSIS 100 The Indigenous Pacific Northwest (5) I&S, DIV *Dian Million, Charlotte Cote* Introduction to the cultures and governing structures of indigenous peoples of American Indian and First Nations tribal communities in the North, coastal British Columbia, and Pacific Northwest region as self-determining political actors in a contemporary multicultural and global region. Offered: jointly with AIS 103; W.

JSIS 123 Introduction to Globalization (5) I&S, DIV Provides an introduction to the debates over globalization. Focuses on the growth and intensification of global ties. Addresses the resulting inequalities and tensions, as well as the new opportunities for cultural and political exchange. Topics include the impacts on government, finance, labor, culture, the environment, health, and activism. Offered: jointly with GEOG 123.

JSIS 187 Study Abroad: Global (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 188 Study Abroad: Canadian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 189 Study Abroad: African Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 190 Study Abroad: Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 191 Study Abroad: East Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 192 Study Abroad: South Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 193 Study Abroad: Southeast Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 194 Study Abroad: European Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 196 Study Abroad: Latin American and Caribbean Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 197 Study Abroad: Middle Eastern Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 200 States and Capitalism: The Origins of the Modern Global System (5) I&S *Kasaba, Migdal, Yang*

Origins of the modern world system in the sixteenth century and its history until World War I. Interacting forces of politics and economics around the globe, with particular attention to key periods of expansion and crisis. Offered: A.

JSIS 201 The Making of the 21st Century (5)

I&S *Bachman, Callahan, Migdal, Radnitz* Provides a historical understanding of the twentieth century and major global issues today. Focuses on interdisciplinary social science theories, methods, and information relating to global processes and on developing analytical and writing skills to engage complex questions of causation and effects of global events and forces. Offered: WSp.

JSIS 202 Cultural Interactions in an Interdependent World (5) I&S

Introduces a critical approach to governance, violence, and development. Students will learn key concepts of cultural theory to understand how the world is socially constructed. Learning how to use interpretive methods, students will acquire new understandings of the varied approaches through which social scientists confront global challenges. Offered: Sp.

JSIS 203 Rise of Asia (5) I&S *Anchordoguy, Bachman,*

Giebel, Sorensen Key themes in the study of Asia, with focus on the present. Topics include: the notion of "Asia;" cultural and religious similarities and differences; comparison of colonial experiences under Western and Asian powers; World War II and liberation; postwar patterns of economic and political development; social patterns and issues. Offered: A.

JSIS 222 Global Markets, Local Economies (5) I&S *J.*

BEGUN Introduces basic economic concepts and tools to analyze the growing economic impact of economic globalization on local economies around the world, in areas such as local and foreign investment, supply chains, international trade, financial markets, and economic growth.

JSIS 278 Global Connections: From Global

Challenges to Creative Solutions (5) I&S Focuses on the identification and understanding of current global challenges from a variety of analytical perspectives. Students from the U.S and from abroad explore creative ways to address these challenges and to effect positive change based on international collaboration.

JSIS 300 Claims and Evidence in International

Studies Research (5) I&S Covers the methodology of international and global studies social science research. Introduces different methods of research including quantitative, qualitative, historical, and ethnographic. Offered: AWSp.

JSIS 310 Data Ethnography and Qualitative

Methods (5) I&S Adapts ethnographic approaches to address problems of replicability, transparency, equity, bias, and ethics in work involving the generation, analysis, and use of big data. Students build skills to interrogate the social context of big data through qualitative methods and techniques, such as participant observation, focus groups, interviewing, case studies, discourse analysis, document analysis, process tracing, and fieldwork.

JSIS 384 Special Topics in East Asian Studies (5) I&S

JSIS 385 Junior Honors Seminar (5) I&S *Porter*

Designed to facilitate writing of honors thesis through methodological and bibliographical research. Required of honors candidates.

JSIS 387 Study Abroad - International Studies (1-5,

max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 388 Study Abroad: Canadian Studies (1-5, max.

15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 389 Study Abroad: African Studies (1-5, max.

15) I&S For participants in study abroad program. Specific content varies. Courses do not automatically apply to major/minor requirements.

JSIS 390 Study Abroad: Asian Studies (1-5, max. 15)

I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 391 Study Abroad: East Asian Studies (1-5, max.

15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 392 Study Abroad: South Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 393 Study Abroad: Southeast Asian Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 394 Study Abroad: European Studies (1-5, max. 15) I&S For participants in Study Abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 396 Study Abroad: Latin American Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 397 Study Abroad: Middle Eastern Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JSIS 478 Special Topics in International and Global Studies (1-5, max. 15) I&S Content varies from quarter to quarter.

JSIS 480 Special Topics in Latin American Studies (1-5, max. 15) I&S Content varies.

JSIS 481 Special Topics in African Studies (1-5, max. 15) I&S

JSIS 482 Special Topics in Canadian Studies (1-5, max. 15) I&S Content varies.

JSIS 483 Special Topics in Asian Studies (1-5, max. 15) I&S Content varies.

JSIS 484 Special Topics in East Asian Studies (1-5, max. 15) I&S Course content varies.

JSIS 485 Special Topics in South Asian Studies (1-5, max. 15) I&S Topics vary.

JSIS 486 Special Topics in Southeast Asian Studies (1-5, max. 15) I&S Content varies.

JSIS 487 Special Topics in Middle Eastern Studies (1-5, max. 15) I&S Content varies.

JSIS 488 Special Topics in European Studies (1-5, max. 15) I&S

JSIS 489 Special Topics in Russia, Eastern Europe, and Central Asian Studies (1-5, max. 15) I&S Topics vary.

JSIS 491 Senior Honors Seminar (5-) I&S *Porter* Study of issues related to students' thesis topics. Develops thesis-writing skills. Open only to Jackson School honors students.

JSIS 492 Senior Honors Seminar (-5) I&S Students write a senior thesis working with their individual writing advisers.

JSIS 493 Senior Research (2) Independent research and writing under supervision of a faculty member. Open only to International Studies majors.

JSIS 494 Journal Workshop for Editors (1/2) Prepares students to be peer reviewers and editors for academic journals. Introduces the format and management processes of scholarly, peer-reviewed publications, as well as training in practical editing skills. Includes opportunities to work for the Jackson School Journal of International Studies. Credit/no-credit only. Offered: W.

JSIS 495 Task Force (5) I&S Small-group seminars address current problems in international affairs, each focusing on one specific policy question and producing a joint task force report. Restricted to senior majors in International Studies. Prerequisite: JSIS 200; JSIS 201; JSIS 202.

JSIS 497 Internship (1-5, max. 15) Credit for the completion of an approved internship in international studies. Credit/no-credit only.

JSIS 498 Readings in International Studies (5) I&S Reading and discussion of selected works of major importance in interdisciplinary international studies. Restricted to majors in International Studies.

JSIS 499 Undergraduate Research (1-5, max. 15)

JSIS 500 Origins of the Modern World (5) *Kasaba, Migdal* Explores the development of global interdependence from the fifteenth century to World War II; the interrelationship of politics and economics; and international political economy from contextual, institutional, and historical perspectives. Offered: A.

JSIS 501 Seminar: Comparative International Studies (5) Focuses on comparison across geographical areas including comparative political economy, comparative cultures, and comparative institutions. Provides familiarity with the comparative method of inquiry, an understanding of the interplay between area studies and cross-regional theories, and skills in conducting comparative research and writing. Prerequisite: ECON 200; ECON 201. Instructors: Bachman, Kasaba, Poznanski Offered: W.

JSIS 511 Research Design and Methods for International Studies (5) *Chiro, Curran* Review of the approaches to posing and answering research questions in the disciplines affiliated with international studies. Explores epistemological approaches and associated methodologies to prepare students to effectively read across the literature of international studies, develop their own research design based on a research question, and write a research proposal. Offered: Sp.

JSIS 512 Qualitative Data Analysis (5) Provides training in data analysis for students who have selected qualitative methodological approaches for their research. Students develop skills for systematic analyses, including memo writing, coding, logging evidence, sampling, case development, vignette composition, thematic analyses, and writing of methods sections and research results.

JSIS 513 Teaching International Studies (2, max. 4) *Migdal* For current and prospective teaching assistants. Includes teaching writing, leading effective discussions, the art of evaluation, and teaching critical reading skills; videotaping of actual teaching sessions of participants in class. Credit/no-credit only.

JSIS 530 Foundations of the World Order (5) Covers the economic, political, military, social, and cultural

forces that have shaped the foundations of the contemporary world order. Selective examination of major historical events and contemporary issues explains the role of both state and non-state actors in determining the trajectory of the international system.

JSIS 531 Asia in the Contemporary World (5) *T. Mallory* Examines regional dynamics within Asia as well as Asia's role in the global context. It looks at the evolution of longstanding issues on the Asian agenda, including the Taiwan question, the division of the Korean peninsula, the military role of Japan, the Kashmir dispute, and regionalism and regionalization.

JSIS 532 Global Challenges (5) Frames the world through a multi-disciplinary lens, exposing students to the growing community of stakeholders within the modern international affairs arena. Examines how government, business, philanthropy, and civil society engage, individually and collectively, in tackling critical global challenges.

JSIS 533 Frameworks for Health Development (5) Examines the history and economic and development determinants and impacts of global health problems. Health problems and unequal access to affordable health services contribute to global poverty and inequality. Explores the important relationships between global trade, access to essential medicines, nutrition, the environment, and health.

JSIS 534 Legal Foundations of World Order (5) Examines the legal foundations for the use of military force in a time of dynamic change in international relations, to include just-war theory and international humanitarian law. Topics include humanitarian intervention, the UN "responsibility to protect", terrorism, suicide bombers, "unprivileged belligerents", targeted killing, and robotic warfare.

JSIS 535 Technology, Society, and the Future (5) Provides understanding of how technology is changing society. Enables students to articulate the risks and opportunities associated with rapid technological change. Students formulate and evaluate the motivations, agendas, and stakeholders shaping technological change, including corporations, civil liberties groups, advocacy groups, NGOs, donors, and government leaders.

JSIS 536 Global Economic Trends (5) Examines the global economic system, including trade trends and movement of international financial markets, with emphasis on Asia and Europe through survey of transformative processes associated with the development of global capitalism; presents challenges to world order and economic development.

JSIS 537 Trends in International Migration (5) Explores the causes, mechanisms, and consequences of contemporary global population movements, with a focus on migration to the United States and Europe from the top sending world regions. Topics include the relationship of persecution, conflict, and poor economic prospects to migration; the extent to which state policies can control migration.

JSIS 538 Governance, Transparency, and Anti-Corruption (5) Examines the structural components of responsible governance in public and private arenas and the causes of implications of corruption on institutions and society. Covers legal frameworks governing corrupt practices, private sector ethics and anti-corruption measures, corruption in development aid, and international transparency initiatives. Offered: W.

JSIS 539 U.S. Foreign Policy and Diplomatic Engagement (5) Explores how the U.S. Executive Branch develops and implements foreign and security policy. Examines the actual conduct of foreign affairs, from defining national interest to day-to-day foreign engagement, based on case studies on how the U.S. advances its policy agenda using military, diplomatic and other means. Students refine analytical and presentation skills with short briefings on current topics and concise policy memos.

JSIS 540 Economics and Politics of International Development (5) *J. BEGUN* Examines the political economy of development in less-developed nations in particular, post-World War II development in Africa and East Asia. Covers basic economic theory and surveys the roles and tools of domestic and foreign governments, international organizations, aid agencies, and businesses in affecting development outcomes.

JSIS 541 Religion and Conflict in International Politics (5) *J. WELLMAN* Covers global issues of

religion, politics and international conflicts as they relate to question of fundamentalism, nationalism and terror. Investigates fundamentalism as a response to globalization and modernization. Reviews connections between religious violence and international relations, human security and global security.

JSIS 542 Dimensions of Security (5) Examines the evolution of global security agendas in response to security challenges that are increasingly non-military and longer term in nature. Through a Middle East lens, students examine traditional security issues, and the emergence of non-conventional challenges and threats, such as environmental degradation and resource scarcity.

JSIS 544 Applied Research Client Project - Part I (5) MAAIS capstone experience. Students work in teams to tackle an international affairs challenge presented by an external client. Students arrange a client briefing, define the scope of the challenge, analyze the underlying issues, and begin to flesh out actionable policy and programmatic recommendations. Credit/no-credit only.

JSIS 545 Applied Research Client Project - Part II (4) MAAIS capstone experience. Students work in teams to tackle an international affairs challenge presented by an external client. Students finalize their written client report and present their findings and recommendations in a formal client briefing.

JSIS 546 Modernity after Empire: View from the Global South (5) *S. Kale, J. Lucero* Interrogates the making of the modern world from the perspective of the global South. Thinking about global post-imperialism political and economic and economic projects in Africa, Latin America, Asia, and the Middle East, provides a critical introduction to debates over nation, development, and globalization.

JSIS 547 Changing Nature of States and Societies (5) Explores global stability and instability, focusing in on four principal domains of transformation in contemporary nation states: poverty, religion, migration, and energy.

JSIS 548 Geopolitical Issues and Challenges (5) Examines interconnected challenges affecting global geopolitics, using South Asia as a frame of reference

and drawing linkages to the boarder global context. Issues covered include international security decision-making, civil-military relations, state-federal relations, and regional-global dynamics.

JSIS 549 Crisis Negotiation (4) Guides students in applying their knowledge to realistic analyses of current problems in international studies through an intensive simulation experience that emphasizes leadership, negotiation, and real-time crisis management and decision-making.

JSIS 578 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visiting or resident faculty.

JSIS 582 Special Topics (2-5, max. 10) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 583 Special Topics (1-5, max. 15) Special topics in Asian Studies. Course content varies by instructor.

JSIS 584 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visiting or resident faculty.

JSIS 585 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 586 Special Topics (1-5, max. 15) *Sears* Course content varies.

JSIS 587 Special Topics (3-5, max. 15) Course content varies.

JSIS 589 Special Topics (2-5, max. 15) Course content varies. Offered occasionally by visitors or resident faculty.

JSIS 591 Colloquium in International Studies (1-, max. 2) *Migdal, Kasaba* Required colloquium for first-year Master in International Studies (MAIS) students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 592 Colloquium in International Studies (-1-, max. 2) *Migdal, Kasaba* Required colloquium for first-year Master in International Studies (MAIS)

students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 593 Colloquium in International Studies (-1-, max. 2) *Migdal, Kasaba* Required colloquium for first-year Master in International Studies (MAIS) students. Informal introduction to the faculty and major avenues of research in international studies. Credit/no-credit only.

JSIS 594 International and Area Studies (2) *Hamilton, Kasaba, S. Pekkanen* Exposes students to the four-fold thematic intellectual rubric of the school, and to the wide range of teaching and research agendas represented in the Jackson School. Required common course for all first-year graduate and doctoral students. Credit/no-credit only. Offered: A.

JSIS 595 Research Tutorial ([1-15]-, max. 15) Introduces students to social science research methods that may be applicable to their research agenda. Focuses on reading, discussion, commentary, writing, and especially rewriting under close and targeted supervision by the professor. Offered: jointly with LAW B 554.

JSIS 596 Field Seminar in Religions, Cultures, and Civilizations (5) *Robinson, Wellman* Exposes students to the diversity of cultural and religious life through world area studies; histories; cultural and political movements; and religious institutions and practices. Topics include religions, cultures, power, colonialism, empire, communities, nations, states, identities, alterities, civilizations, social movements, resistance, development, and security.

JSIS 597 Field Seminar in States, Markets, and Societies (5) Exposes students to theoretical and empirical debates about engagement of states with their societies and with transnational actors in their historical, political, and social settings. Topics include state formation, social change, development, state-market relations, globalization, identities, ethnicities, gender, revolutions, democratization, corruption, clientalism, civil societies, NGOs, and social movements. Offered: jointly with SOC 597.

JSIS 598 Field Seminar in Peace, Violence, and Security (5) *Chirof, S. Pekkanen* Exposes students to theoretical and foreign policy debates about global

security challenges, conflicts, and violence, and issues of their prevention. Topics include balance of power, nationalism, ethnic conflict, genocide, offense-defense balance, weaponry, intelligence, invasions, interventions, peacekeeping, arms control, and national security.

JSIS 599 Field Seminar in Law, Rights, and Governance (3-5) *Saadia M. Pekkanen, Angelina Snodgrass Godoy, Kathie Friedman* Exposes students to theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of world governance concerns. Topics include human rights, markets, commerce, climate, environment, migration, institutions, justice, order, and rule of law. Offered: jointly with LAW B 568.

JSIS 600 Independent Study or Research (*-)

JSIS 602 International Studies Practicum (2-3, max. 6) Professional practicum for student in International Studies graduate programs. Credit/no-credit only.

JSIS 700 Master's Thesis (*)

JSIS 800 Doctoral Dissertation (*)

AREA STUDIES

JSIS A 110 Introduction to Russian Culture and Civilization (5) VLPA/I&S Introduction to Russian culture and history from pre-Christian times to the present, as seen through literary texts, music, film, visual art, and historical works. All lectures and written materials in English. No prior knowledge of Russian necessary. Offered: jointly with RUSS 110; A.

JSIS A 121 Introduction to Human Rights in Latin America (5) I&S, DIV *Godoy* Overview of human rights issues and how they have evolved in recent Latin American history, from the military dictatorships of the authoritarian period to contemporary challenges faced in the region's democracies.

JSIS A 130 Introduction to Slavic Culture and Civilization (5) VLPA Examines the culture of the Slavs, an ethno-linguistic group of peoples living primarily in Central/Eastern Europe. Among nations investigated: the Czech Republic, Russia, Poland, and Ukraine. Students gain a fundamental grasp of major

issues and historical events of this region, expressed through culture. Offered: jointly with SLAVIC 130.

JSIS A 154 Estonian Literary and Cultural History (5) VLPA *G. Smidchens* Surveys Estonian literary and cultural history from the prehistoric period to the present. Authors, musicians, artists, and filmmakers include Kaplinski, Koidula, Kreutzwald, Vilde, Part, Tormis, Meri, Parn, Pollu, and others. Offered: jointly with SCAND 154; AWSpS.

JSIS A 202 Introduction to South Asian History, 1500 - present (5) I&S The Islamic impact, British conquest, and contemporary India. Emphasis on the rise of nationalism, social organization, and contemporary life and history. Offered: jointly with HSTAS 202.

JSIS A 205 Filipino Histories (5) I&S, DIV *Vicente L. Rafael* Introduction to histories, cultures and politics of Filipinos and the Philippines. Examines pre-colonial societies, Spanish colonial rule, nationalism and Revolution, Filipino-American war, U.S colonial rule, Japanese occupation, postcolonial period to Martial Law, continuing rebellions, and the Filipino diaspora. Offered: jointly with HSTCMP 205.

JSIS A 206 Contemporary India and Pakistan (5) I&S *Dhavan, Kale* Interdisciplinary introduction to the field of South Asian Studies. Overview of the topographic, social, and linguistic geography and history of India, Pakistan, Bangladesh, Sri Lanka, and Nepal. Examines politics, economy, social structure, religion, cultural production and the arts, popular culture, and transnationalism.

JSIS A 207 Asian Civilizations: Traditions (5) VLPA/I&S *Porter* Interdisciplinary introduction to the civilizations of Asia, particularly those of India, China, Japan, and Korea. Explores the religion, philosophy, literature, art, and social and political thought of these civilizations from ancient times to the 17th century.

JSIS A 210 Introduction to Islamic Civilization (5) VLPA/I&S Covers major developments in the formative, classical, and modern periods of Islamic civilization from seventh century Arabia to the contemporary Muslim world. Looks at the development of Islamic religious thought and legal practice as well as the Muslim polities, cultures, and intellectual traditions of Asia, Africa, Europe, and

America. May not be taken for credit if credit earned in NEAR E 210. Offered: jointly with NEAR E 229.

JSIS A 211 Fashion Systems: Europe-Asia (5) VLPA/I&S *R. Silberstein* Introduces the historical development of fashion systems in early modern and modern Europe and Asia. Explores topics including: Fashioning the Body; Gender and Fashion; Fashion as Conspicuous Consumption; Fashion as Urban Spectacle; the Politics of Fashion. Offered: jointly with ART H 211.

JSIS A 212 History of Korean Civilization (5) I&S From earliest times to the present. Development of Korean society and culture in terms of government organization, social and economic change, literature, and art. Offered: jointly with HSTAS 212.

JSIS A 213 The Korean Peninsula and World Politics (5) I&S *Ha* Introduces Korean politics, economics, society, and international relations. Overviews the development in politics, economy, and society since the late nineteenth century. Addresses the evolution of Korea in the international society by comparing Korea experience with that of China and Japan. Offered: jointly with POL S 213.

JSIS A 215 Introduction to the Modern Middle East (5) I&S Major social and political trends in the Middle East during the 18th, 19th, and 20th centuries. Basic principles of Islam and its diversity, changing balance of power during the early modern period; European colonialism and withdrawal; pan-Arabism, nationalism, feminism and religious resurgence. Offered: jointly with NEAR E 232.

JSIS A 220 Introduction to East European Studies (5) I&S *Felak* Introduction to the history of post-1945 Eastern Europe focusing on political, economic, social, cultural, and diplomatic issues. Countries surveyed include Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Offered: jointly with HSTEU 220.

JSIS A 221 History of Southeast Asia (5) I&S, DIV Surveys Southeast Asian civilizations at the outset of Western colonial rule; the colonial impact on the traditional societies of Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, Indonesia, and the Philippines; nineteenth- and twentieth-century nationalist and revolutionary movements;

emergence of Southeast Asia as a region in the modern world. Offered: jointly with HSTAS 221.

JSIS A 224 Culture and Media Forms (5) VLPA/I&S Explores French, Francophone, and European culture in history through a focus on varied and evolving media forms: manuscripts, printed books, digital media, visual forms, etc. Taught in English. Offered: jointly with FRENCH 224.

JSIS A 235 History of Modern Taiwan (5) I&S Social, cultural, political, and economic history of modern Taiwan from approximately 1600 to the present. Places Taiwan within global historical changes and explores Taiwan-centric issues in depth. Covers migration, colonialism, race and identity, urban and rural development, the Cold War, capitalism and industrialization, science, religion, labor, and gender. Offered: jointly with HSTAS 235.

JSIS A 236 Development and Challenge in Greater China (5) I&S Studies the geography of development processes, patterns, and problems in "Greater China": mainland China, Taiwan, and Hong Kong. Covers physical geography, history, and economic and political systems, with major focus on geographical issues in China's development: agriculture, population, industry and trade, and relations with Hong Kong and Taiwan. Offered: jointly with GEOG 236.

JSIS A 239 Greece: From Ancient to Modern (5) VLPA/I&S *A. HOLLMANN, N. KLAPAKI* How are Ancient and Modern Greece connected to each other? Learn about great moments in Ancient Greek culture (tyranny and democracy, tragedy and comedy, athletics and art) and the complex ways Modern Greece has drawn on this heritage by exploring ancient and modern texts and images. Offered: jointly with CLAS 239.

JSIS A 240 Greece Today: The Mediterranean, Europe, and the World (5) I&S *N. KLAPAKI* Introduction to current political, social, economic and cultural issues in Greece, including Greece's relations with the European Union and its Mediterranean neighbors.

JSIS A 241 Japanese Civilization (5) I&S Japan's civilization, including its origins, government, literature, economic institutions, material culture, social organization, and religions, in relation to the

development of Japan as a society and nation. Cannot be taken for credit if SISEA 341 previously taken. Offered: jointly with HSTAS 241.

JSIS A 242 Introduction to Contemporary Japan (5) I&S *R. Pekkanen* Interdisciplinary social science introduction to various aspects of contemporary Japan, such as its politics, economics, and society. Designed to be taken either as a first course on Japan for majors or as a single-course introduction to Japan., suitable for non-majors. No prior background on Japan is necessary.

JSIS A 244 Imperialism and Anti-Colonialism in Asia (5) I&S, DIV Introduction to Western imperialism expansion, conquest, and colonial rule in Asia; the anti-colonial, nationalist resistances they engendered; and the resultant cultural, political, economic, and intellectual transformations in Asian societies. Covers post-1800 violence, racial hierarchies, human rights abuses, post-colonial memories, persistent strategies of domination, and structural inequities. Offered: jointly with HSTAS 244.

JSIS A 245 Human Rights in Asia (5) I&S, DIV *Callahan, Giebel* Introduction to recent and ongoing human rights issues in South, Southeast, and East Asia. Focuses on how human rights politics have played out in domestic political arenas. Provides exposure to views/insights into the historical context in which human rights claims, abuses, and debates arise. Offered: jointly with HSTAS 245.

JSIS A 251 Events That Shook Modern Europe: From the French Revolution to the EU (5) I&S *J. Felak* Examines major events that shaped Europe, from French Revolution in 1789 to the foundation of the European Union in 1993. Wars, revolutions, social transformations, toxic ideologies, and liberation movements as milestones in the course of developments in Europe over the past two centuries. Lectures and analysis of documents from these time periods. Offered: jointly with HSTEU 251; Sp.

JSIS A 252 The Bloodlands: East Central Europe under Hitler and Stalin (5) I&S *J. Felak* From 1933-1945, 14 million people were killed, in cold blood, by Nazi Germany and Soviet Union regimes between central Poland and western Russia, including those starved in the Soviet Ukraine famine, victims of

Stalin's Great Terror and Hitler's Holocaust, Soviet citizens starved by Nazis during World War II & Poles murdered under joint Nazi-Soviet occupation. Course investigates these fateful events through study of history, literature & film. Offered: jointly with HSTEU 252.

JSIS A 254 Modern China: Three Revolutions (5) I&S *Y. Dong* Surveys Chinese history from the late nineteenth century to the end of the twentieth century. Examines how "modern China" took shape by focusing on the transformations and changes in the political system, economic structure, social organization, and intellectual trends. In particular, examines the three revolutions of modern China -- the Republican, Nationalist, and Communist revolutions. Offered: jointly with HSTAS 254.

JSIS A 260 Fashion, Nation, and Culture (5) VLPA/I&S *Gaylard* Introduction to Italian culture focusing on fashion and manners from the late Middle Ages to today. Explores common assumptions about nation, gender, clothes, make-up, and manners, through literary and visual analysis. In English. Offered: jointly with ART H 260/ITAL 260; W.

JSIS A 261 Turkic Peoples of Central Asia (3) I&S History of the Turkic peoples, AD 552 to present. Emphasis on current status of Turkic peoples in Central Asia. Geographical distribution, demographic data, reactions and adaptations to changes resulting from the 1917 revolution. Turkic viewpoint on past and present developments. Offered: jointly with NEAR E 261.

JSIS A 265 The Viet Nam Wars (5) I&S *Giebel* Recent Vietnamese history and struggles for independence and national unification vis-a-vis French colonialism, Japanese occupation, American intervention, and internal divisions. Covers historical roots and contemporary contexts of revolution and war, objectives and motivations of participants, and the enormous human costs. Emphasizes socio-cultural changes and wars' legacies. Offered: jointly with HSTAS 265.

JSIS A 268 Introduction to the Silk Road (5) I&S Introduces students to the Silk Road as a site of cultural exchange between peoples, and of political, economic, and intellectual exchange between regions and continents. Themes include ecology,

empire, ethnicity, language, religion, and the arts. Considers the Silk Road as a forerunner and symbol of modern globalization. Offered: jointly with NEAR E 268.

JSIS A 270 Native Peoples of the Northwest Coast (5) I&S, DIV *Dian Million, Charlotte Cote* Examines indigenous societies on the Pacific Northwest's western slope, from southeast Alaska to California, including social structures and relations, subsistence strategies, belief systems, and changes over time, both before and after non-Natives' arrival. Offered: jointly with AIS 270.

JSIS A 280 Indigenous Encounters: Politics, Culture, and Representation in Latin America (5) I&S, DIV *Garcia* Explores the contemporary cultural and political transformations advanced by indigenous groups and their advocates in Latin America. Examines the concept of indigeneity, the cultural politics of indigenous mobilization, and the effects of international development policies on indigenous communities. Offered: jointly with CHID 280.

JSIS A 301 Europe Today (5) I&S *Ingebritsen, Lang* A multi-disciplinary approach to contemporary Europe focusing on social, political, cultural, and economic change, with special reference to developments in the countries of the European Union, Scandinavia, and those in Eastern Europe in the post-Soviet era. Offered: A.

JSIS A 302 The Politics and Cultures of Europe (5) I&S Builds upon themes and topics introduced in JSIS A 301. Provides rigorous and specialized investigation of European political institutions, societies, and cultures in the modern era.

JSIS A 303 Divided Lands/Divided Lives: An Environmental History of South Asia (5) Focuses on the mobilization of South Asian tribal, peasant, and ethnic communities around ecological issues to secure social equity in the colonial and post-colonial period. Examines how the complex interactions of states and peoples have changed the ways in which nature itself is conceptualized. Offered: jointly with HSTAS 303.

JSIS A 304 Contemporary European Migration (5) I&S Provides a theoretical and empirical understanding of contemporary migration processes and patterns in Europe. Introduces the different

migration regimes and integration practices of selected European states. Analyzes the impact of globalization, the ever-changing role of the European Union, and the importance of international, national, and urban policy on immigrant lives. Offered: jointly with GEOG 303; W.

JSIS A 305 Changing Generations in Japan and East Asia (5) I&S Investigates the relation between economic changes and social changes by focusing on the conditions confronting young people in East Asia. Focuses on the issue of generational change regionally and globally through an anthropological lens, using ethnographic methods centering on Japan and other East Asian countries.

JSIS A 314 History of Modern Israel/Palestine (5) I&S, DIV Cultural, social, and political histories of Palestine, the Land of Israel, and the State of Israel; Zionist and Palestinian nationalist movements, in their larger regional, transnational, and global contexts. Offered: jointly with HSTAFM 314.

JSIS A 315 Southeast Asian Civilization: Buddhist and Vietnamese (5) I&S, DIV Civilizations of Theravada Buddhist societies in Burma, Thailand, Cambodia, and Laos and in Vietnamese societies of Southeast Asia. Culture of tribal peoples who live on peripheries of these societies. Cultural transformations consequent upon the war in Indochina and resettlement of Indochinese refugees in United States. Offered: jointly with ANTH 315.

JSIS A 316 Modern South Asia (5) I&S Twentieth-century history and society of Indian subcontinent. Topics include nationalism, rural and urban life, popular culture, gender, and environmental politics. Offered: jointly with ANTH 316.

JSIS A 317 History by Bollywood: Colonial India through Film (5) I&S, DIV *Anand A Yang* Through popular cinema, specifically Hindi-language films produced by Bombay-based film industry for mass market, explores colonial history of South Asia beginning with British takeover of Indian subcontinent in late eighteenth century to emergence of independence and partition in 1947. Focuses specifically on Bollywood films that have shaped popular (mis) understandings of key episodes and developments in history of modern India. Offered: jointly with HSTAS 317.

JSIS A 320 Greek History: 7000 BC to Present (5) I&S

History of Greece from its Neolithic village origins to the present. Examines the different forms of one of the most resilient cultures in the human story. Offered: jointly with HSTCMP 320.

JSIS A 321 Government and Politics of Canada (5)

I&S Critical analysis of parliamentary institutions, political parties, and the federal system in Canada. Offered: jointly with POL S 341.

JSIS A 322 International Political Economy of Latin America (5) I&S

V. MENALDO Exploration of politics underlying Latin America's economic development. Topics covered include import-substituting industrialization, mercantilism, the debt crisis, neoliberalism, market integration, and poverty. Review of major theoretical perspectives such as modernization theory, dependency, and the new political economy. Offered: jointly with POL S 322.

JSIS A 323 United States-Latin American Relations (5) I&S

Surveys the political, economic, and social dimensions and consequences of United States relations with Latin America during the twentieth century. Topics include empire, immigration, cultural production, covert operations, revolution and counter-insurgency, student movements, human rights, and the war on drugs.

JSIS A 324 Human Rights in Latin America (5) I&S,

DIV A. *Godoy* Overview of human rights issues and their recent evolution in Latin American history; military dictatorships; contemporary challenges in the region's democracies. Human rights concerns in relation to broader sociopolitical context. Offered: jointly with LSJ 322.

JSIS A 325 Modern Mexico: Culture, Politics and Society (5) I&S

V. Freije Provides an historical survey of Mexican politics, culture, and society. Explores debates about the role of violence and foreign intervention in Mexico's political development. Topics include revolution, U.S.-Mexico relations, race and gender politics, student movements, cultural production, neoliberalism, and the war on drugs. Offered: jointly with HSTLAC 325.

JSIS A 327 China and the West in Historical Perspective, 1500-1976 (5) I&S

M. MOSCA Examines relations between China and the West in historical perspective. Covers the period from 1500 to 1976,

including political interactions as well as intellectual, religious, and cultural contact. Investigates how and why these relations changed over time, and how this historical legacy is relevant today. Offered: jointly with HSTAS 327.

JSIS A 328 Gender and Sexuality in China (5) I&S, DIV Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform.

Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with ANTH 328/GWSS 328.

JSIS A 339 Social Movements in Contemporary India (5) I&S, DIV

P. RAMAMURTHY Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 339/GWSS 339.

JSIS A 340 Politics of India, Pakistan, and South Asia (5) I&S

Course promotes a deeper understanding of politics in South Asia. Topics include political regimes, civil conflict, religion and politics, and economic development. Students also sharpen skills in reading social science articles, including picking out arguments, evidence, and logics of presentation. Offered: jointly with POL S 340.

JSIS A 341 Political Violence and the Post-Colonial State in South Asia (5) I&S, DIV

Examines theoretical approaches to the analysis of collective, state, and anti-state violence in post-colonial South Asia through the study of specific cases of political violence in modern India, Pakistan, Sri Lanka, and Nepal. Offered: jointly with ANTH 341.

JSIS A 342 Government and Politics of Latin America (5) I&S

Analysis of the political dynamics of change in Latin America comparing various national approaches to the political problems of modernization, economic development, and social change. Offered: jointly with POL S 342.

JSIS A 343 Politics and Change in Southeast Asia (5)

I&S Government and politics in the countries of Southeast Asia, with attention given to the nature of the social and economic environments that condition them. Offered: jointly with POL S 343.

JSIS A 344 The Baltic States and Scandinavia (5) I&S

Survey of the cultures and history of Estonia, Latvia, and Lithuania from the Viking Age to the present, with particular attention to Baltic-Scandinavian contacts. Offered: jointly with SCAND 344.

JSIS A 345 Baltic Cultures (5) VLPA/I&S

Cultures and peoples of Estonia, Latvia, and Lithuania. Baltic literature, music, art, and film in social and historical context. Traditional contacts with Scandinavia and Central and East Europe. Offered: jointly with SCAND 345.

JSIS A 346 Alternative Routes to Modernity (5) I&S

Routes to modernity followed by non-Western societies between 1600 and 1900. Historical experiences of non-Western societies seen in the context of European history and of development theory. Emphasizes primary sources and techniques for posing theoretical questions of historical data. Offered: jointly with HSTAS 348.

JSIS A 348 European Union as Global Actor (5) I&S

Surveys the European Union's evolution as a global actor and emergence as a potential superpower with increasingly unified foreign and defense policies. Covers institutions and interests that have driven this process; specific examples of European Union global engagement; and the potential implications for U.S. foreign policy. Offered: jointly with POL S 348.

JSIS A 349 Migration and Multiculturalism in the

Mediterranean (5) I&S Examines multiculturalism and migration in the Mediterranean. Focuses on immigrant communities of Greek diaspora in multicultural cities of Smyrna in nineteenth century Ottoman Empire, and of Alexandria in twentieth century Egypt. Considers how immigration to contemporary Greece transformed an ethnically homogeneous, mono-cultural Greek society into an increasingly multicultural one.

JSIS A 350 United States - Europe Relations (5)

I&S D. Bessner Examines history of the United States-Europe relationship from the eighteenth

century to the present, focusing on political, economic, and cultural connections, as well as the foreign policies that have undergirded this relationship from its inception. Offered: Sp.

JSIS A 351 Scandinavia, the European Union, and

Global Climate Change (5) I&S Reviews the history of climate change, the role of Swedish scientist Svante Arrhenius in defining greenhouse effects, Scandinavian policy response, and the role of the European Union in global climate change. Offered: jointly with SCAND 351; WSp.

JSIS A 355 Social Change in Latin America (5) I&S

Explores cultures, identities, political economy, and popular mobilization in Latin America. Examines relations of power and production between social classes and ethnic groups, as well as ideologies and intellectual movements. Offered: jointly with SOC 355.

JSIS A 356 Canadian Society (5) I&S

Origins to the present in its North American setting; political development, cultural evolution, and emergence of multinationalism; economic base; arts and literature; problems of the environment; Canadian foreign relations.

JSIS A 357 Peoples and Cultures of Central and

Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 357/NEAR E 357.

JSIS A 360 Contemporary Spain (5) VLPA/I&S

Social, political, and cultural developments in Spain since the end of the Franco dictatorship in 1975. Extensive use of Spanish Web sites. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Raneda Offered: jointly with SPAN 360.

JSIS A 362 The Political Economy of Africa (5) I&S,

DIV Focuses on the political economy of governance, development, and conflict in sub-Saharan African countries since independence. Explores the political and economic choices made by Africa's colonial and

post-colonial regimes and connects them to current events in sub-Saharan Africa.

JSIS A 364 Modern Greece: 1821 to the Present (5)

I&S Politics and society of Greece from War of Independence to the present. Emergence and development of the Greek state; Greece in the world wars; civil war and post-war politics; military dictatorship; transition to democracy; recent developments. No prior study of Greece assumed. Offered: jointly with HSTEU 364.

JSIS A 365 Mapping Luso-Brazilian Cultures (5)

I&S/VLPA Explores cultures of Brazil, Portuguese-speaking Africa, Asia, and Europe within the framework of cultural studies theory. Follows an interdisciplinary approach, drawing from readings, audio files (radio), films and documentaries in history, literature, arts and performances, anthropology, among others. Focuses on selected cultural aspects and countries. Taught in ENGLISH. Offered: jointly with PORT 365; Sp.

JSIS A 367 Southeast Asian Activism and Social Engagement (5) I&S

Rafael Investigates how Southeast Asian activism is tied to the histories of political struggle within Southeast Asia and to questions of diasporic Asian American identity. Engages in group research projects exploring the meaning of social activism within local communities. Offered: jointly with HSTCMP 367.

JSIS A 370 Han Chinese Society and Culture (5) I&S

Themes in the society and culture of the Han Chinese people. Concepts of self; personal interaction; family, gender, and marriage; communities and the state; religion and ritual; class, social categories, and social mobility; culturalism, nationalism, and patriotism. Offered: jointly with ANTH 370.

JSIS A 375 History of Canada (5) I&S

General survey and analysis of political, economic, social, and cultural aspects of Canadian history from the foundation of New France to present; Canadian-American relations, the rise of Quebec nationalism, and the development of the Canadian West. Offered: jointly with HSTAA 377.

JSIS A 401 Asia and the World (5) I&S Overview of major issues and developments in the interactions of Northeast and Southeast Asia and the world. Topics

include economic development and integration, sources of instability, and historical patterns of relations. Particular focus on major current issues related to the region. Prerequisite: JSIS 201, JSIS 202. Instructors: Bachman

JSIS A 402 The Middle East in the Modern World (5)

I&S *Kasaba* Economic, political, and cultural ties between the Middle East and the modern world between the eighteenth century and the present. Particular attention to the transformation of societies, formation of modern states, the relationship between Islam and democracy, and gender and society in the Middle East.

JSIS A 403 Politics of Representation in Modern China (5) I&S, DIV A.

ANAGNOST Focuses on issues of representation and power in twentieth century China. Combines substantive information on modern Chinese society and culture with recent debates in social theory and the politics of representation. Major themes include Chinese nationalism, body politics, popular culture, and everyday practice. Offered: jointly with ANTH 444.

JSIS A 404 Religion in China (5) I&S

Tokuno Covers major doctrinal and practical themes and patterns and their historical developments in Confucianism, Daoism, Buddhism, and popular religion; their mutual interactions and influences as well as the relationship between the state and religion.

JSIS A 405 Social Transformation of Modern East Asia (5) I&S

Sorensen Comparative study of social change in China, Japan, Korea, and Vietnam since 1945. Concentration on small-scale social units in rural and urban areas under both communist and capitalist political systems. Offered: jointly with ANTH 449.

JSIS A 406 China's Environment (5) I&S

Analysis of contemporary environmental problems in China, including population, food, water supply, pollution, biodiversity, and environmental activism. Combines natural science and social science perspectives. Prerequisite: either ANTH 210, ENVIR 201, JSIS 200, JSIS 201, or JSIS 202. Offered: jointly with ANTH 406.

JSIS A 407 Global Futures in East Asia (5) I&S

Explores interlinked modernity projects in China, Japan, Korea, and Taiwan and how the education of youth figures in projects of national development

and international economic competition. Offered: jointly with ANTH 407; AWSpS.

JSIS A 408 Government and Politics of China (5) I&S. *WHITING* Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with POL S 442.

JSIS A 409 History of Twentieth-Century India (5) I&S. *Yang* Analysis of the problems in the fields of social life, international and domestic politics, education, economics, and other areas that confront India today. Offered: jointly with HSTAS 404; A.

JSIS A 412 South Asian Social Structure (5) I&S, DIV Examines caste, class, and community in modern India. Transitions from colonial typology to analysis of social change, diversity, stability, and caste hierarchy in rural society. Current debates on class and community in Indian society, rural and urban, explored through themes of identity, structure, and mobility. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 412.

JSIS A 413 African Studies Seminar (5, max. 15) I&S Interdisciplinary seminar focusing upon one particular aspect of the African continent. Emphasis may be humanistic, social scientific, or historical. African Studies faculty and visiting scholars lecture on areas of their own expertise.

JSIS A 415 National Security of Japan (5) I&S Changing landscape of Japan's national security concerns: actors, institutions, and circumstances that have brought issues of defense and rivalry to the center stage of Japanese politics. Topics include nationalism, militarization, pacifism, United States-Japan security alliance, Sino-Japanese competition, constitutional revision, collective defense, and spy satellites. Offered: jointly with POL S 423.

JSIS A 416 North Atlantic Treaty Organization (5) I&S Explores the history of NATO since 1949. Case studies include German unification; evolving security relationship between NATO, the USSR, and its successor states; process of NATO enlargement; emergence of human rights as a priority in NATO's security interactions with non-member states; and NATO's role in ethno-nationalist-religious conflicts in the Balkans.

JSIS A 417 Political Economy of India (5) I&S Analysis of relationships among processes of economic change, political institutions, and structures of political power in contemporary India. Includes contrasting approaches to Indian economic development, land reform, radical and agrarian political movements, and role of foreign aid. Offered: jointly with POL S 417.

JSIS A 418 Eastern Europe: the Political Economy of the Region (5) I&S *Poznanski* Focus on the classical command-type economy and the most recent economic and political transition in Eastern Europe. Analysis of current institutional reform, privatization, and trade relations.

JSIS A 419 Southeast Asian Knowledge and the Politics of Information (5) I&S *Henchy* Overview of information resources in and about Southeast Asia, including evaluation of those sources within various theoretical articulations (scholastic, cultural, and political) . Pedagogical implications of the life cycle of information; critique of these implications from various theoretical and cultural viewpoints.

JSIS A 420 Post-Soviet Security (5) I&S *Radnitz* Examines security issues in Eurasia, emphasizing human over international security. Focuses on problems stemming from the collapse of the Soviet Union, covering topics such as weak states, civil wars, nationalism, corruption, and authoritarianism. Includes Russia's relations with former Soviet republics and U.S.-Russian relations.

JSIS A 422 First Nations Filmmaking in Canada (5) VLPA *Cote* Examines First Nations video production in Canada; how film is utilized as a medium for addressing issues significant to First Nations. First Nations filmmakers "decolonize" the screen by providing real and positive images of First Nations people that correspond to their cultural and social experiences. Offered: jointly with AIS 465.

JSIS A 423 Origins of Modern Japan (5) I&S *Mark Metzler* Course surveys Japan's early modern age, from the end of the warring-states period in the late 1500s through the Meiji revolution and creation of a modern state in the late 1800s. Japan's history since the early 20th century is continued in a second class, JSIS A 424/HSTAS 424. Offered: jointly with HSTAS 423.

JSIS A 424 The Emergence of Postwar Japan (5)

I&S Pyle The making of modern Japan; World War II and surrender; American occupation; postoccupation rebuilding; emergence as an industrial power. Offered: jointly with HSTAS 424.

JSIS A 426 First Nations Government and Politics in Canada (5) I&S, DIV Cote

Focuses on First Nations government and politics in Canada. Examines development of First Nations political governing structures with an introduction to the values, perspectives, concepts, and principles in Native political cultures. Explores federal Indian policy in context of First Nations strategies to become self-governing. Offered: jointly with AIS 461.

JSIS A 427 Anthropology of the Post-Soviet States (5) I&S L. BILANIUK

Analysis of Soviet and post-Soviet culture and identity. Historical transformations in Soviet approaches to ethnicity and nationality; contemporary processes of nation building and interethnic conflict. Examination of culture through the intersection of social ritual, government policies, language, economic practices, and daily life. Regional focus varies. Offered: jointly with ANTH 425.

JSIS A 429 Eco-Capitalism (5) I&S Ingebriksen

Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with SCAND 479.

JSIS A 430 The Soviet Empire: Creation,

Consolidation, and Collapse (5) I&S Jones Surveys history of Soviet military and Soviet empire from 1917 to 1985, breakup of the USSR during 1985 to 1991, and the emergence of new security issues among those Eurasian states that formally constituted the national components of the USSR and its communist military allies.

JSIS A 431 Demographic Issues in Asia (3-5)

I&S Hirschman, Lavelly Contemporary Asian countries face a number of issues with demographic components, including environmental and resource issues, ethnic rivalries, international migration, and

public health. Addresses a set of these issues by focusing on the demography of one or more countries in Asia. Offered: jointly with SOC 434.

JSIS A 433 Paris: Architecture and Urbanism (3/5) VLPA/I&S

Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ARCH 458/ART H 494.

JSIS A 434 International Relations of South Asia (5)

I&S Interrelationships of domestic, interstate, and extraregional forces and their effects upon the resolution or expansion of interstate conflicts in South Asia. Offered: jointly with POL S 434.

JSIS A 435 Japanese Government and Politics (5)

I&S Government and politics of Japan with emphasis on the period since 1945. Offered: jointly with POL S 435.

JSIS A 436 Political Parties in Japan and East Asia (5)

I&S R. Pekkanen Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Offered: jointly with POL S 429.

JSIS A 437 International Relations of Japan (5) I&S S.

Pekkanen Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Offered: jointly with POL S 424.

JSIS A 438 Social and Political Geographies of South Asia (5) I&S

Introduces the social and political geographies of South Asia through reference to agrarian change in India. Outlines key concepts related to the reproduction of inequality in the region, particularly theories of caste, class, gender, and religious communalism, and examines the mechanisms through which these inequalities are reproduced in South Asia. Offered: jointly with GEOG 436.

JSIS A 439 Politics of Divided Korea (5) I&S

Governments, politics, and economy of South and North Korea, the inter-Korea relations, and the two Koreas' relationship with the major powers - especially the United States - with emphasis on the post-cold war period. Offered: jointly with POL S 439.

JSIS A 440 Japanese History in Ecological

Perspective (5) I&S *M. Metzler* Survey of Japanese history in ecological perspective, from early times to the present. Topics include ancient Japanese lifeways; climate and history; agriculture, population, and resources; Buddhist and animist views of outer and inner nature; urbanization from ancient capitals to megacity Tokyo; industrialization and energy; and future visions. Readings include influential scholarly works and Japanese sources in English translation. Offered: jointly with HSTAS 440; W.

JSIS A 441 Quebecois Literature (5) VLPA Readings of novels, plays, and occasionally, poetry. Special attention paid to how Quebecois authors represent in their works the complex socio-political reality of their culture. Conducted in French. French majors required to read and write in French; all others may read and write in English. Prerequisite: either FRENCH 304, FRENCH 305, or FRENCH 306. Offered: jointly with FRENCH 441.

JSIS A 442 War and Occupation in Northern Europe: History, Fiction, and Memoir (5) VLPA/I&S, DIV The study of literary representations (fiction, memoirs, and personal narratives) dealing with World War II and the occupation of the Nordic and Baltic countries. Offered: jointly with SCAND 445.

JSIS A 443 Medieval Russia: 850-1700 (5) I&S

Development of Russia from earliest times to the reign of Peter the Great. Offered: jointly with HSTAM 443.

JSIS A 444 Imperial Russia: 1700-1900 (5) I&S

Development of Russia from Peter the Great to Nicholas II. Offered: jointly with HSTEU 444.

JSIS A 445 The Rise and Fall of the Soviet Union (5)

I&S Russia and the USSR from Nicholas II to the present. Offered: jointly with HSTEU 445.

JSIS A 446 Modern Korean History (5) I&S *Hajin Jun*

Traces complex social, cultural, and political developments that transformed Korea during the late nineteenth and twentieth centuries. Topics include late Choson reforms, changing gender norms, national identity, colonial state and society, territorial division, and democratization. Attention to diversity of Korean experiences, as well as the interplay of local dynamics and global forces in the peninsula. Offered: jointly with HSTAS 482.

JSIS A 447 Literature and Society in Southeast Asia (5, max. 10) VLPA/I&S

Focus on either Vietnam or Thailand. Provides students with opportunity to explore how those living in Southeast Asia have reflected on the radical social changes their societies have undergone through novels, short stories, and poetry. Prerequisite: either one 200-level ANTH course or LING 203. Offered: jointly with ANTH 445.

JSIS A 448 Modern Korean Society (5) I&S *Sorensen*

Social organization and values of twentieth-century Korea. Changes in family and kinship, gender relations, rural society, urban life, education, and industrial organization since 1900. Differences between North and South Korea since 1945. Offered: jointly with ANTH 448.

JSIS A 449 Anthropology of Modern Japan (5) I&S

Examines the problem of modernity in Japan since the late nineteenth century, with emphasis on contemporary Japan. Critically addresses previous anthropological work concerning patterns of Japanese "culture." Particular focus on the influence of modern forms of power, media, and exchange in the construction of present-day Japan. Offered: jointly with ANTH 443.

JSIS A 451 Youth in Modern China (5) I&S *Madeleine*

Y. Dong Emergence of youth in Modern China as a social category; a distinctive stage of life; from most dominated group in society to driving force of history. Explores how young people experienced history of modern China as individuals, members of family, and society. Youth as shaped in post-socialist consumer culture, new nationalism, cosmopolitanism. Offered: jointly with HSTAS 458.

JSIS A 452 Global Asia (5) I&S, DIV

Explores how Asia has been constructed through transnational interactions such as imperialism, anti-colonialism, tourism, diaspora, and global capitalism. Topics

include the cultural construction of similarity and difference, politics of representation, and political economy of global circulations of people and things. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 442/GWSS 446; W.

JSIS A 454 History of Modern China (5) I&S Offered: jointly with HSTAS 454.

JSIS A 455 Baltic Politics and Society Today (5) I&S *G. Smidchens* Intensive interdisciplinary survey of current social, political, and economic developments in Estonia, Latvia, and Lithuania. Offered: jointly with SCAND 455; AWSp.

JSIS A 456 Topics in Chinese Social History (5) I&S Surveys major issues and approaches to the study of the role of the Chinese people in China's historical development. Historical focus of course varies with instructor. Offered: jointly with HSTAS 456.

JSIS A 457 Current Issues in the Arab Media (5, max. 15) VLPA/I&S *Hamd* Critical discussions on the dominant issues confronting the Arab world today. Examines Arab societies as they face the challenges of contemporary globalism. Emphasizes language proficiency and cultural competence. Taught in Arabic. Offered: AWSp.

JSIS A 458 Israel: Politics and Society (5) I&S, DIV Examines how parts of the mosaic of Israel's ethnic groups and religions have interacted over time to create today's society. Focus on politics, especially interaction of the state with the mosaic society. The religious divide; the Jewish ethnic divide; Palestinians in Israel; war and its effect on Israel; the long road to peace.

JSIS A 459 United States-China Relations (5) I&S *Bachman* Surveys the history of United States-China relations and examines the evolution of bilateral relations, particularly since 1949. Focus on the period since 1972 and the major issues as they have evolved since that time, including trade, human rights, security, and Taiwan. Offered: jointly with POL S 419.

JSIS A 460 Cities in China: Past and Present (5) I&S *Dong* Economic, political, social, and cultural functions of the city in modern Chinese history. Changes in China's urban system. The city as cultural center and focus of literary and cinematic

representation. Attention to architecture, commerce, urbanization, the role of capital cities in the power of the state. Offered: jointly with HSTAS 460.

JSIS A 461 Ramayana in Comparative Perspective (5) VLPA, DIV *Pauwels* Examines and compares different versions (mainly South Asian) of the Ramayana, including the widely popular television version. Focuses on some famous and controversial passages, with special attention to gender issues. Incorporates background readings from the most recent research. Offered: jointly with ASIAN 494.

JSIS A 462 Islam, Mysticism, Politics and Performance in Indonesian Culture (5) VLPA/I&S Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influences from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with HSTAS 466.

JSIS A 463 Topics in Southeast Asian History and Society (5) I&S Introduces major issues within the history and culture of one country of Southeast Asia. Content varies. Topics may include religion, economics, colonialism, perspectives on gender, labor history, literatures, popular culture, and performing arts. Focuses on a different Southeast Asian country each time offered.

JSIS A 464 Contemporary Society in the People's Republic of China (5) I&S *Lavelly* Separate development of rural and urban social institutions in the People's Republic of China since 1949 from a sociological perspective. Family and marriage, social control, educational institutions. Dilemmas of contemporary China and reasons for institutional change. Offered: jointly with SOC 464.

JSIS A 465 International Humanitarian Law (5) I&S *Lorenz* Investigates International Humanitarian Law (sometimes called the Law of Armed Conflict), the field concerned with rules developed by civilized nations to protect the victims of armed conflict, including the Geneva Conventions. Case studies include the conflict between Israel and the Palestinians, as well as developments in Afghanistan and Iraq.

JSIS A 466 Comparative Politics and Korea Studies (5) I&S *Ha* Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with POL S 480.

JSIS A 467 China's Rise and Its Global Implications (5) I&S Examines the consequences of China's dramatic rise - three decades of very high rates of economic growth - on China and on the World. Fundamental concerns are how China's rise is changing the institutions and practices of the world order, and whether China is increasingly socialized into global norms. Prerequisite: JSIS 202. Instructors: Bachman

JSIS A 468 Russia and the International System (5) I&S *C. JONES* Introduces the history of the Russian Federation's policy toward Europe, East Asia, South Asia, the Middle East, and the United States. Covers nuclear weapons, energy issues, and regional integration. Offered: Sp.

JSIS A 469 North Korean Society (5) I&S *C. SORENSEN* Description of the institutions and culture of North Korea with attention to the daily life of ordinary people. Uses North Korean media materials in addition to primary and secondary sources. Offered: W.

JSIS A 470 Minority Peoples of China (5) I&S Interaction between China and the peoples of its periphery, including inner Asia, Tibet, northern mainland Southeast Asia, and aboriginal peoples of Taiwan. Emphasis on ethnicity, ethnic group consciousness, and role of the Chinese state. Prerequisite: one 200-level ANTH course; LING 203; either ANTH 370/JSIS A 370 or HSTAS 454. Offered: jointly with ANTH 470.

JSIS A 471 New Orders in East Asia (5) I&S *Pyle* Rise and fall of successive international systems in East Asia over the past 150 years: Sino-centric, imperialist, Washington Treaty system, Japan's East Asian order, Yalta system, cold-war system. Post-cold-war search for a new order. Special attention to triangular relations among the United States, China, and Japan.

JSIS A 472 Science, Technology, and Innovation in East Asia: Japan, South Korea, Taiwan, and China (5) I&S *Marie C Anchordoguy* Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores conditions for its successful continuation. Offered: jointly with I BUS 461.

JSIS A 473 Political Economy of Postwar Japan (5) I&S *Anchordoguy* Political and economic problems of Japan since 1945. Utility of competing theoretical approaches to analysis of government and economy of Japan. Policy-making processes and effects of policies adopted. Some knowledge of postwar Japan desirable.

JSIS A 474 Civil Society in Japan and East Asia (5) I&S *R. Pekkanen* Examines a wide range of nongovernmental organizations (NGOs) nonprofits, and voluntary groups under the unifying rubric of civil society. Theoretical introduction to civil society and ideas of social capital. Investigates general aspects of civil society, focusing on its specific characteristics in Japan and other parts of Asia.

JSIS A 475 Japanese Society (5) I&S Discusses rapidly changing Japanese society and history of its unique aspects. Readings and lectures in sociology, anthropology, economics, and politics; emphasis on Japanese search for cultural identity and prevalent interpretations of Japanese society and behavior.

JSIS A 476 Energy Security in East Asia (5) Explores the current state of energy security in East Asia, defined in terms of demand, supply, resources, and geopolitics, and how it impacts global energy-related issues, including climate change.

JSIS A 477 Readings on Political Economy of Japan and Northeast Asia (5) *Anchordoguy* Analyzes major Political Economy issues in Japan, Korea, and China, such as the state's role in industrial development, trade and investment in Asia, trade and security relations with the United States, and Asian models of capitalism.

JSIS A 478 Japanese Business and Technology (5) I&S *Anchordoguy* Examination of Japan's postwar enterprise system in its historical context. Topics

include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with I BUS 462.

JSIS A 479 Contemporary Central Asian Politics (5) I&S Radnitz Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with POL S 479.

JSIS A 480 Kierkegaard and Decadence in European Literature (5) VLPA Reading and discussion of core texts by Soren Kierkegaard, as well as a consideration of the relationship between Kierkegaardian thought and the literary practice of various writers of Scandinavian and European decadence. Offered: jointly with SCAND 480.

JSIS A 481 August Strindberg and European Cultural History (5) VLPA/I&S Examines the work of Swedish dramatist, novelist, and painter August Strindberg, in the context of European literary movements and history of ideas from 1880 to 1912, and Strindberg's influence on twentieth-century drama and film. Offered: jointly with SCAND 481.

JSIS A 482 Knut Hamsun and Early European Modernism (5) VLPA Reading and discussion of significant novels by Knut Hamsun, whose oeuvre is considered in the context of works by other European modernist writers. Offered: jointly with SCAND 482.

JSIS A 483 Technology and Culture in the Making of Contemporary Empires (5) I&S Benitez, Rodriguez-Sliva Explores struggles shaping organization of US empire in the early twentieth century, focusing on sites where empire's material, cultural, and ideological boundaries were drawn and contested. Includes race, gender and class as colonial formation; technologies of imperial governance such as public health, citizenship, and territory. Offered: jointly with HSTCMP 483.

JSIS A 484 Korea in the Japanese Empire (5) I&S, DIV Korean colonial history in the context of Japanese imperial expansion from the 1870s to 1945. Analyzes

the Korean quest for modernization and nation-building, colonial industrialization and colonial modernity, assimilation and resistance, wartime mobilization and collaboration, Manchurian experiences, social movements, and cultural developments. Offered: jointly with HSTAS 484.

JSIS A 485 Culture, Politics, and Violence in Latin America (5) I&S, DIV Garcia Examines notions of "otherness" and the power to label as central to understanding inequality, human rights, and social struggle. Uses academic texts, films, documentaries, historical fiction, plays, and testimonials to interrogate the complexities of violence and social justice in Latin America, one of the most unequal regions in the world. Offered: jointly with CHID 487.

JSIS A 486 Photography and Cultural Studies in Latin America (5) VLPA/I&S Interdisciplinary exploration of the connections between visual anthropology (ethnography through photography and film), documentary and art photography, and colonial and post-colonial discourse in Latin America during the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322. Instructors: Steele Offered: jointly with SPAN 486.

JSIS A 487 Japanese Trade Politics (5) I&S R. Pekkanen Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Offered: jointly with POL S 418.

JSIS A 489 The Mexico-U.S. Border in Literature and Film (5) VLPA/I&S, DIV Analysis of the Mexico-U.S. Border region in literature and film of the 1990s and early 2000s. Includes migration, tourism, NGOs, globalization, transnational commerce, multiculturalism, and politics of gender, sexuality, and race. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Steele Offered: jointly with SPAN 489.

JSIS A 490 Politics and Society in Eastern Europe (5) I&S Political and social issues in lands east of the Elbe, treating some historical problems but focusing particularly on developments since 1945. Includes all

communist states of Eastern Europe and their successors. Offered: jointly with POL S 445.

JSIS A 491 Methodologies in Near Eastern Studies

(5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism. Offered: jointly with NEAR E 486.

JSIS A 492 Latin American Studies Seminar (5, max. 15) I&S

JSIS A 493 Water and Security in the Middle East (5) I&S As the available fresh water in the world decreases in quality and quantity, protection of this critical resource becomes a matter of international security. By studying three major river basins in the Middle East, students explore the historic, geographic, political, environmental and legal factors that lead to conflict or cooperation in the region. Offered: A.

JSIS A 494 Senior Seminar (5) I&S Introduction to research into European topics and to the analysis of problems.

JSIS A 495 European Studies Senior Thesis (5) I&S Independent study under faculty supervision to complete senior Thesis in the European Studies major

JSIS A 496 Development and Democracy in South Korea (5) I&S *H. NAM* Examines the nation-building history of South Korea in the larger geopolitical context of the era, focusing in particular on the period under Park Chung Hee's rule (1961-1979) and the relationship between development and democracy.

JSIS A 498 Seminar: Canadian Problems (5) I&S Major issues pertaining to Canadian society, government, and economic development.

JSIS A 504 Survey of Eurasia (5) Provides a basic intellectual foundation for interdisciplinary graduate-level study of Russia, East Europe, and Central Asia, taught by rotating faculty from the

major scholarly disciplines. Students read important texts and are introduced to major debates on the history, politics, and culture of the region.

JSIS A 506 Study of Southeast Asia (5) Lowe Focuses on questioning what it means to create knowledge about the region.

JSIS A 508 Interdisciplinary Study of South Asia I (5) Examines key themes and debates about the development of South Asian cultural and political formations. Examines how different scholarly disciplines, particularly those in the humanities, have approved and analyzed the past in South Asia.

JSIS A 509 Interdisciplinary Study of South Asia II (5) Kale Examination of key themes and debates about the development of South Asian cultural and political formations. Examines how different scholarly disciplines, particularly those in the social sciences, analyze political transitions, social change, and cultural transformations in South Asia through the twentieth century. Offered: W.

JSIS A 510 South Asian Studies Research Design Seminar (5) Interdisciplinary seminar for graduate students in which research and writing on individual research topics are critically developed. Designed to provide each student with an opportunity to synthesize his or her studies on South Asia. Prerequisite: JSIS A 508; JSIS A 509 or permission of graduate program coordinator. Instructors: Robinson

JSIS A 512 Russian, East European and Central Asian Studies Certificate Capstone (1) Includes the preparation and presentation of the student portfolio required for the Russian, Eastern European, and Central Asian Studies certificate. Credit/no-credit only. Offered: AWSp.

JSIS A 513 Capstone Portfolio (1) Includes the preparation and presentation of the student portfolio required for the South Asia Certificate.

JSIS A 514 Thesis Seminar I (2) Mikkelsen Review of research techniques: preparation for drafting master's thesis. Required of all first-year MAIS students. Offered: Sp.

JSIS A 515 Thesis Seminar II (2) Mikkelsen Seminar to complete draft of master's thesis. Some use of

relevant language required. Required of all second-year MAIS students. Offered: W.

JSIS A 516 North Atlantic Treaty Organization (5)

Explores the history of NATO since 1949. Case studies include German unification; evolving security relationship between NATO, the USSR, and its successor states; process of NATO enlargement; emergence of human rights as a priority in NATO's security interactions with non-member states; and NATO's role in ethno-nationalist-religious conflicts in the Balkans.

JSIS A 519 Southeast Asian Knowledge and the Politics of Information (5) VLPA/I&S Henchy

Reviews information resources in and about Southeast Asia, including evaluating those sources within various theoretical articulations (scholastic, cultural, and political). Covers the pedagogical implications of the life cycle of information; and critique of these implications from various theoretical and cultural viewpoints.

JSIS A 520 Post-Soviet Security (5) Radnitz

Examines security issues in Eurasia, emphasizing human over international security. Focuses on problems stemming from the collapse of the Soviet Union, covering topics such as weak states, civil wars, nationalism, corruption, and authoritarianism. Includes Russia's relations with former Soviet republics and U.S.-Russian relations.

JSIS A 521 Seminar: Introduction to the Interdisciplinary Study of China (5-) Bachman, Dong, Guy

JSIS A 522 Seminar: Introduction to the Interdisciplinary Study of China (-5) Bachman, Dong, Guy

JSIS A 525 Japanese Government and Politics (5)

Government and politics of Japan with emphasis on the period since 1945.

JSIS A 526 The Security of China (5) Bachman

Examines how the Chinese state conceptualizes its national security interests and how it pursues strategies designed to achieve those interests. Topics include use of force, military modernization, civil-military relations, and defense industrialization. Offered: jointly with POL S 526.

JSIS A 528 Gender and Sexuality in China (5)

Explores gender and sexuality in China's process of modernization, from the late Qing dynasty through the building of the Republic, Communist revolution, and post-Mao economic reform. Examines, through historical, anthropological, and cultural studies scholarship, the centrality of these social constructs in terms of family, state, labor, body, and ethnicity. Offered: jointly with ANTH 528/GWSS 528.

JSIS A 529 Eco-Capitalism (5) Ingebritsen

Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do places such as Europe adapt more readily to environmental challenges? Offered: jointly with SCAND 579.

JSIS A 531 Social Movements in Contemporary India (5) P. RAMAMURTHY

Covers issues of social change, economic development, and identity politics in contemporary India studied through environmental and women's movements. Includes critiques of development and conflicts over forests, dams, women's rights, religious community, ethnicity, and citizenship. Offered: jointly with ANTH 539/GWSS 539.

JSIS A 532 The Chinese Political System (5) S.

WHITING Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Offered: jointly with POL S 532.

JSIS A 534 Indonesian Histories, Oral Traditions, and Archives (5)

Explores the inscription of Indonesian histories and stories. Focuses on oral traditions, oral testimonies, and archives. Investigates how oral and written testimonies enter historical archives. Explores theoretical work on literary and performance traditions as they relate to nationalism and Islam in Indonesia. Offered: jointly with HSTAS 534.

JSIS A 535 International Relations of Modern China (5)

Foreign policy of the People's Republic of China: historical antecedents; domestic and international systemic determinants; and Chinese policies toward major states, regions, and issues. Prerequisite: a

course on contemporary Chinese politics or history, or permission of instructor. Offered: jointly with POL S 535.

JSIS A 536 Political Parties in Japan and East Asia (5)

R. Pekkanen Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties.

JSIS A 537 International Relations in Japan (5)

S. Pekkanen Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Not open to students who have taken JSIS A 437.

JSIS A 539 Japanese History in Ecological

Perspective (5) *M. Metzler* Survey of Japanese history in ecological perspective, from early times to the present. Topics include ancient Japanese lifeways; climate and history; agriculture, population, and resources; Buddhist and animist views of outer and inner nature; urbanization from ancient capitals to megacity Tokyo; industrialization and energy; and future visions. Readings include influential scholarly works and Japanese sources in English translation. Offered: jointly with HSTAS 540; W.

JSIS A 540 Japanese Law (3-4) Basic institutions and processes of the Japanese legal system. Historical development and traditional role of law, reception of Western law, and cultural and structural factors that influence the function of law and legal institutions. Offered: jointly with LAW B 540.

JSIS A 541 Chinese Law (4) Introduction to the institutions and processes of the Chinese legal system. Focuses on the contemporary system and its role in relation to political, economic, and social developments. Examines legal aspects governing foreign trade and investment in China. Offered: jointly with LAW B 541.

JSIS A 543 Japan, the United States, and New Orders in Asia (5) Seeks historical understanding of establishment of new order in contemporary East Asia. Analyzes the imperialist, Washington

conference, and cold war systems and explores the present post-cold war search for a new order. Prerequisite: one course in modern Japanese history, political economy, or political science. Instructors: Pyle

JSIS A 544 Reading Seminar on Middle East Studies

(2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 545 Reading Seminar on Middle East Studies

(2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 546 Reading Seminar on Middle East Studies

(2) Middle Eastern historiography, Islamic law, Islamic theology, relations between the Middle East and the world economy, political structures, social movements in the Middle East. Credit/no-credit only.

JSIS A 548 National Security of Japan (5)

S. Pekkanen Focuses on the changing landscape of Japan's national security concerns—the actors, institutions, and circumstances that have brought issues of defense and rivalry to the center stage of Japanese politics. Topics include nationalism, militarization, pacifism, United States-Japan security alliance, Sino-Japanese competition, constitutional revision, collective defense, and spy satellites.

JSIS A 551 International Relations of Northeast Asia

(5) Comprehensive survey of contemporary international relations of Northeast Asia with emphasis on Russia, Japan, China, and the United States. Multidisciplinary approach placing contemporary problems in historical context, drawing on modern social science theories. Connections between defense and economics are examined. Prerequisite: permission of instructor. Instructors: Hellmann Offered: jointly with POL S 539.

JSIS A 552 Industrialization and International Relations (5) *Ha* Examines internal-external linkage with a focus on industrialization and international

relations. Comparative perspective on the question of how industrialization shapes distinctive international perspectives in terms of perception, strategies, and foreign policy behaviors. Countries covered: South Korea, Japan, Prussia, the Soviet Union, and China. Offered: jointly with POL S 560.

JSIS A 553 Asian Financial Systems (5) *Hamilton* Examines the transformation of Asian economies that has occurred in the past half century, with particular emphasis on the three-way relationship between key business groups, banks, and financial markets. Emphasizes differences as well as similarities among a group of Asian economies, including China, Japan, South Korea, and Taiwan.

JSIS A 555 Introduction to Japanese Studies (3-6, max. 6) *Anchordoguy* Interdisciplinary introduction to the study of Japan, with emphasis on historical development. Required seminar for first-year graduate students.

JSIS A 560 Seminar in Turkish Studies (2, max. 12) Recent research and writings focused on the Ottoman Empire and modern Turkey. Credit /no credit only. Credit/no-credit only.

JSIS A 563 Approaches to East European Politics (3-5) Selected concepts and methodologies useful for the analysis of politics and social structure in the socialist countries of east-central and southeastern Europe. Prerequisite: permission of instructor. Offered: jointly with POL S 537.

JSIS A 566 Comparative Politics and Korea Studies (5) *Ha* Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with POL S 580.

JSIS A 568 Russia and the International System (5) *C. JONES* Introduces the history of the Russian Federation's policy toward Europe, East Asia, South Asia, the Middle East, and the United States. Covers nuclear weapons, energy issues, and regional integration. Offered: Sp.

JSIS A 569 North Korean Society (5) *C. SORENSEN* Description of the institutions and culture of North

Korea with attention to the daily life of ordinary people. Uses North Korean media materials in addition to primary and secondary sources. Offered: W.

JSIS A 570 Readings in Israel/Palestine Studies (5) Survey of significant scholarly texts on Israel and Palestine during the 19th-21st centuries. Topics may include: Jewish and Middle East context; medical and environmental history; economic history; intellectual history of Zionism and Palestinian nationalism; cultural history. Offered: jointly with HSTAFM 570.

JSIS A 573 Political Economy of Post War Japan (5) *Anchordoguy* Political and economic problems of Japan since 1945. Utility of competing theoretical approaches to analysis of government and economy of Japan. Policy-making processes and effects of policies adopted.

JSIS A 574 Civil Society in Japan and East Asia (5) *R. Pekkanen* Examines a wide range of nongovernmental organizations (NGOs), nonprofits, and voluntary groups under the unifying rubric of civil society. Theoretical introduction to civil society and ideas of social capital. Investigates general aspects of civil society, focusing on its specific characteristics in Japan and other parts of Asia. Not open to students who have taken JSIS A 474.

JSIS A 575 Seminar on Japanese Society (5) Interdisciplinary seminar with class-led discussions on readings from anthropology, history, sociology, and nondiscipline-specific articles on Japanese society. Prerequisite: background on Japan. Not open to students who have taken JSIS A 475.

JSIS A 576 Modern Chinese History (5) Introduction to the major English-language literature on modern Chinese history and to the major historiographical issues of the period. Prerequisite: HSTAS 454 or equivalent, and permission of instructor. Offered: jointly with HSTAS 579.

JSIS A 577 Readings on Political Economy of Japan and Northeast Asia (5) *Anchordoguy* Analysis of major issues in Japan and also in Korea and China, such as the state's role in industrial development, trade and investment in Asia, trade and security relations with the U.S., and Asian models of capitalism.

JSIS A 578 Japanese Business and Technology (5)

Anchordoguy Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with I BUS 562.

JSIS A 579 Contemporary Central Asian Politics (5)

Radnitz Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with POL S 579.

JSIS A 580 Field Course in Southeast Asian History (5)

Introduces major English-language works on Southeast Asian history and to the major historiographical issues of the era. Offered: jointly with HSTAS 530.

JSIS A 581 Science, Technology, and Innovation in East Asia: Japan, South Korea, Taiwan, and China (5)

Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores conditions for its successful continuation. Offered: jointly with I BUS 561.

JSIS A 582 Seminar in Southeast Asian History (5)

Selected topics in Southeast Asian history and historiography. Includes preparation for theses and doctoral dissertations on Southeast Asian History. Offered: jointly with HSTAS 532.

JSIS A 583 Modern Korean History (5)

Hajin Jun Traces complex social, cultural, and political developments that transformed Korea during the late nineteenth and twentieth centuries. Topics include late Choson reforms, changing gender norms, national identity, colonial state and society, territorial division, and democratization. Attention to diversity of Korean experiences, as well as the interplay of local dynamics and global forces in the peninsula. Prerequisite: permission of instructor. Offered: jointly with HSTAS 581.

JSIS A 584 Survey of Korean Society (5)

Sorensen Introduction to the social and political institutions of North and South Korea with an opportunity to master the most important literature on modern Korea. Focuses on the twentieth century with the major emphasis on the post-1945 period. Offered: A.

JSIS A 585 Research Seminar: Modern Korea (6)

Advanced instruction in problems and methods of research in Korean history. Foreign language not required. Prerequisite: permission of instructor. Instructors: Ha

JSIS A 586 Islam, Mysticism, Politics, and Performance in Indonesia (5)

Examines how Indonesia, the world's fourth most-populous country, with the largest Islamic population, weaves together local practices and influence from India and Persia. Offers ways of understanding modern Indonesian performing arts, religion, and politics. Offered: jointly with HSTAS 566.

JSIS A 587 Japanese Trade Politics (5)

S. Pekkanen Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Not open to students who have taken JSIS A 487.

JSIS A 588 Making Modern Taiwan (5)

J. Lin Explores modern Taiwanese history and contemporary Taiwanese society. Contextualizes Taiwan within larger historical trends and covers key issues of politics, society, and culture, identity, democracy, Taiwan's colonial legacy, geography, and cross-Strait relations with the People's Republic of China.

JSIS A 590 Politics and Society in Eastern Europe (5)

Political and social issues in lands east of the Elbe, treating some historical problems but focusing particularly on developments since 1945. Includes all communist states of Eastern Europe and their successors.

JSIS A 593 Water and Security in the Middle East (5)

As the available fresh water in the world decreases in quality and quantity, protection of this critical resource becomes a matter of international security. By studying three major river basins in the Middle

East, students explore the historic, geographic, political, environmental and legal factors that lead to conflict or cooperation in the region.

JSIS A 596 Development and Democracy in South Korea (5) H. NAM Examines the nation-building history of South Korea in the larger geopolitical context of the era, focusing in particular on the period under Park Chung Hee's rule (1961-1979) and the relationship between development and democracy.

GLOBAL AND THEMATIC COURSES

JSIS B 100 Issues in International Studies (5, max. 15) I&S *Bachman, Curran, Yang* Offers an introduction to some contemporary salient issues in international and global affairs, focusing on one or two major developments or questions.

JSIS B 103 Society and the Oceans (5) I&S/NW Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with ENVIR 103/SMEA 103.

JSIS B 120 Perspectives on Contemporary Public Policy Issues (3) I&S Lecture series on contemporary domestic and international public policy issues. Credit/no-credit only. Offered: jointly with POL S 120.

JSIS B 180 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) I&S *Todd Faubion, Stephen Gloyd* Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with G H 101/GEOG 180; Sp.

JSIS B 216 Science and Society (5) I&S/NW *Chaloupka* Investigation of the relationship between science, technology, and society. Nuclear physics and molecular biology serve as concrete

examples of fields with significant impact on society. Offered: jointly with PHYS 216; Sp.

JSIS B 264 Violence, Race, and Memory (5) VLPA/I&S, DIV Explores how images and ideas of power, race, violence, and global modernity circulate in memories and discourses about US relations with Vietnam, the Philippines, and Indonesia. Topics include foundations myths, colonial and postcolonial encounters, historiography and narrative, and nationalist and ethnic identity formations. Offered: jointly with HSTAS 264; Sp.

JSIS B 301 War (5) I&S Origins and conduct of war; readings from anthropology, political science, economics, and history, as well as novels and some recent works on the arms-control controversy. Modern forms of warfare, including guerrilla war, world war, and nuclear war. Offered: jointly with SOC 306.

JSIS B 307 Digital Storytelling and Global Citizenship (5) I&S T. LAGOS Teaches students the meaning of global citizenship while developing their skills to effectively communicate, through digital storytelling, the power of social change. Working in teams students use their knowledge and experiences to produce a short video highlighting efforts or strategies to address a specific global issue.

JSIS B 310 State-Society Relations in Third World Countries (5) I&S, DIV *Bachman, Callahan* Relationships among political, social, and economic changes in Asia, Africa, and Latin America. Problems of economic and political development, revolution and reform, state-society relations, imperialism and dependency. Offered: jointly with POL S 320.

JSIS B 311 Myth of War (5) I&S *Poznanski* Explores war as a concept in international political economy. Examines interpretations of war as put forth by proponents of the key theoretical constructs of mercantilism, liberalism, and Marxism. Explores contemporary challenges to the prevailing, dominant theories of war.

JSIS B 312 Money, Love and Marriage in Europe and America (5) I&S N. KLAPAKI Provides a cross-cultural and interdisciplinary discussion of romantic and economic issues related to marriage by drawing on seminal texts in the fields of history,

anthropology, feminist literary criticism and cultural studies.

JSIS B 315 Law, State, and Society (5) I&S

Examination of both state law and non-state law (rules and ways of ordering behavior such as customary law, religious law, and social conventions) . Focuses on the ways non-state law interacts with and affects state law and is affected by state law.

JSIS B 320 Yoga: History, Health and Practice (5) I&S/VLPA

C. NOVETZKE Examines history, practice, literature, and health effects of yoga from ancient to modern. Explores essential texts and ideas, issues of health and wellness, and contemporary legal debates about yoga.

JSIS B 321 United States National Security (5) I&S

Examines the history of United States national security policies from the eighteenth century to the present, focusing on ideas, relationships, and events that impacted the decision makers who created these policies.

JSIS B 324 Immigration (5) I&S, DIV

Friedman Introduces key theoretical debates in international migration. Examines immigrants' political, economic, religious, and social integration into host societies, and continued ties to homelands. Experiences of voluntary and involuntary immigrants, of the second generation, and of incorporation into America and Europe. Designed around interdisciplinary texts and fieldwork in Seattle.

JSIS B 330 International Political Economy (5) I&S

Establishment, maintenance, and decay of the post-1945 international economic order. Political economy of international trade, monetary relations, inflation, and North-South relations. Prerequisite: JSIS 201 which may be taken concurrently; either ECON 201, GEOG 123 or JSIS 123 any of which may be taken concurrently. Instructors: Hamilton, Ingebritsen, Latsch

JSIS B 331 Political Economy of Development (5) I&S

Growth, income distribution, and economic development in less-developed countries today. Policies concerning trade, industrialization, the agricultural sector, human resources, and financing of development. Prerequisite: either ECON 201, GEOG 123 or JSIS 123, any of which may be taken concurrently. Instructors: Latsch, Poznanski

JSIS B 332 Political Economy of International Trade and Finance (5) I&S

Poznanski Theoretical and historical analysis to explore the causes and effects of the rise and decline of four major international trade and monetary regimes. Foundations and emerging features of the new international trade and monetary regime and its implications for the world economy.

JSIS B 333 Gender and Globalization: Theory and Process (5) I&S, DIV

Ramamurthy Theoretical, historical, and empirical analysis of how current processes of globalization are transforming the actual conditions of women's lives, labor, gender ideologies, and politics in complex and contradictory ways. Topics include feminist exploration of colonialism, capitalism, economic restructuring policies, resistance in consumer and environmental movements. Offered: jointly with GWSS 333.

JSIS B 335 Geography of the Developing World (5) I&S

Characteristics and causes, external and internal, of Third World development and obstacles to that development. Special attention to demographic and agricultural patterns, resource development, industrialization and urbanization, drawing on specific case studies from Asia, Africa, and Latin America. Offered: jointly with GEOG 335.

JSIS B 336 Political Violence (5) I&S

Examines the causes and consequences of the use of violence in the context of armed conflict and contentious politics, with a focus on the targeting of civilians. Investigates the dynamics influencing both state and non-state armed actors in their resort to various forms of violence across a range of conflicts. Offered: jointly with POL S 336.

JSIS B 337 Collective Violence and the State (5) I&S, DIV

Comparative study of how and why genocides have occurred in modern times. Examines how ethnic, religious, and nationalist conflicts have sometimes led to violent conflict, and how political leaders and governments have mitigated or exacerbated them, sometimes engaging in state sponsored mass killing. Offered: jointly with POL S 337.

JSIS B 338 Biosecurity (5) I&S

Lowe Examines relations between life and safety as a new focus of study in the human sciences. Pays attention to the reframing of international health, food security,

environmental change, migration, etc., in security terms. Focuses on both present practical issues of biosecurity and the concept of "security" itself.

JSIS B 340 The Cold War: Realities, Myths, Legacies (5) I&S Provides an interdisciplinary introduction to the Cold War (1947-1991), a global conflict, with political, cultural, and military tensions, between the two post-World War II superpowers: the USA and its "Western" allies, and the USSR and its "Eastern" allies. Attention given to diplomatic, military, and cultural ramifications. Offered: jointly with HSTCMP 340.

JSIS B 344 Migration in the Global Economy (5) I&S Analyzes the relationship between human mobility in the late twentieth century and changes in the global economy. Allows students to gain familiarity with scholarly research on international migration from a diversity of approaches and methods. Offered: jointly with GEOG 344.

JSIS B 345 Women and International Economic Development (5) I&S, DIV P. RAMAMURTHY Questions how women are affected by economic development in Third World and celebrates redefinitions of what development means. Introduces theoretical perspectives and methods to interrogate gender and development policies. Assesses current processes of globalization and potential for changing gender and economic inequalities. Offered: jointly with ANTH 345/GWSS 345.

JSIS B 346 Disability in Global and Comparative Perspective (5) I&S, DIV Examines the meaning, politics, and experience of disability globally and locally in order to understand what is universal and what is particular to the disability experience in a diverse world. Human rights, inclusive development, and social movements approaches addressing the marginalization of disabled persons explored throughout. Offered: jointly with DIS ST 346/LSJ 346.

JSIS B 347 Comparative Geographies of Youth (5) I&S Examines how three key global processes - rising levels of formal education, changing health regimes, and environmental transformation - are shaping youth in the US and South Asia. Examines ways young people rework broader structures, paying particular attention to their economic livelihoods,

cultural practices, and political engagements. Offered: jointly with GEOG 343; A.

JSIS B 350 Environmental Norms in International Politics (5) I&S Ingebritsen Surveys development of international environmental consciousness from 1960s to present. Models of "green development"; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with ENVIR 360/SCAND 350.

JSIS B 351 The Global Environment (5) I&S Explores the environment in international perspective emphasizing the social implications of living in an economically globalized and environmentally interconnected world. Examines these implications through examples of toxics and the human body, biodiversity conservation, climate change, disease, and environmental problems.

JSIS B 352 Sustainability and Global Business: Leading in a Changing World (5) I&S J. Leinaweaver Course explores the relationships between business, sustainability and social responsibility, asking three core questions: Why should business care about sustainability and social responsibility? What can businesses do to help address these problems? How do we re-invent the traditional consumer-based business model of "make things, sell things, buy things"?

JSIS B 355 Cybersecurity and International Studies (5) I&S J. Beyer Addresses the major international agreements, organizations, and infrastructures shaping cybersecurity. Covers basic technical terminology and legal frameworks related to cybersecurity.

JSIS B 357 The Geopolitics of Energy (5) I&S Provides an Introduction to energy studies focusing on geopolitics. Topics explored include global energy resources, trends, and technologies; energy supply, demand, and consumption; economic issues; the changing role of OPEC; concepts of energy sustainability; energy and climate change.

JSIS B 360 The United States in the World (5) I&S Examines the history of the United States' relations with the world over the twentieth century.

Combines and overview of broad trends in the projection and contestation of United States power abroad with specific case studies grounded in particular geographic regions of the globe. Offered: Sp.

JSIS B 361 The Rise of a Global Language (5) I&S

Explores the reality and status of English as a global language, implications for international relations, relationship to globalization, and effects in areas of national identity, modernization, science and technology, and the future of human communication.

JSIS B 365 World Cities (5) I&S *Kasaba, Sparke*

Factors that have propelled New York, London, and Tokyo into key positions in the organization of the late twentieth century international system. Asks historical and comparative questions and discusses the reasons behind the diminished position of cities such as Venice, Vienna, and Istanbul in that system.

JSIS B 366 Comparative Law and Legal Cultures (5) I&S *G. Barzilai*

Explores global issues of comparative law, societies, politics, courts, and cultures. Introduces theories and methods of comparing legal settings internationally and understating diverse responses to law. Covers what is comparative law; families of law; history of comparative law; judicial review; legal cultures; rights consciousness; and regulation. Can not be taken for credit if student has already taken LSJ/POL S 367. Offered: jointly with LSJ 366.

JSIS B 370 Privacy (5) I&S *S. Pekkanen* Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with LSJ 370/POL S 370; Sp.

JSIS B 371 Global Crime and Corruption (5) I&S *J. Long Iv*

We examine sources & outcomes of illicit behavior within firms, governments, and organizations at local, national, & international levels; investigating the psychological, cultural, political, and economic sources of crime/corruption; and explore these dynamics within businesses, bureaucracies, gangs, mafias, cults, and pirates. Case studies include India, US-Mexico drug trade, piracy,

doomsday cults, Sicilian mafias, Nazi drug abuse, & Dark Web. Recommended: POL S 203, POL S 204, or POL S 270; or JSIS 123, JSIS 200, JSIS 201, or JSIS 222; or equivalent. Offered: jointly with POL S 371.

JSIS B 375 Geopolitics (5) I&S, DIV An introduction to both political geography and geopolitics, addressing the fundamental links between power and space. Topics covered include: theories of power, space, and modernity; the formation of modern states; international geopolitics in the aftermath of the Cold War; the post-colonial nation-state; and the geopolitics of resistance. Offered: jointly with GEOG 375.

JSIS B 380 Immigration and Cultural Memory in the Pacific Northwest: The Role of Film and Cinema (5) I&S *T. LAGOS*

Explores immigration and culture through the development of the film industry in relation to the immigrant flows into Seattle at the turn of the 20th century. The rise of cinema helped immigrants to assimilate into mainstream society. In turn, immigrants turned films into a major American industry.

JSIS B 385 Industry and the State (5) I&S Builds on states and markets approach of 200 and 201 through specific examination of effects of industry and industrial structure on political outcomes and roles of state. Emphasis on late-developing and newly developing economies. Prerequisite: JSIS 200; JSIS 201. Instructors: Hamilton, Whiting

JSIS B 386 Law and Politics of International Trade (5) I&S *S. Pekkanen*

Survey of global trade politics in the context of the World Trade Organization (WTO), with attention to positive and negative aspects of its governance. Examines the impact of the WTO legal framework on trade relations among developed and developing countries. Covers topics such as dispute settlement, development, safeguards, antidumping, intellectual property, and regionalism.

JSIS B 388 Political Economy of Industrialized Nations (5) I&S

Theoretical bases of various political economic systems of industrialized nations. Several major issues these political economies currently face; usefulness and limits of economic analyses within broader perspective of political economy. Prerequisite: either ECON 201, GEOG 123 or JSIS 123 any of which may be taken concurrently.

JSIS B 391 Climate Change - An International Perspective: Science, Art, and Activism (5)

I&S/VLPA R. PAVIA Explores climate change science in the context of geographic, social, and political constraints, considering the role of art, activism, and Arctic indigenous peoples in communicating impacts and mitigation. Students gain knowledge in key atmospheric and ocean science principles along with the role of science in society Offered: jointly with ARCTIC 391; Sp.

JSIS B 393 LGBTI Rights in International Affairs (5)

I&S, DIV E. CARLSON-RAINER Introduction to LGBTI and human rights issues impact in contemporary international relations.; NGOs and civil society advocacy that leads to foreign policy reform; Difference strategies uses by LGBTI activists in Europe, Scandinavia, and the U.S.; Debates in the UN on global rights; LGBTI rights diplomacy; conditioning international aid according to LGBT rights; Human rights issues in the context of broader global sociopolitical relations.

JSIS B 406 Political Islam and Islamic

Fundamentalism (5) I&S Robinson Study of resurgence, since mid-1970s, of political Islam and what has come to be called Islamic fundamentalism, especially in the Middle East. Topics include the nature and variety of political Islam today, causes and implications of the current resurgence, and comparison with previous resurgences. Offered: jointly with POL S 432.

JSIS B 407 Political Islam and Contemporary Islamist Movements (5) I&S

Examines Islamist movements (which seek to reform Muslim society through the capture and the modern state and the establishment of Islamic law) to understand how they impact regional politic and global political Islam.

Prerequisite: either HIST 161, NEAR E 211, NEAR E 212, JSIS C 211, JSIS C 212, JSIS B 406/POL S 432, JSIS A 215, or JSIS A 402, any of which may be taken concurrently. Instructors: Robinson Offered: Sp.

JSIS B 408 Topics in the History of Capitalism (5,

max. 10) I&S Mark Metzler Selected topics in the history of capitalism in a global, multi-century perspective. Recommended: either JSIS 200, or equivalent courses in global history. Offered: jointly with HSTCMP 408.

JSIS B 410 Readings in U.S. in the World (5) I&S D.

Bessner Explores how numerous factors - political, economic, social, racial, intellectual, technological, and others - shaped the ways in which the United States has interacted with the world since the late-nineteenth century.

JSIS B 416 Putting the World on the Couch: Psychoanalysis and International Studies (5)

I&S Deborah Porter Explores the relation of trauma to memory and cultural production, focusing on historical, literary, and filmic treatments of hysteria and repression, shell shock, and the effects of war, terrorism, and psychic trauma. Uses psychoanalytical theory to analyze the commentary on international issues that lies in texts, films, and other cultural phenomena.

JSIS B 417 Enter the Dragon: Seminar on World Cultures through the Asian Martial Arts (5)

I&S Novetzke Examines how the martial arts have preserved religious, cultural, and philosophical aspects of the world areas of their origin, as well as the new cultures and international communities that have adopted and reinvented their practices and philosophies, including India, China, Japan, Korea, Brazil, and Euro-America. Offered: jointly with CHID 417.

JSIS B 419 Comparative Media Systems (5) I&S

Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with COM 420/POL S 468.

JSIS B 420 Failed States (5) I&S Radnitz

Critically examines the causes and consequences of state failure. Analyzes theories about the rise of the modern state and the precondition for "successful" states to form and endure, then examines theories and case studies of modern failed state.

JSIS B 422 International Trade and Security (5) I&S

Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other

governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 423 Practicing American Foreign Policy (5)

I&S Develops familiarity with tools available to promote international objectives of the United States. International case studies selected to illustrate the diverse considerations inherent in the policy process and evaluate the strengths and weaknesses of the national institutions involved. Prerequisite: JSIS 201.

JSIS B 424 The Politics of International Nuclear Security: Weapons, Energy and Environment (5)

I&S C. JONES Nation state choices and military alliance choices in Eurasia on nuclear weapons arsenals, nuclear energy, arms control treaties plus survey of global and regional Eurasian non-proliferation regimes. Eurasian military-political conflicts; Cold War nuclear arms race; Nuclear Non-Proliferation Treaty; Nuclear Weapons Free Zones. Comparisons of fissile and fossil fuels, climate change, economic development, energy security, and terrorist threats.

JSIS B 425 Crafting and Influencing United States Foreign Policy (5) I&S J. BUTTE-DAHL

Explores the inner-workings of the United States government and the complexity inherent in United States foreign policy decision-making. Includes an overview of foreign affairs agencies and the interagency process, executive-legislative relations, foreign assistance and the budget process, and the impact of external stakeholders on the policy-making system. Offered: Sp.

JSIS B 426 World Politics (5) I&S The nation-state system and its alternatives, world distributions of preferences and power, structure of international authority, historical world societies and their politics. Offered: jointly with POL S 426.

JSIS B 427 Weapons of Mass Destruction: Development, Deployment, and Detection (5)

I&S Fuller Practical understanding of the development of nuclear, biological, and chemical weapons plus missile delivery systems. Proliferation detection technology and its limitations. Case studies of past and current arms control agreements and non-proliferation programs.

JSIS B 428 The Media and Peace (5) I&S Investigates the complex relationships among the media, journalistic practice, and our understanding and pursuit of peace. Offered: jointly with COM 428.

JSIS B 429 Nuclear Nonproliferation and International Safeguards (5) I&S Examines the technologies of nuclear energy, the institutions that have been deployed to address the security threats related to peaceful uses of nuclear energy, and the issues and challenges confronting those institutions today.

JSIS B 430 Late Industrialization and Social Change (5) I&S

Deals with distinct patterns of social change under late industrialization, such as Japan, South Korea, Germany and the Soviet Union. Analyzes the social and institutional implications of economic policies by looking at the interactions between the state, traditions, and economic actors.

JSIS B 431 International Negotiation Simulation (5)

I&S Research and writing in small groups to prepare policy documents on a current international issue, followed by simulated negotiations with students representing different nations, following instructions from and reporting to national leaders.

JSIS B 433 Environmental Degradation in the Tropics (5) I&S/NW Christie

Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with ENVIR 433/SMEA 433.

JSIS B 436 Ethnic Politics and Nationalism in Multi-Ethnic Societies (5) I&S

Provides a broad theoretical base, both descriptive and analytical, for the comparative study of ethnicity and nationalism. Examples drawn from ethnic movements in different societies. Some previous exposure either to introductory courses in political science or to courses in ethnicity in other departments is desirable. Offered: jointly with POL S 436.

JSIS B 437 Global Diasporas (5) I&S Friedman

Studies the concept, process, and lived practice of diaspora in comparative global perspective. Surveys the theoretical literature. Examines the ramifications of transnational movements for notions of diasporic

identities and citizenship; implications of diaspora for economic development and political movements; and the utility of the concept of diaspora as an analytical tool

JSIS B 440 The Communist Experience Around the World (5) I&S *Young* Communism from its origins in Bolshevik faction of Russian social democracy to the present, treating the development of the ideology, the various communist parties, and the communist states. Offered: jointly with HSTCMP 440.

JSIS B 441 Forced Migrations (5) I&S, DIV *Friedman* Provides an interdisciplinary understanding of the causes, characteristics, and consequences of forced migration experiences across the global system. Explores how international policy makers, humanitarian workers, and scholars have constructed forced migration as a problem for analysis and action, including some of the ethical dilemmas involved.

JSIS B 444 Space Law and Policy (5) I&S *Saadia M. Pekkanen* Law and policy foundations of outer space activities. Essential origins, sources, and role of space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with A A 490/ESS 488.

JSIS B 446 History, Memory, and Justice (5) I&S *Giebel* Focuses on the complex interactions between history and historical representation, remembrance and commemoration, memory and identity, and notions of justice and reconciliation. Addresses these issues on methodological, theoretical, and practical grounds, drawing on examples from various genres, periods, and world regions. Offered: jointly with HSTCMP 446.

JSIS B 450 Deeply Divided Societies (5) I&S Ethnic conflict seen from two perspectives: 1. the study of theoretical approaches as a means of understanding deeply divided societies; 2. a focus on one or more specific conflicts.

JSIS B 451 Political Parties in Democratic Systems (5) I&S Examines political parties in three different and interrelated aspects: party organizations; party in the electorate; and the party in government. How

parties aggregate and represent interests. Parties at different points in time and in different states around the world. Offered: jointly with POL S 450; W.

JSIS B 455 International Environmental Policy (5) I&S *J. BEGUN* Examines the economics of international environmental policy from both a theoretical and empirical perspective. Focus is on environmental policy in China, the U.S. and Europe and on the challenges combining economic growth and development with environmental stewardship and responsible resource use.

JSIS B 457 Food, Ethnicity, and Identity in Hispanic Culture (5) I&S/VLPA *Ana M. Gomez-Bravo* Explores food, ethnicity, and identity in the Hispanic World, including Sephardic, Muslim, Native American, Basque, and Catalan groups. Taught in English. Prerequisite: Either SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with SPAN 457; Sp.

JSIS B 467 Nations and States in the Modern World (5) I&S Development of national consciousness in the "old nations" of Europe before the French Revolution. Replacement by new nationalism, spreading into East Central Europe, Russia, Ibero-America, Asia, and Africa. Offered: jointly with HSTCMP 467.

JSIS B 468 Theatre as a Site of History and Memory (5) VLPA/I&S *Sears* Explores Asian theatre traditions as sites of memory, testimony, and archive using ethnographic and historiographical approaches. Includes service-learning components and collaborative performance projects. Offered: jointly with HSTCMP 468.

JSIS B 469 Law and Rights in Authoritarian Regimes (5) I&S *S. WHITING* Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Offered: jointly with LSJ 469/POL S 469.

JSIS B 472 Electoral Systems (5) I&S *R. Pekkanen* Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and

policy. Covers effects and mechanics of the various voting systems. Offered: jointly with POL S 472.

JSIS B 476 Comparative International Political Economy (5) I&S Comparative analysis of four major approaches to international political economy: mercantilism, Marxism, liberalism, and evolutionary approach. Focus on international cooperation, social change, and economic institutions. Theoretical analysis of the four paradigms and applications to historic and current issues in international political economy: hegemonic cycle, post-communist transition, and cross-national income inequality.

JSIS B 480 Fundamentals of Global Cybersecurity (5) I&S *Jessica Beyer* Area and international studies approach to investigating nation-state cybersecurity strategy and regional dynamics. Addresses the cybersecurity strategies of major international actors, regional dynamics, famous cyberattacks, and the state of international cybersecurity. Structured geographically. Involves instruction by guest experts. Offered: A.

JSIS B 508 Topics in the History of Capitalism (5, max. 10) *Mark Metzler* Selected topics in the history of capitalism in a global, multi-century perspective. Offered: jointly with HSTCMP 508.

JSIS B 510 Readings in U.S. in the World (5) D. *Bessner* Explores how numerous factors - political, economic, social, racial, intellectual, technological, and others - shaped the ways in which the United States has interacted with the world since the late-nineteenth century.

JSIS B 520 Failed States (5) *Radnitz* Critically examines the causes and consequences of state failure. Analyzes theories about the rise of the modern state and the precondition for "successful" states to form and endure, then examines theories and case studies of modern failed state.

JSIS B 522 International Trade and Security (5) Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 523 Seminar on Religious and Political Violence (5) *Robinson* Employs ethnographic studies and anthropological theory to examine the relationships between culture and power in the analysis of religious and political violence. Topics include modernity; secularisms and fundamentalisms; ritual, sacrifice, and martyrdom; law, rights, and subject-making. Offered: jointly with ANTH 523.

JSIS B 524 International Law and Arms Control (5) Surveys the political, legal, and technological history of twentieth century arms control agreements with emphasis on the treaties which ended the Cold War. Examines current issues of law, politics, military strategy, and technology in regard to weapons of mass destruction and related topics in international security.

JSIS B 525 Special Topics in Race, Ethnicity, and Nationalism (5, max. 10) Topics vary, but focus on the politics of race, ethnicity, and nationalism viewed from a broad, comparative, interdisciplinary perspective. Emphasizes cross-cultural, and the geographical coverage may be regional or global.

JSIS B 526 Political Islam and Islamic Fundamentalism (3/5) *Robinson* Examines political Islam as a modern phenomenon produced at the intersections between localized and globalized political cultures and between political, religious, and social authority. Focuses on anthropological studies to examine how Islamic publics produce moral judgments about political practices. Offered: jointly with ANTH 526.

JSIS B 527 Weapons of Mass Destruction: Development, Deployment, and Detection (5) *Fuller* Practical understanding of the development of nuclear, biological, and chemical weapons plus missile delivery systems. Proliferation detection technology and its limitations. Case studies of past and current arms control agreements and non-proliferation programs.

JSIS B 529 Nuclear Nonproliferation and International Safeguards (5) Examines the technologies of nuclear energy, the institutions that have been deployed to address the security threats related to peaceful uses of nuclear energy, and the issues and challenges confronting those institutions today.

JSIS B 531 International Negotiation Simulation (5)

Examines international trade's potential threat to national security. Covers basic elements and limitations of export controls used to protect national security and international stability. Focuses on export controls to prevent proliferation of weapons of mass destruction, and to limit other governments' ability to develop capabilities that jeopardize regional or international stability.

JSIS B 536 Analysis, Information, and the Politics Shaping American Foreign Policy (5)

Chirot Explores competing interests and sources of information in the making of American foreign policy. Examines the origins of the national security state after World War II; decision making during the Cold War and Viet Nam War; the crisis of 9/11; and current strategies for analyzing information and handling foreign policy crises.

JSIS B 537 Global Diasporas (5)

Friedman Studies the concept, process, and lived practice of diaspora in comparative global perspective. Surveys the theoretical literature. Examines the ramifications of transnational movements for notions of diasporic identities and citizenship; implications of diaspora for economic development and political movements; and the utility of the concept of diaspora as an analytical tool

JSIS B 541 Forced Migrations (5)

Friedman Provides an interdisciplinary understanding of the causes, characteristics, and consequences of forced migration experiences across the global system. Explores how international policy makers, humanitarian workers, and scholars have constructed forced migrations as a problem for analysis and actions, including some of the ethical dilemmas involved.

JSIS B 542 Seminar: State and Society (5)

Migdal Examines the mutually conditioning relationship between states and the societies they seek to govern. Studies states as large, complex organizations and their interactions with society on different levels. Shows that interactions on any level affect the nature of the state on other levels as well. Offered: jointly with POL S 542.

JSIS B 544 Space Law and Policy (5)

Saadia M. Pekkanen Law and policy foundations of outer space activities. Essential origins, sources, and role of

space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with A A 590/ESS 584; Sp.

JSIS B 549 International Investment Law and Practice (4/5)

Examines the rise of international investment law and practice, including topics such as Bilateral Investment Treaties (BITs), standards of treatment, investor-state arbitrations, and social and political controversies related to the governance of foreign direct investment (FDI) in developed and developing countries. Offered: jointly with LAW E 549.

JSIS B 553 Environment and Health in the World Trade Organization (5)

S. Pekkanen Conflicts between global environmental and public health on the one hand and international trade expansion on the other in the World Trade Organization (WTO). Focuses on the state of GAITT/WTO jurisprudence and its interaction with sovereign laws and regulations. Cases include asbestos, reformulated gasoline, beef hormones, shrimp-turtle, and genetically modified organisms.

JSIS B 555 Cybersecurity and International Studies (5)

J. Beyer Addresses the major international agreements, organizations, and infrastructures shaping cybersecurity. Covers basic technical terminology and legal frameworks related to cybersecurity.

JSIS B 556 International Human Rights Clinic ([1-12]-

, max. 12) Interdisciplinary clinical training in international human rights. Includes seminar component on legal issues, practice skills, and reflections on human rights projects. Fieldwork on human rights projects tests, develops, and enhances skills training through real-world human rights practice with cross-campus, U.S., and international partnerships. Credit/no-credit only.

JSIS B 557 The Geopolitics of Energy (5)

Introduction to energy studies focusing on geopolitics. Topics include global energy resources, trends, and technologies; energy supply, demand, and consumption; economic issues; the changing role of OPEC; concepts of energy sustainability; energy and climate change.

JSIS B 569 Law and Rights in Authoritative Regimes (5) Explores role of law and courts and the nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law promotion. Offered: jointly with POL S 569.

JSIS B 572 Electoral Systems (5) *R. Pekkanen* Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with POL S 572.

JSIS B 575 Advanced Political Geography (5, max. 10) Provides resources for theorizing how politics shapes and is shaped by geographical relationships. Examines how politics are situated in complex material and discursive geographies that are partly reproduced through political negotiations. Examines interrelationships of contemporary capitalism with other complex systems of social and political power relations. Offered: jointly with GEOG 575.

JSIS B 581 Fundamentals of Global Cybersecurity (5) *Jessica Beyer* Area and international studies approach to investigating nation-state cybersecurity strategy and regional dynamics. Addresses the cybersecurity strategies of major international actors, regional dynamics, famous cyberattacks, and the state of international cybersecurity. Structured geographically. Involves instruction by guest experts.

JSIS B 586 Law and Politics of International Trade (5) *S. Pekkanen* Survey of global trade politics in the context of the World Trade Organization (WTO), with attention to positive and negative aspects of its governance. Examines the impact of the WTO legal framework on trade relations among developed and developing countries. Covers topics such as dispute settlement, development, safeguards, antidumping, intellectual property, and regionalism.

SCHOOL OF INTERNATIONAL STUDIES D

JSIS D 140 Russia from the Tenth Century to the Present (5) *I&S* Russian political, social, and economic history from the tenth century to the present. Offered: jointly with HSTEU 140.

JSIS D 217 Renaissance, Enlightenment, Revolution: Major Works in English (5) *VLPA/I&S* Introduction to major figures of French culture from the Middle Ages to the eighteenth century, their contributions to the intellectual life of the Western world. Readings include Montaigne, Descartes, Rousseau, Voltaire, and Moliere. In English. Offered: jointly with FRENCH 211.

JSIS D 317 Scandinavian Crime Fiction (5) *VLPA Nestingen* Studies Scandinavian crime-fiction literature and cinema since 1965, approaching crime fiction as a changing cultural artifact. Analyzes major issues and texts in the genre and its public status, while also training students in critical approaches to study of popular literature and culture. Offered: jointly with SCAND 315; Sp.

JSIS D 323 Globalization and You (5) *I&S* Offers an evidence-based analysis of globalization that addresses how individuals are affected personally as well as economically amidst the market-led processes of global integration. Offered: jointly with GEOG 323; A.

JSIS D 354 Modern China: From Empire to Republics (5) *Dong* Surveys the major historical events and discourses of twentieth century China and lays a foundation for understanding contemporary China. Themes include reforms; revolutions; colonialism and imperialism; state and society; and social and cultural changes. Offered: jointly with HSTAS 354.

JSIS D 429 International Population (5) *I&S Lavelly* Demographic situation of the world and of major world regions. The demographic transition. Topics include public health, policies of fertility and mortality control, international migration, relation of population growth to economic development, social change, and resource constraints. Exploration and manipulation of international demographic data.

JSIS D 432 Technology and Culture in the Making of Contemporary Empires (5) *I&S Benitez, Rodriguez-Silva* Explores the struggles that shaped organization of the U.S. empire at the turn of the twentieth century, focusing on how empire's material, cultural, and ideological boundaries were drawn. Topics include race, gender, and class as colonial formations; technologies of imperial governance such as public health, citizenship and territory; and popular culture. Offered: jointly with C LIT 432.

JSIS D 435 Population and Modernization (3)

I&S *Hirschman, Lavelly* Examines role of demographic factors in the process of social modernization and economic growth. The approach is both historical, focusing on populations of developed countries since 1700, and analytic, stressing the attempts made by different disciplines to model demographic relationships, with attention to less-developed regions. Offered: jointly with SOC 432.

JSIS D 443 Class and Culture in East Asia (5) I&S, DIV

Examines the nexus between culture and systems of social stratification/class in East Asia, with an emphasis on Taiwan, Korea, Japan, and China. Topics include class formation, mechanisms of social mobility and reproduction, markers of status and hierarchy, resistance, and the formation of class identity. Offered: jointly with ANTH 446.

JSIS D 450 Political Economy of Women and Family in the Third World (5) I&S

Theoretical and empirical aspects of the political economy of women and the family in the Third World during the process of development, with a focus on labor. Main theoretical approaches examined and applied to case studies from Asia and Latin America. Offered: jointly with SOC 450.

JSIS D 451 Cultural Geography of Latin America (5) I&S

Interdisciplinary senior seminar examining how physical and social geographies are culturally constructed and interconnected with subjectivities and power in Latin America. Topics include identity formation grounded in particular territories and the social constitution of space via an interplay of material and cultural forces. Offered: jointly with GEOG 451.

JSIS D 453 Art, Religion, and Politics in Byzantium, 700-1453 AD (3) VLPA/I&S

Kartsonis Evolution of the art of Byzantium (700-1453 AD) in the context of contemporary religious, political, and cultural developments. Offered: jointly with ART H 453.

JSIS D 511 Chinese History: Research Methods and Bibliographic Guides (3, max. 6)

Introductory research seminar dealing with the methodological and bibliographical problems concerning all periods and aspects of Chinese history from the earliest times to the nineteenth century. Prerequisite: two years of classical or modern Chinese. Instructors: Guy

JSIS D 517 Foreign Trade and Investment Law of the People's Republic of China ([1-4]-, max. 4)

JSIS D 530 Religion and Literature (5) The relation of religious thought to the study of imaginative literature. Includes both critical theory and practical criticism of exemplary texts.

JSIS D 533 Seminar on Contemporary Chinese Politics (5)

Research on selected problems in contemporary Chinese politics. Prerequisite: POL S 532, or permission of instructor. Offered: jointly with POL S 533.

JSIS D 549 Government Regulation of Business in Japan (3)

Offered: jointly with LAW B 549.

JSIS D 553 Chinese Legal Tradition (3)

Offered: jointly with LAW B 553.

JSIS D 564 Seminar: Problems of Social and Political Development in Eastern Europe (3-6, max. 6)

Research seminar dealing with selected problems of continuity and change in eastern Europe. Prerequisite: some previous course work on eastern Europe.

JSIS D 572 Peoples and Cultures of Central and Inner Asia (5)

Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 522/NEAR E 558.

LANGUAGE COURSES

JSIS E 101 Elementary Khmer (5) L. Yin

Fundamentals of oral and written Khmer. Offered: A.

JSIS E 102 Elementary Khmer (5) L. Yin

Fundamentals of oral and written Khmer. Prerequisite: JSIS E 101. Offered: W.

JSIS E 103 Elementary Khmer (5) L. Yin

Fundamentals of oral and written Khmer. Prerequisite: JSIS E 102. Offered: Sp.

JSIS E 111 Elementary Modern Greek (5)

Fundamentals of oral and written modern Greek.
Offered: A.

JSIS E 112 Elementary Modern Greek (5)

Fundamentals of oral and written modern Greek.
Prerequisite: JSIS E 111. Offered: W.

JSIS E 113 Elementary Modern Greek (5)

Fundamentals of oral and written modern Greek.
Prerequisite: JSIS E 112. Offered: Sp.

JSIS E 121 Elementary Burmese (5) Introduces speaking, listening, reading and writing skills in colloquial Burmese, building a foundation in basic grammar and developing communicative skills.
Offered: A.

JSIS E 122 Elementary Burmese (5) Introduces speaking, listening, reading and writing skills in colloquial Burmese, building a foundation in basic grammar and developing communicative skills.
Prerequisite: JSIS E 121 Offered: W.

JSIS E 123 Elementary Burmese (5) Introduces speaking, listening, reading and writing skills in colloquial Burmese, building a foundation in basic grammar and developing communicative skills.
Prerequisite: JSIS E 122 Offered: Sp.

JSIS E 134 Intensive Elementary Modern Greek (15)
Fundamentals of oral and written modern Greek. No more than 15 credits allowed for any combination of JSIS E 111, JSIS E 112, JSIS E 113, and JSIS E 134.

JSIS E 201 Intermediate Khmer (5) L. YIN Intensive practice in speaking, reading, and writing.
Prerequisite: JSIS E 103. Offered: A.

JSIS E 202 Intermediate Khmer (5) L. YIN Intensive practice in speaking, reading, and writing.
Prerequisite: JSIS E 201. Offered: W.

JSIS E 203 Intermediate Khmer (5) Luoth Yin
Intensive practice in speaking, reading, and writing.
Prerequisite: JSIS E 202. Offered: Sp.

JSIS E 211 Second-Year Modern Greek (5) VLPA
Continuation of JSIS E 111, 112, 113. Intensive practice in speaking, reading, and writing.
Prerequisite: JSIS E 113. Offered: A.

JSIS E 212 Second-Year Modern Greek (5) VLPA

Continuation of JSIS E 111, 112, 113. Intensive practice in speaking, reading, and writing. Offered: W.

JSIS E 213 Second-Year Modern Greek (5) VLPA

Continuation of JSIS E 111, 112, 113. Intensive practice in speaking, reading, and writing. Offered: Sp.

JSIS E 221 Intermediate Burmese (5) VLPA Expands students' ability in speaking, listening, reading and writing skills in colloquial Burmese, based on the foundation in Elementary Burmese. Prerequisite: JSIS E 123 Offered: A.

JSIS E 222 Intermediate Burmese (5) VLPA Expands students' ability in speaking, listening, reading and writing skills in colloquial Burmese, based on the foundation in Elementary Burmese. Prerequisite: JSIS E 221 Offered: W.

JSIS E 223 Intermediate Burmese (5) VLPA Expands students' ability in speaking, listening, reading and writing skills in colloquial Burmese, based on the foundation in Elementary Burmese. Prerequisite: JSIS E 222 Offered: Sp.

JSIS E 301 Advanced Khmer (5) VLPA L. Yin Develops communicative and reading skills in Khmer and enables students to move on to the literary level.
Prerequisite: JSIS E 203 Offered: A.

JSIS E 302 Advanced Khmer (5) VLPA L. Yin Develops communicative and reading skills in Khmer and enables students to move on to the literary level.
Prerequisite: JSIS E 301 Offered: W.

JSIS E 303 Advanced Khmer (5) VLPA L. Yin Develops communicative and reading skills in Khmer and enables students to move on to the literary level.
Prerequisite: JSIS E 301 Offered: Sp.

JSIS E 321 Advanced Burmese (5) VLPA Advanced reading, writing and discussion of various topics beyond everyday situations. The students will also be further developing their grammar as well as introduced to literary Burmese. Prerequisite: JSIS E 223 Offered: A.

JSIS E 322 Advanced Burmese (5) VLPA Advanced reading, writing and discussion of various topics beyond everyday situations. The students will also be further developing their grammar as well as introduced to literary Burmese. Prerequisite: JSIS E 321 Offered: W.

JSIS E 323 Advanced Burmese (5) VLPA Advanced reading, writing and discussion of various topics beyond everyday situations. The students will also be further developing their grammar as well as introduced to literary Burmese. Prerequisite: JSIS E 322 Offered: Sp.

JSIS E 428 Perspectives on East Asia for Teachers (3, max. 6) I&S Substantive concepts, resources, and materials employed in teaching about East Asia. Requirements may vary in relation to the background of participants.

JSIS E 429 East Asia for Educators (6, max. 18) I&S *Bernson* Provides pre-service and in-service elementary, middle, and high school educators with a grounding in China, Japan, or Korea studies and in curricular strategies for bringing the study of the country of focus into the educator's classroom. Offered: S.

JSIS E 478 Readings in the Social Sciences in Japanese (3-5) I&S Introduction to articles and short works in economics, history, political science, and other social sciences. Assignments chosen from major Japanese monthlies and academic works. All readings in Japanese. Prerequisite: JAPAN 313.

JSIS E 547 Readings on Japan in the Social Sciences (5) Seminar discussing articles in Japanese in economics, history, political science, and other social sciences. Assignments from major Japanese monthlies and academic works. Prerequisite: JAPAN 313 or equivalent and permission of instructor.

JEWISH STUDIES

JEW ST 130 Justice, Service, and Activism in the Jewish Tradition (5) I&S, DIV *Pianko* Focuses on thinking critically about justice and social activism by integrating classroom and community learning. Uses the rich textual tradition of Judaism and the experiences of American Jewish social activists as a

prism for considering the possibilities and challenges of pursuing social justice around the globe.

JEW ST 145 Introduction to Judaism (5) I&S Explores Judaism's sacred texts, holidays, and beliefs. Addresses Judaism's impact on society, culture, and politics. Through the lens of the Jewish experience, grapples with fundamental questions about the role of individuals and members of larger communities in an increasingly multicultural, religious, and interconnected world. Offered: jointly with RELIG 145.

JEW ST 175 Popular Film and the Holocaust (5) VLPA, DIV Introduces films about the Holocaust with particular emphasis on popular films. Develops the requisite tools for analyzing films, a historical perspective of the Holocaust, and the problems involved in trying to represent a historical event whose tragic dimensions exceed the limits of the imagination. Offered: jointly with GERMAN 195.

JEW ST 199 Study Abroad: Jewish Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JEW ST 206 Violence and Contemporary Thought (5) I&S, DIV *Nicolaas P. Barr* Modern and contemporary ideas about violence and their emergence as intellectual responses to historical events. Topics may include histories of physical violence, such as slavery, colonialism, or the Holocaust, as well as structural forms of violence. Offered: jointly with CHID 206; A.

JEW ST 210 Funny Jews: Jewish Humor and American Identity (5) VLPA Jewish humor plays an important role in American popular culture. Investigates the modern history of Jewish humor through the writers, comedians, and actors who have shaped American comedy. Discusses the purpose of humor and the role that Jewish humor plays in shaping American and American Jewish identity.

JEW ST 215 Ladino Language and Culture (5) I&S/VLPA Fundamental elements of Modern Ladino, the traditional language of Sephardic Jews of the Balkans and Middle East, including the traditional Hebrew-based alphabet and its Romanization, and basic grammar, syntax and lexicon. Historical stages

in the development of Ladino and the social and cultural life of modern Ladino speakers. No prior knowledge of Spanish or Hebrew required.

JEW ST 250 Introduction to Jewish Cultural History (5) I&S Introductory orientation to the settings in which Jews have marked out for themselves distinctive identities as a people, a culture, and as a religious community. Examines Jewish cultural history as a production of Jewish identity that is always produced in conversation with others in the non-Jewish world. Offered: jointly with HSTCMP 250.

JEW ST 258 Introduction to Rabbinic Literature (5) I&S/VLPA Investigates the origins of Judaism through the works of the rabbis. The Judaism that prevails today arose after the Romans' destruction of the temple in Palestine in 70 CE. Discusses the rabbinic movement, its writings, and its Greco-Roman as well as Babylonian-Persian context. Offered: W.

JEW ST 269 The Holocaust: History and Memory (5) I&S, DIV Explores the Holocaust as crucial event of the twentieth century. Examines the origins of the Holocaust, perpetrators and victims, and efforts to come to terms with this genocide in Europe, Israel, and the United States. Offered: jointly with HSTCMP 269.

JEW ST 270 From the Mediterranean to America: Jewish, Christian, and Muslim Migrations in Global Context (5) I&S, DIV *Devin E Naar* Migration of "Middle Easterners" - Jews, Christians, and Muslims - from the Ottoman Empire to the United States in the twentieth century. How their experiences shaped, and were shaped by, the development of racial categories, definitions of citizenship and national belonging, and broader political, religious, and cultural dynamics linking the Mediterranean world to the Americas. Offered: jointly with HSTCMP 270.

JEW ST 289 Special Topics in Jewish Studies (1-5, max. 15) I&S Topics vary.

JEW ST 295 The Contributions of German Jews to German Culture (5) VLPA/I&S, DIV Contribution, assimilation, and alienation of German-speaking Jews - such as Karl Marx, Sigmund Freud, and Franz Kafka - emphasizing the multi-cultural nature of that which is understood as "German culture." Offered: jointly with GERMAN 295.

JEW ST 312 Jewish Literature: Biblical to Modern (5) VLPA/I&S, DIV A study of Jewish literature from Biblical narrative and rabbinic commentary to modern prose and poetry with intervening texts primarily organized around major themes: martyrdom and suffering, destruction and exile, messianism, Hasidism and Enlightenment, Yiddishism and Zionism. Various critical approaches; geographic and historic contexts. Offered: jointly with ENGL 312.

JEW ST 317 From Israelites to Jews: the First Six Centuries BCE (3) VLPA/I&S Traces the Israelites, from the Babylonian destruction of the Jerusalemite Temple (586 BCE) to events following the destruction of the second Temple (first century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible required. Offered: jointly with NEAR E 307.

JEW ST 318 Jewish Life in Literature and Film (5) VLPA/I&S Major themes of Jewish life treated in modern narrative and cinema. Topics include religious tradition and modernity. Jewish immigration to America, responses to the Holocaust and Zionism. Offered: jointly with NEAR E 317.

JEW ST 325 Contemporary Judaism in a Global Context (5) I&S *Pianko* Explores the dynamic interactions between contemporary social, political, and intellectual forces and today's changing religious landscape. Critical analysis of the ways in which religious ideologies and communities transform themselves in relationship to geographical contexts and historical processes. Examines Jews and Judaism as a lens for considering changes to religious life.

JEW ST 330 The Sages: Foundations of Classical Judaism (5) I&S *M. Ahuvia* Investigates the origins and foundation of classical Judaism by the Jewish sages (AKA the rabbis) in the context of the Bible's completion, the Romans' destruction of Jerusalem, and the emergence of Christianity. Discusses the rise of the rabbis, their stories and laws, and their Greco-Roman as well as Babylonian-Persian context. Offered: W.

JEW ST 336 American Jewish History Since 1885 (5) I&S Political, social, economic, religious history of American Jewish community from great eastern European migration to present. Integration of

immigrant community into general American community; rise of nativism; development of American socialism; World War I and II; and reactions of American Jews to these events. Offered: jointly with HSTAA 336.

JEW ST 337 The Holocaust and American Life (5) I&S, DIV In most accounts, "the Holocaust" is told as a European story, but it was also transatlantic. Incorporates film, literature, journalism, social scientific writing, diaries, court cases, and other primary sources to examine how events in Europe affected and were affected by developments in United States history. Offered: jointly with HSTAA 337.

JEW ST 339 Bioethics: Secular and Jewish Perspectives (3) I&S, DIV *Hadar Khazzam-Horovitz* Legal, ethical, scientific, and Jewish religious perspectives on contemporary medical and biomedical research practices. Legal and civil rights of women, people with disabilities, minors and minority or marginalized groups. Key differences between secular and Biblical/Rabbinic approaches in interpretation, analysis and application of bioethics, doctor-patient relationships; reproductive methods; abortion; euthanasia; and stem cell research. Offered: jointly with B H 339/NEAR E 328.

JEW ST 357 Jewish American Literature and Culture (5) VLPA, DIV *Butwin* Examines the literary and cultural production of American Jews from the colonial period to the present time. Considers ways in which American Jews assimilate and resist assimilation while Jewish writers, filmmakers, playwrights, and graphic novelists imitate and alter American life and literature. Offered: jointly with ENGL 357; AWSp.

JEW ST 358 Jewish Thought (5) I&S *N. PIANKO* Explores the historical context of major shifts in modern Jewish thought. Topics include the impact of the Enlightenment, Emancipation, the Holocaust, and the founding of the State of Israel on conceptions of Jewish theology, identity, and religious practice. Offered: jointly with HSTCMP 368; Sp.

JEW ST 360 Jews, Greeks, and Romans in the Ancient World (5) VLPA *Stroup* Examines the interactions between populations of Jews, Greeks, and Romans in the ancient Mediterranean from the

late Bronze Age through the early Talmudic period, informed by perspectives from literature (religious and secular), art, and archaeology. Offered: jointly with CLAS 360.

JEW ST 362 Food and Community: Cultural Practices in the Hispanic World (5) I&S *Ana M. Gomez-Bravo* Intersections of food and community in Hispanic cultures. Past and present practices. Food and material culture, urban design, foodways and gender roles, food and race, diet and hygiene, religious, and civic celebrations, and food preparation techniques. Offered: jointly with GEOG 373/SPAN 362; S.

JEW ST 367 Medieval Jewish History (5) I&S Social and intellectual history of the Jews in western Europe to the fifteenth century. Jews under Islam and Christianity; the church and the Jews; the Crusades and their legacy; intellectual achievements; conflict and cooperation. Offered: jointly with HSTAM 367.

JEW ST 368 Modern European Jewish History (5) I&S, DIV Surveys European Jewish history from the Spanish expulsion (1492) to World War I (1914). Considers diversity of European Jewries and the factors that cohered them. Examines how European Jewries ordered their lives, shaped gender and class norms, and interacted with the societies in which they lived. Offered: jointly with HSTEU 368.

JEW ST 369 The Jewish Twentieth Century in Film (5) I&S/VLPA, DIV *Stein* Surveys twentieth-century Jewish history in its European, American, and Middle Eastern contexts by examining films produced in these settings. Considers central events that shaped modern Jewish culture: the changing geography of Europe and the Middle East, mass migrations, the Holocaust, shifting meanings of race, culture, and religion. Offered: jointly with HSTCMP 369.

JEW ST 377 The American Jewish Community (5) I&S, DIV Examines how American Jews adapt to a changing world. Explores impact of diverse immigration, acculturation, social mobility, social justice movements, and changing relations between Jews and non-Jews. Encompasses concerns that all communities have adapting to change, when they are also agents of change. Offered: jointly with SOC 377.

JEW ST 378 Contemporary Jewish American Identities (5) I&S, DIV Introduction to the debates about post-Holocaust Jewish identities in multicultural America. Explores whether a distinctive Jewish community is headed toward assimilation, experiencing revival, or merely transforming the multiple ways Jewish experience is lived. Topics include new Jewish immigrants, the new Orthodox, Black Jews, Jewish feminism, children of Holocaust survivors. Offered: jointly with SOC 378.

JEW ST 379 Doing Jewish Identity Studies (5) I&S *Friedman* Involves the student in researching the diverse Jewish identities of young people today. Includes background reading on Jewish identities in the United States; interviewing young Jewish adults; transcribing and interpreting interviews; and crafting a qualitative research paper. Covers research skills, as well as sensitivity to Jewish community values and concerns.

JEW ST 399 Study Abroad - Jewish Studies (1-5, max. 15) I&S For participants in study abroad program. Specific course content varies. Courses do not automatically apply to major/minor requirements.

JEW ST 418 Jewish Philosophy (5) I&S *M. ROSENTHAL* Introduces the central concepts and themes of Jewish philosophy. Focuses either on debates within a particular historical period - e.g., medieval or modern; or on a topic - e.g., reactions to the Enlightenment or to the Holocaust. Offered: jointly with PHIL 418.

JEW ST 427 Russian Jewish Experience (5) VLPA/I&S, DIV *A. Senderovich* Examines the experience of Russian Jews from the late 19th century to the present through fiction, films, memoirs, graphic novels set during the Bolshevik Revolution, Stalinism, the Holocaust, the Cold War, the post-Soviet era. Explores issues of identity, gender, class, place of Jews as individuals and as a minority within Russian & Soviet society, as well as Jewish-Russian emigration to USA, Israel and elsewhere at the turn of the 21st century. Offered: jointly with RUSS 427; A.

JEW ST 438 Jewish Women in Contemporary America (5) I&S, DIV *Friedman* Examines how Jewish women's identities are socially constructed and transformed in contemporary America, using social

histories, memoirs, and ethnographies to analyze scholars' approaches to Jewish women's lives. Topics include the role of social class, religion, migration, the Holocaust, and race relations in Jewish women's lives. Offered: jointly with GWSS 438.

JEW ST 459 History of Jewish-Muslim Relations (5) I&S, DIV Topics include Jews' and Muslims' linked encounters with empire, westernization, and nationalism; Jewish culture and identity in Islamic contexts migration and diasporic identities; the impact of Zionism, European Jewish settlement in Palestine, and the State of Israel on Jewish-Muslim relations in the Middle East and beyond; Islamophobia and antisemitism. Offered: jointly with HSTAFM 459.

JEW ST 460 Sephardic Culture before 1492 (5) VLPA/I&S *Ana M. Gomez-Bravo* Explores Sephardic art. Music, food, film, literature, citizenship and nationhood, identity, and the origins of Ladino, among other topics. Taught in English. Prerequisite: SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with SPAN 460; W.

JEW ST 462 Anti-Semitism As a Cultural System (5) I&S, DIV Comparative study of various anti-Semitic cultural systems from ancient to modern times. Topics include how anti-Semitism can be defined as a cultural phenomenon; the conditions that explain the circulation of anti-Semitic traditions in a given society; the conditions under which social conflict with Jews becomes anti-Semitism.

JEW ST 463 Enlightenment, Emancipation, Antisemitism: History of the Jews, 1770-1914 (5) I&S, DIV The Jewish experience in the modern world from the European Enlightenment to the First World War. Focus on the debates surrounding Jewish emancipation, the reception of Jews within European society, modern antisemitism, nationalist movements, mass migration, and war.

JEW ST 465 The Jews of Eastern Europe (5) I&S Jewish society in Poland, Russia, the Hapsburg Lands, and Romania from the late Middle Ages to the Holocaust. Offered: jointly with HSTEU 465.

JEW ST 466 The Sephardic Diaspora: 1492-Present (5) I&S, DIV Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the

creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with HSTCMP 469.

JEW ST 468 The Jews in Spanish History (5) I&S
Sephardic Jews in Spanish politics, economy, and culture, emphasizing the medieval Golden Age and the Inquisition. Offered: jointly with HSTEU 464.

JEW ST 490 Advanced Topics in Jewish Studies (1-5, max. 15) I&S Content varies.

JEW ST 491 Seminar: Topics and Issues in Judaism (5) I&S Topics vary.

JEW ST 495 Seminar in Jewish Studies (5) I&S
History of Jewish Studies as an organized field of academic inquiry. Explores the implications for Jewish Studies of its present setting within the context of the humanities and the social sciences.

JEW ST 530 The Sages: Foundations of Classical Judaism (5) M. Ahuvia Investigates the origins and foundation of classical Judaism by the Jewish sages (AKA the rabbis) in the context of the Bible's completion, the Romans' destruction of Jerusalem, and the emergence of Christianity. Discusses the rise of the rabbis, their stories and laws, and their Greco-Roman as well as babylonian-persian context. Offered: W.

JEW ST 539 Bioethics: Secular and Jewish Perspectives (5) H. Khazzam-Horovitz Explores legal, ethical, scientific, and Biblical-Rabbinic & contemporary religious perspectives on contemporary medical and biomedical research practices. Review of key differences between secular and Jewish approaches in interpretation, analysis and application of bioethics. The topics include: doctor-patient relationships; reproductive methods; abortion; euthanasia; and stem cell research. Offered: jointly with B H 539.

JEW ST 558 Jewish Thought (5) N. PIANKO Explores the historical context of major shifts in modern Jewish thought. Topics include the impact of the Enlightenment, Emancipation, the Holocaust, and the founding of the State of Israel on conceptions of Jewish theology, identity, and religious practice. Offered: jointly with HSTCMP 568; Sp.

JEW ST 559 History of Jewish-Muslim Relations (5)
Topics include Jews' and Muslims' linked encounters with empire, westernization, and nationalism; Jewish culture and identity in Islamic contexts migration and diasporic identities; the impact of Zionism, European Jewish settlement in Palestine, and the State of Israel on Jewish-Muslim relations in the Middle East and beyond; Islamophobia and antisemitism. Offered: jointly with HSTAFM 559.

JEW ST 569 The Sephardic Diaspora: 1492-Present (5) Devin E Naar Examines the history and culture of Sephardic Jewry from the expulsion from the Iberian Peninsula in 1492 to the present. Explores the creation of Sephardic communities in the Dutch and Ottoman Empires, Western Europe, the Americas, and Africa, and the history of the conversos and "hidden Jews." Offered: jointly with HSTCMP 569.

LAW, SOCIETIES, AND JUSTICE

LSJ 200 Introduction to Law, Societies, and Justice (5) I&S Steve Herbert, Katherine Beckett Explores the central role of law in social processes; investigates the primary types of legal regimes and compares them across different national and international contexts; contrasts legal with non-legal forms of social ordering; investigates the structure and practice of human rights law.

LSJ 230 Introduction to Disability Studies (5) I&S, DIV J. WOIAK Introduces the field of disability studies. Focuses on the theoretical questions of how society predominantly understands disability and the social justice consequences. Examines biological, social, cultural, political, and economic determinants in the framing of disability. Offered: jointly with CHID 230/DIS ST 230.

LSJ 301 Internship (1-5, max. 5) Participation in an approved internship. Credit/no-credit only.

LSJ 310 Research in Law, Societies, and Justice (1-5, max. 15) I&S Supervised introductory individual and/or seminar-based research on some aspect of society and justice.

LSJ 320 The Politics and Law of International Human Rights (5) I&S, DIV J. Mayerfeld Studies the international human rights movement in its legal and political context. Focuses on institutions which

influence, enable, and constrain the international promotion of human rights. Offered: jointly with POL S 368.

LSJ 321 Human Rights Law in Culture and Practice (5) I&S, DIV Arzoo Osanloo Introduces the complexities of issues surrounding human rights. Examines human rights concerns through critical analyses, taking into account legal, social, economic, and historical variables. Offered: jointly with ANTH 323.

LSJ 322 Human Rights in Latin America (5) I&S, DIV A. Godoy Overview of human rights issues and their recent evolution in Latin American history; military dictatorships; contemporary challenges in the region's democracies. Human rights concerns in relation to broader sociopolitical context. Offered: jointly with JSIS A 324.

LSJ 327 Women's Rights as Human Rights (5) I&S, DIV Rachel A Cichowski Women's rights in comparative perspective, focusing on varying settings that alter the meaning and practical application. Domestic level: areas including abortion politics to trafficking in women. International level: areas including equality claims before European supranational judicial bodies, rape as war crime in international law. Offered: jointly with POL S 327.

LSJ 329 Immigration, Citizenship, and Rights (5) I&S, DIV C. PINEDO-TURNOVSKY A sociological examination of citizenship. Focus on how immigration law and policies shape diverse meanings, practices, and statuses, of citizenship in varied context. Topics include migration theories, state control, stage of legal status, relationship to race and gender ideology, as well as labor and civil society, in shaping membership and rights.

LSJ 331 The Politics of Race and Ethnicity in the United States (5) I&S, DIV M. FRANCIS Introduction to the history and development of racial hierarchy, focusing on how race and ethnicity shape political institutions (e.g., the Constitution, political parties, voting systems). Examination of political relationships between Whites, African Americans, Latinos, and Asian Americans. Case studies of minority representation and the politics of welfare, crime, immigration, and terrorism. Offered: jointly with POL S 317.

LSJ 332 Disability and Society (5, max. 15) I&S Concentrates on contemporary issues in disability studies, focusing on the thematic frameworks of rights, identities, values, and science/medicine. Offered: jointly with CHID 332/DIS ST 332.

LSJ 346 Disability in Global and Comparative Perspective (5) I&S, DIV Examines the meaning, politics, and experience of disability globally and locally in order to understand what is universal and what is particular to the disability experience in a diverse world. Human rights, inclusive development, and social movements approaches addressing the marginalization of disabled persons explored throughout. Offered: jointly with DIS ST 346/JSIS B 346.

LSJ 347 Politics of International Law (5) I&S G. Wallace Examines the development, design, and consequences of international law. Focuses on how international legal agreements constrain and enable both state and non-state actors across a range of issues, including economic affairs, the environment, human rights, and war. Offered: jointly with POL S 347.

LSJ 360 Introduction to United States Constitutional Law (5) I&S George I Lovell Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects. Offered: jointly with POL S 360.

LSJ 361 United States Courts and Civil Liberty (5) I&S G. Lovell Cases and literature bearing on protection of constitutionally guaranteed private rights, with particular reference to the period since 1937. Offered: jointly with POL S 361.

LSJ 363 Law in Society (5) I&S Inquiry into how law matters in social practice. Examines general theories of law, the workings of legal institutions, and the character of legally constituted practices and relationships in diverse terrains of social life. Offered: jointly with POL S 363.

LSJ 366 Comparative Law and Legal Cultures (5) I&S G. Barzilai Explores global issues of comparative law, societies, politics, courts, and cultures. Introduces theories and methods of comparing legal settings internationally and understating diverse responses to law. Covers what is comparative law; families of law; history of comparative law; judicial

review; legal cultures; rights consciousness; and regulation. Can not be taken for credit if student has already taken LSJ/POL S 367. Offered: jointly with JSIS B 366.

LSJ 367 Comparative Law and Courts (5) I&S R. *Cichowski* Introduction to comparative judicial politics, focusing on the relationship between law and politics in cross-national perspective, as well as on the functioning of supranational and international legal entities in the international system. May not be taken for credit if student has taken LSJ/JSIS B 366. Offered: jointly with POL S 367.

LSJ 370 Privacy (5) I&S S. *Pekkanen* Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with JSIS B 370/POL S 370; Sp.

LSJ 375 Crime, Politics, and Justice (5) I&S Examines role of police, courts, and corrections in criminal justice; investigates critical legal and sociological factors and perspectives that shape criminal procedure; considers the relationship between criminal procedure and wider concerns of justice and equality in society. Offered: jointly with SOC 372.

LSJ 376 Drugs and Society (5) I&S Explores the questions of drug use and abuse, social and political factors that shape response to their use, and the social conditions under which drug use is likely to have adverse consequences. Also covers U.S. drug control policy, the political economy of legal and illegal drugs, and political aspects of drug use. Offered: jointly with SOC 376.

LSJ 377 Punishment: Theory and Practice (5) I&S Examines the philosophical reasoning that underlies punishment practices such as sentencing, imprisonment, or capital punishment. Considers policy issues in these areas in light of theories about morality and human nature. Helps students learn how to analyze punishment policies from ethical and philosophical perspectives.

LSJ 378 Policing the City (5) I&S S. *HERBERT* Investigates how and why formal and informal order is established in urban areas, how this order

produces advantages and disadvantages, and possibilities of alternative visions of order. Topics include formal means of control (zoning, laws, policing, building codes) and informal means of control (gossip, ostracism, peer pressure, local politics). Offered: jointly with GEOG 378; A.

LSJ 380 Contemporary Issues in Comparative Legal Institutions (5, max. 10) I&S Covers theoretical, empirical, and comparative aspects of such topics as socio-legal concepts, justice, legal policies, and the institutions of law.

LSJ 381 Contemporary Issues in Rights (5, max. 10) I&S Studies the theoretical, empirical, and comparative aspects of such topics as human rights, civil rights, and legal change.

LSJ 401 Field Experience in Law, Societies, and Justice (5) S. *HERBERT* Participant observation in a public or private agency relevant to the study of law, justice, human rights, or court systems.

LSJ 420 The Politics of Rights (5) I&S M. *McCann* Examines rights in practical and social interaction, rights as social conventions, relations of rights practices to official state policies, disputing practices, interest formation, and identity construction at individual and group levels. Explores how rights practices figure into the constellation of contested power relations within modern societies.

LSJ 421 Women's Rights and Politics in Islamic Society (5) I&S, DIV A. *OSANLOO* Human rights theory with women's legal rights and practice within context of the Islamic state. Introduction to debates regarding universality of human rights through examination of women's rights in Muslim context. Considers journalistic notions of homogeneity among Muslims, political nature of the Islamic state, and its mobilization of human rights. Offered: jointly with ANTH 498.

LSJ 422 Immigrants, Labor, and Legality (5) I&S, DIV C. *PINEDO-TURNOVSKY* Provides sociological examination of working immigrants in the United States. Focuses on how immigration and labor legislation shape context of working, worker identity, and rights. Topics include federal and state legislation, employee classification, division of labor, skilled/unskilled, flexibility, legal status, organizing,

and relationship to race and gender ideology in shaping contexts of working and rights.

LSJ 425 Domesticating International Human Rights: Perspectives on U.S. Asylum and Refugee Law (5)

I&S, DIV A. *OSANLOO* Examines the creation, production, and proliferation of law and legal categories relating to the status of refugees and asylum-seekers in the United States. Integrates anthropological perspectives of law's ability to create meaning in the examination of deeper implications of asylum and refugee law in American society. Offered: jointly with ANTH 497.

LSJ 426 Reconciliation: The Politics of Forgiveness in a Global Age (5) I&S, DIV A.

OSANLOO Draws on history of post-World War II conflict. Analyzes international mechanisms for reconciliation alongside philosophical and moral consideration. Combines occidental moral philosophies of secular human rights rooted with local knowledge and value systems. Surveys faith-based epistemologies underlying reconciliation processes. Prerequisite: either LSJ 320/POL S 368, LSJ 321/ANTH 323, LSJ 322/JSIS A 324, or PHIL 338.

LSJ 428 Women's Rights in an Integrated Europe (5)

I&S Examines the transformation in women's rights policy within the European community from the late 1950s through the present. Focuses on the legal rules and bodies that govern not only these policy domains, but also their evolution and impacts. Offered: jointly with POL S 415.

LSJ 430 Topics in Disability Studies (1-5, max. 15)

I&S Theoretical, critical, analytical, or comparative examination of an issue or issues in Disability Studies. Topics vary. Prerequisite: either DIS ST/CHID/LSJ 230, DIS ST 332, DIS ST 433, or DIS ST 434. Offered: jointly with CHID 430/DIS ST 430.

LSJ 431 Civil-Military Relations in Democracies (5)

I&S E. *Kier* Explores issues of civil-military relations in the United States including debates about the garrison state hypothesis; military advice on the use of force; the civil-military "gap"; and issues of race, gender, and sexual orientation in the military. Offered: jointly with POL S 430.

LSJ 433 Disability Law, Policy, and the Community

(5) I&S, DIV Addresses the history of legal rights of disabled people, U. S. disability policy, and the role

of community activism and other forces in policy development and systems change. Introduces the existing social service system that affects disabled people. Offered: jointly with CHID 433/DIS ST 433.

LSJ 434 Civil and Human Rights Law for Disabled People (5) I&S, DIV

Brown Expands knowledge of civil and human rights for disabled people. Examines the American perspective (ADA) as well as various international models including the United Nations' International Human Rights treaties as they relate to disabled people. Offered: jointly with CHID 434/DIS ST 434; A.

LSJ 437 Crime, Law, and Mental Illness (5) I&S, DIV

Explores experiences of those with mental illness in the criminal justice system and involuntary civil commitment system. Emphasis on societal responses including the emergence of therapeutic courts and specialized police training. Examines how courts, legislature, and communities balance public safety and civil liberties. Offered: jointly with CHID 437/DIS ST 437.

LSJ 438 Human Rights and International Development (5) I&S, DIV S.

Meyers Focuses on recent theoretical debates and innovations in the practice of applying human rights principles to international development. Uses case studies of groups historically marginalized in development policies, such as persons with disabilities, indigenous peoples, and older persons to understand the usefulness of course concepts.

LSJ 444 Ethics in Law and Justice (5) I&S

Applies ethical theories, research, and practice to the law and justice system, with the goals of: (1) analyzing the moral dimensions of criminal law; (2) studying ethical issues in law enforcement, adjudications, and corrections; and (3) examining a variety of controversial ethical issues associated with the justice system.

LSJ 456 Institutional Failure (5) I&S R.

THORPE Examines why political institutions fail to achieve their goals or operate in a manner they were originally intended to, and the consequences of these failures. Topics include the national security establishment, the drug war, concentrated poverty, mass incarceration, and inner-city schools. Offered: jointly with POL S 456.

LSJ 467 Law, Justice, and the Environment (5) I&S. *HERBERT* Examines the role law plays in shaping environmental policy. Challenges student to understand how environmental concerns are translated into legal discourse, and covers several typical issues that emerge in environmental law. Centers on active discussions. Offered: jointly with GEOG 467.

LSJ 469 Law and Rights in Authoritarian Regimes (5) I&S. *WHITING* Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Offered: jointly with JSIS B 469/POL S 469.

LSJ 474 Geography and the Law (5) I&S. *HERBERT* Examines the relationship between geography, law, and socio-legal analysis; reviews significant instances where law and geography intersect, such as the regulation of public space, the regulation of borders and mobility, and disputes over property and land use. Offered: jointly with GEOG 474.

LSJ 476 Miscarriages of Justice (5) I&S Examines legal and social factors that shape criminal case outcomes, analyzing how one type of miscarriage of justice - wrongful conviction - occurs. How can cases of wrongful conviction be explained? Why are some people, against whom there is only weak evidence, convicted-and sometimes even executed? Offered: jointly with SOC 476.

LSJ 478 The Experience of Incarceration (5) I&S. *Herbert* The United States incarcerates people at a higher rate than any other country and these individuals' daily lives largely escape any form of public awareness. This course is designed to help illuminate those lives. While prisons vary significantly, there are sufficient commonalities across U.S. prisons to allow meaningful exploration of what it means to be in a contemporary penal institution. We will undertake such an exploration in this class. Offered: A.

LSJ 480 Policing Modern Society (5) I&S Explores institution and practices of police in context of the rise of modern society, and considers the expanding presence of the police in everyday modern life. Topics include: history of policing, changing roles of

police, police reform, and ethical dilemmas intrinsic to the police function.

LSJ 488 Honors in Law, Societies, and Justice (5-) First of a two-course hyphenated sequence. To be completed with LSJ 489.

LSJ 489 Honors in Law, Societies, and Justice (-[1-5], max. 5) I&S Thesis research honors option. Second of a two-course hyphenated sequence. To be completed with LSJ 488.

LSJ 490 Special Topics in Comparative Legal Institutions (1-5, max. 15) I&S Focused, comparative examination of legal institutions.

LSJ 491 Special Topics in Rights (1-5, max. 15) I&S Focused, comparative examination of topics in rights.

LSJ 495 Study Abroad-Law, Societies, and Justice (3-5, max. 15) I&S Comparative studies abroad of legal institutions, rights, and justice as related to national settings. Specific course content determined by faculty member.

LSJ 499 Readings in Law, Societies, and Justice (1-5, max. 10) Individual readings in law, societies, and justice.

LSJ 501 Law, Politics, and Society (5) *Beckett, Herbert, McCann* Provides a broad overview of, and introduction to, the interdisciplinary field of Law and Society Studies, including the historical development of law and society studies and an overview of its main concerns and questions.

LSJ 510 Topics in Law and Society Studies (3-5, max. 20) Current topics in law and society studies.

LINGUISTICS

AMERICAN SIGN LANGUAGE

ASL 101 Elementary American Sign Language I (5) *Lance Forshay, Kristi G Winter* Introduction to American Sign Language using conversational methods. Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. First in a sequence of three. Offered: A.

ASL 102 Elementary American Sign Language II (5)

Kristi G Winter, Lance Forshay Focuses on building mastery of American Sign Language grammar skills, increasing vocabulary, and gaining a deeper knowledge and appreciation of deaf culture. Second in a sequence of three. Prerequisite: ASL 101. Offered: W.

ASL 103 Elementary American Sign Language III (5)

Lance Forshay, Kristi G Winter Focuses on grammatical features such as spatialization, directionality, and non-manual components. Intensive work in vocabulary development and continued study of deaf culture. Third in a series of three. Prerequisite: ASL 102. Offered: Sp.

ASL 134 Intensive First Year ASL (15) Bateh, Forshay,

Winter Intensive introduction to American Sign Language using conversational methods and covering vocabulary, grammatical usage, and culturally appropriate behavior. Also focused on grammatical features such as spatialization, directionality, and non-manual components. Offered: S.

ASL 201 Intermediate American Sign Language I (5)

VLPA *Lance Forshay* Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. First in a series of three. Prerequisite: either ASL 103 or ASL 134. Offered: A.

ASL 202 Intermediate American Sign Language II (5)

VLPA *Lance Forshay* Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. Second in a series of three. Prerequisite: ASL 201. Offered: W.

ASL 203 Intermediate American Sign Language III

(5) VLPA *Kristi G Winter, Lance Forshay* Covers vocabulary, grammatical usage, and culturally appropriate behavior within the deaf community. Emphasizes receptive/expressive skill development and fluency with attention to correct formation of signs, movement, rhythm, phrasing, and clarity. Third in a series of three. Prerequisite: ASL 202. Offered: Sp.

ASL 234 Intensive Intermediate American Sign Language (15) VLPA

Lance Forshay Intensive second year American Sign Language using conversational methods and covering vocabulary, grammatical usage, and culturally appropriate behavior. Also focuses on grammatical features such as spatialization, directionality, and non-manual components. Prerequisite: ASL 103. Offered: S.

ASL 301 Advanced American Sign Language I (5)

VLPA This course is a non-sequential course in advanced study of American Sign Language (ASL) with emphasis on basic concepts of ASL linguistics. This is an application of linguistic theories in ASL in which students will gain an advanced understanding and mastery of ASL grammar, sociolinguistics, language variation in the Deaf community according to region, age, gender, minority groups and Deaf-Blind people. Prerequisite: ASL 203; recommended: ASL 203 Offered: A.

ASL 302 Advanced ASL II (5) VLPA

L. Forshay Non-sequential course in advanced study of American Sign Language (ASL) with emphasis on basic concepts of ASL linguistics. An application of linguistic theories in ASL in which students gain an advanced understanding and mastery of ASL grammar, sociolinguistics, language variation in the Deaf community according to region, age, gender, minority groups and Deaf-Blind people. Prerequisite: ASL 203 Offered: W.

ASL 303 Advanced ASL III (5) VLPA

M. Cooper Non-sequential course in advanced study of American Sign Language (ASL) with emphasis on basic concepts of ASL linguistics. An application of linguistic theories in ASL in which students will gain an advanced understanding and mastery of ASL grammar, sociolinguistics, language variation in the Deaf community according to region, age, gender, minority groups and Deaf-Blind people. Prerequisite: ASL 203; recommended: ASL 203 Offered: Sp.

ASL 305 Introduction to American Deaf Culture (3)

I&S, DIV L. FORSHAY Covers topics in Deaf culture, history, education, sociology, language, legal issues, art and literature, sensory variety and politics, audism, assistive technological devices, Deafhood, Deaf Blind, Deaf identity and intersections of diversity within the Deaf community, and other special topics analyzed from the Deaf culture worldview.

ASL 306 Deaf History (3) I&S Covers all major events impacting Deaf people, in Europe and America. Topics include: development of sign language, deaf education, politics of deafness, audism, eugenics, hearing technology, leadership in deaf community, deaf revolution movements, international deaf history, and key biographies. Experience with American Sign Language not required.

ASL 334 Intensive Advanced American Sign Language (15) VLPA K. Winter Intensive course in advanced study of American Sign Language (ASL) with emphasis on basic concepts of ASL linguistics, Deaf cultural history and DeafBlind studies. An application of linguistic theories in ASL in which students gain an advanced understanding and mastery of ASL grammar, sociolinguistics, language variation in the Deaf community according to region, age, gender, minority groups and DeafBlind people. Prerequisite: ASL 203 or ASL 234; recommended: Two years of ASL at an institution of higher learning. Offered: S.

ASL 480 Special Topics in American Sign Language (3, max. 12) VLPA L. Forshay Introduction to an area of study in American Sign Language (ASL). Topics may include ASL linguistics, Pro-Tactile, Foreign Signed Languages, Deaf culture or other related topics. Recommended: Some background in American Sign Language. Offered: ASp.

ASL 495 Literature and Poetry (3) VLPA Emphasizes the historical background, story content, analysis of grammatical features, and discourse analysis to include a variety of sign registers and styles. Challenges and redefines the concept of literature with the visual-gestural nature of sign language using films and videos including: the Veditz's 1913 motion films collections; American Sign Language poetry works by Valli and Lentz; folktales; and humor. Prerequisite: ASL 202.

ASL 499 Independent Study or Research (1-3, max. 3) L. FORSHAY, K. WINTER Advanced study or research of a topic related to American Sign Language guided by a faculty member. Prerequisite: ASL 203; ASL 305.

LINGUISTICS

LING 100 Fundamentals of Grammar (5) VLPA Introduction to basic grammatical concepts and terminology. Specifically intended for students planning to take a foreign language or linguistics. Does not count toward the linguistics major or minor.

LING 101 Fundamentals of Pronunciation for Language Learners (5) VLPA Fundamentals of pronunciation for language learners. Introduces students to systematic characteristics of language sounds through examination of specific languages and their differences from English. Includes a laboratory component developing perceptual and productive skills of non-English sounds.

LING 200 Introduction to Linguistics (5) VLPA/I&S, QSR Language as the fundamental characteristic of the human species; diversity and complexity of human languages; phonological and grammatical analysis; dimensions of language use; and language acquisition and historical language change. Not open for credit to students who have completed LING 201 or LING 400.

LING 201 Introduction to Linguistic Theory and Analysis (5) VLPA/I&S, QSR Background and scope of modern linguistics; behaviorist versus rationalist theories of language; universal and cognitive aspects of language structure; interplay of genetic and social factors in language formation; linguistic analysis. Not open for credit to students who have completed LING 200.

LING 203 Introduction to Anthropological Linguistics (5) I&S/VLPA Linguistic methods and theories used within anthropology. Basic structural features of language; human language and animal communication compared; evidence for the innate nature of language. Language and culture: linguistic relativism, ethnography of communication, sociolinguistics. Language and nationalism, language politics in the United States and elsewhere. Offered: jointly with ANTH 203.

LING 210 Language and Thought (5) I&S *Laura W McGarrity* Investigates linguistic relativity, the extent to which language can impact non-linguistic cognitive processes. Evolution of the theory from its

historical origins to current research. Evidence for/against the theory drawn from cross-linguistic case studies. Offered: WSp.

LING 212 Infant Brain and Language Development (5) NW *Naja Ferjan Ramirez* Examines the interplay of biological and environmental factors in shaping language development in early childhood. Investigates how early language and brain growth are linked to children's opportunities to learn, affecting education and societies worldwide. Offered: Sp.

LING 220 Origins of the Germanic Languages (5) VLPA Introduction to basic grammatical concepts, terminology, and linguistics with emphasis on German-English relationship. Overview of phonology, morphology, syntax, and history of Germanic languages and people, both ancient and modern. Languages covered include Old, Middle, and New High German; English, Frisian, Dutch, Old Saxon, and Gothic. Taught in English. Offered: jointly with GERMAN 220.

LING 233 Introduction to Language and Society (5) VLPA, DIV *Evans, Wassink* Introduces the study of sociolects, the varieties of language that arise from differences in cultural and societal groups, often reflective of power inequalities. Raises awareness of the role that society and the individual play in shaping sociolects via the systematic observation and critical discussion of linguistic phenomena. Offered: jointly with ANTH 233/COM 233; A.

LING 234 Language and Diversity (5) I&S, DIV Advances students' knowledge of language and diversity in a global society, focusing on language and identity, multilingualism, language contact, language spread/variation, and language loss. Offered: WSp.

LING 242 Introduction to Meaning (5) VLPA Non-technical introduction to meaning in language and how it functions in communication and thinking. Discussion of how and why meanings of words change through time.

LING 269 Swearing and Taboo Language (5) I&S L. *MCGARRITY* Examines swear words and taboo language, both within and across cultures, investigating their linguistic, pragmatic, neurological, psychological, social, and legal aspects. Offered: ASP.

LING 270 Introduction to Perl Programming for Linguists (5) Bender Fundamental programming techniques, including data types, control flow, regular expressions, file handling, GUI design, and CGI interaction. Content relates to a variety of linguistic concepts including syntax, morphology, phonology, lexicon building and foreign language corpora. No previous programming necessary; however, a background in general linguistic theory is assumed. Offered: W.

LING 333 Linguistics and Society (3) VLPA/I&S Interaction of language, culture, and society, and the relationship of linguistic theory to societal problems. Ethical and political considerations involved in the application of linguistic theory.

LING 372 Language and Translation (5) VLPA *Tarlinskaja* Role of linguistic concepts in the process of translation from one language to another. Attention to both language universals and language particulars.

LING 373 Introduction to Localization and Project Management (5) Covers basic concepts of translation, localization, and internationalization. Explores rationales for localizing products; history and future of the industry; workflows, professional roles, and localization tools. Includes the application of central concepts of localization to real-life situations; and introduction to the basics of localization project management. Offered: jointly with FRENCH 373.

LING 374 Localization: Technology and Tools (5) Covers basic concepts of localization and internationalization. Examines how technology and tools are applied to solving translation and localization scenarios in the real world. Includes daily tasks and basic steps; machine translation; community localization; and experience with actual localization tools. Offered: jointly with FRENCH 374.

LING 390 Foreign Studies in Linguistics (1-15, max. 20) I&S For students who take linguistics courses while participating in a University of Washington study abroad program and for which there is no direct University of Washington equivalent.

LING 400 Survey of Linguistic Method and Theory (5) VLPA/I&S, QSR L. *MCGARRITY* Examines major linguistic theories in phonology, syntax and

semantics; linguistic analysis and argumentation. Not available for credit to students who have completed LING 200.

LING 401 The Linguistic, Philosophical, and Political Thought of Noam Chomsky (3) VLPA/I&S Relation of current work in Chomskyan linguistics to philosophical, psychological, political, and educational thought. Prerequisite: LING 200 or LING 400.

LING 402 Survey of the History of Linguistics (3) I&S/VLPA Main trends in linguistic theory and philosophy of linguistics from ancient times through advent of transformational-generative grammar. Includes nineteenth-century comparative and historical grammar, Prague school grammar, American structuralist grammar, major concerns of linguistics today. Prerequisite: LING 451.

LING 403 Linguistics of Signed Languages (5) VLPA Introduction to the phonological, morphological, and syntactic structure of American Sign Language. Topics include acquisition, sociolinguistics, neurolinguistics, lexicography, history, and culture. Knowledge of American Sign Language is not required. Prerequisite: LING 200, LING 203, or LING 400 Offered: W.

LING 404 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 405 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 406 Indo-European (3) VLPA Voyles Overview of the Indo-European languages, of comparative method, and of the phonology, morphology, and syntax of reconstructed Indo-European. Grammatical analyses and texts from various attested ancient and modern Indo-European languages, selected according to the interests of the students.

LING 407 Languages of the World (5) VLPA A survey of the world's languages, focusing on their syntactic, phonological, and morphological properties. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 410 Historical Linguistics (5) VLPA Method and theory of historical and comparative linguistics. Problems of phonological, morphological, syntactic, and semantic change and reconstruction. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Instructors: Aldridge, Handel

LING 411 Native Languages and Language Families of Washington State (3) VLPA Survey of linguistic structures of Washington native languages. Language families consist of Salish, Wakashan, Chemakuan, Athabaskan, Chinookan, Sahaptian, Cayuse. Structure and origin of Chinook jargon. Prerequisite: LING 450; either LING 461 or LING 481. Instructors: Hargus

LING 412 Japanese Syntax and Semantics (5) VLPA T. OGIHARA Introduces issues in Japanese syntax and semantics. Emphasizes description generalizations, rather than theoretical proposals. Prerequisite: either LING 200 or LING 400; recommended: LING 461; at least two years of coursework in Japanese. Offered: jointly with JAPAN 442.

LING 415 History of the German Language (5) VLPA Traces the history of the German language from early Germanic to the present. Offered: jointly with GERMAN 452; W.

LING 416 History of the Chinese Language (5) VLPA E. Aldridge, Z. Handel Provides an overview of the phonology, morphology, and grammar of Old and Middle Chinese and the most significant changes that have taken place from Old to Modern Chinese. Prerequisite: either LING 200, ANTH 203/LING 203, CHIN 342, or CHIN 442; recommended: An introductory linguistics course Offered: A.

LING 419 Romance Linguistics Senior Essay (3) VLPA Capstone course for undergraduate Romance Linguistic majors.

LING 421 R for Linguists (5) QSR A. Wassink Introduction to the R programming language and environment for character processing, validation,

summarization, and visualization of linguistic data. Students learn to work with different datatypes (numeric, character strings, geographic information, lists) . Students produce scripts of utility to researchers in different linguistic subfields (including corpus linguistics, phonetics, sociolinguistics, syntax) . Prerequisite: LING 200 or LING 400; recommended: An introductory linguistics course. Offered: Sp.

LING 430 Pidgin and Creole Languages (5) VLPA/I&S

Explores aspects of the linguistic structure, history, and social context of pidgin and creole languages. Creolization as one possible outcome of language contact. Examines theories of creole genesis, similarities and differences between creole and non-creole languages. Prerequisite: either ANTH 203, LING 200, LING 201, LING 203, or LING 400. Instructors: Wassink Offered: jointly with ANTH 439.

LING 432 Sociolinguistics I (5) VLPA/I&S, DIV

Interrelationships between social and linguistic factors influencing variation in speech production and perception, morphology, syntax, lexicon. Considers contribution of ethnic, regional and socioeconomic group memberships to dialect differentiation and progression of language change. Nonstandard language, diglossia, pidgins, creoles, gender differences, bi- and multilingualism, ethnography of speaking, pragmatics, and language attitudes. Prerequisite: either LING 200 or LING 400. Instructors: Evans, Wassink Offered: jointly with ANTH 432.

LING 433 Sociolinguistics II (5) VLPA/I&S Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Instructors: Wassink Offered: jointly with ANTH 433.

LING 441 Language Processing and Development 1 (5) I&S/NW This course explores current research on language processing and development in adult native speakers and children, with a focus on sound and word-level representations. Topics include speech perception, word recognition, acquisition of phonology and word meanings, as well as a variety of methodologies that are used to study these mechanisms. Prerequisite: LING 200 or LING 400. Offered: A.

LING 442 Language Processing and Development 2 (5) I&S Overview of research on language processing and development in adult native speakers and children, with a focus on the sentence-level representations. Topics include processing of syntactic/semantic representations, development of morpho-syntax, semantics and pragmatics, as well as variety of methodologies for studying these mechanisms. Prerequisite: LING 200 or LING 400.

LING 446 English Phonology (3) VLPA Descriptively oriented approach to of English phonology and phonetics; dialect differences. Prerequisite: LING 450. Instructors: Hargus

LING 449 Second-Language Learning (5) VLPA Issues related to the linguistic aspects of second-language learning. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 450 Introduction to Linguistic Phonetics (5) VLPA/NW *S. HARGUS, A. WASSINK, R. WRIGHT* Introduction to the articulatory and acoustic correlates of phonological features. Issues covered include the mapping of dynamic events to static representations, phonetic evidence for phonological description, universal constraints on phonological structure, and implications of psychological speech-sound categorization for phonological theory. Prerequisite: either LING 200 or LING 400.

LING 451 Phonology I (5) I&S/VLPA *Sharon L Hargus* Patterning of sounds and gestures in human languages; analysis in generative phonological framework. Prerequisite: LING 450.

LING 452 Phonology II (5) I&S/VLPA *Sharon L Hargus* Speech sounds, mechanism of their production, and structuring of sounds in languages; generative view of phonology; autosegmental and metrical phonology. Prerequisite: LING 451.

LING 453 Experimental Phonetics (5) VLPA/I&S/NW Examines phonetic and phonological aspects of spoken language using experimental methods. Focuses on acoustic phonetics and speech perception. Significant time devoted to experimental design and hands-on data analysis techniques. Prerequisite: LING 450. Instructors: Wright

LING 455 Areal Linguistics (3, max. 6) VLPA/I&S Issues involved in classification of languages.

Systems of classification based on structure, word order, areal features. Ways in which languages may be classified for different purposes. Processes such as borrowing, vocabulary specialization, lexical change, and language death and revival.

Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with ANTH 455.

LING 458 Language and Gender (5) VLPA/I&S, DIV

Survey of the theoretical trends, methods, and research findings on the relationship between language and gender. Focus on power relations in gendered language use. Extensive study of research based on conversational analysis. Prerequisite: LING 200; either LING 201, LING 203, or ANTH 203.

Offered: jointly with ANTH 450/GWSS 450.

LING 461 Syntax I (5) I&S/VLPA Barbara Citko

Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: either LING 200 or LING 400.

LING 462 Syntax II (5) VLPA/I&S Barbara Citko

Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 461.

LING 463 Syntax III (4) VLPA/I&S

Study of the structural properties of language; introduction to generative transformational syntax. Prerequisite: LING 462.

LING 464 Language Politics and Cultural Identity (3)

VLPA/I&S Theories and case studies of the power of language and how it is manipulated. Multilingualism, diglossia. Role of language and linguistics in nationalism. Standardization, educational policy, language and ethnicity. World languages, language death and revival. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400. Offered: jointly with ANTH 464.

LING 470 Discourse: Analyzing Talk and Texts (5)

VLPA/I&S, DIV A critical and practical introduction to contemporary theories/methods in discourse analysis: how verbal communication (together with visual communication) is used in conversational talk and mediated texts to construct identities and relationships; and how power and ideology are reproduced through these everyday social interactions. Offered: jointly with COM 470.

LING 471 Computational Methods for Linguists (5)

QSR Overview of methods for working with linguistic data in electronic form: electronic corpora, linguistic software tools, textual data formats, operating system fundamentals, and basic programming.

Prerequisite: either LING 450 or LING 461.

LING 472 Introduction to Computational Linguistics

(5) VLPA/NW E. BENDER Introduction to computational approaches to modeling language, for linguistic research and practical applications, including analyses at different levels of linguistic structure and symbolic as well as statistical approaches. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 311. Offered: jointly with CSE 472.

LING 473 Basics for Computational Linguistics (3)

Examines computer applications involving automatic processing of natural language speech or text by machines. Intended as preparation for CLMS core courses. Includes concepts from probability and statistics; formal grammars and languages; finite-state automata and transducers; review of algorithms and data structures; and software for using parallel server cluster. Prerequisite: CSE 326; STAT 391; programming in Perl, C, C++, Java, or Python. Offered: S.

LING 476 Philosophy of Language (5) VLPA/I&S

Current theories of meaning, reference, predication, and related concepts. Offered: jointly with PHIL 453.

LING 478 Semantics I (5) VLPA/NW

Introduction to the study of meaning as part of linguistic theory. Relation of semantics to syntax. Emphasis on formal semantics and pragmatics. Discussion of various semantic phenomena in natural language that are theoretically relevant. Prerequisite: LING 461. Instructors: Ogihara

LING 479 Semantics II (3) VLPA/I&S/NW T. Ogihara

Formal characterization of linguistic meaning. Emphasis on nature and purpose of formal semantics and on its relation to formal syntax. Prerequisite: LING 478 Offered: jointly with PHIL 479.

LING 480 Topics in Linguistics (3, max. 12) VLPA

Introduction to an area of linguistic study not covered by the regular departmental course offerings.

LING 481 Introduction to Morphology (5) VLPA S. *HARGUS* Structure of words and the processes by which they are formed. Morphological processes in a wide variety of languages. Prerequisite: LING 450.

LING 484 Lexical Semantics and the Lexicon (3) VLPA Role of the lexicon in syntax and semantics. Topics include the syntax-lexicon mapping; theories of argument structure; complex predicate formation and lexical subordination; the lexicon and language acquisition; the role of the lexicon in linguistic theory; and the lexicon and sentence processing. Prerequisite: LING 461.

LING 490 Undergraduate Fieldwork (1-5, max. 15) Individual consultation with faculty member and supervised practical experience in a broad range of industry, community, clinical settings dealing with linguistic issues. Credit/no-credit only. Offered: AWSpS.

LING 499 Undergraduate Research (1-5, max. 10)

LING 501 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 452, LING 462, or LING 508.

LING 502 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 452, LING 462, or LING 508.

LING 503 Field Methods (3) Guided analysis of a language unfamiliar to all students of the class; construction of a grammar based on material elicited from native informant. Prerequisite: LING 453, LING 462, or permission of instructor.

LING 507 Syntactic Theory I (5) Barbara Citko Introduction to the principles and parameters model of syntactic theory. The lexicon and its relation to syntactic representations. Syntactic modules and principles. Problem solving.

LING 508 Syntactic Theory II (5) Barbara Citko Further explorations in principles and parameters syntax. Topics include logical form, island phenomena, locality restrictions, and licensing.

Prerequisite: LING 507 or permission of instructor. Offered: W.

LING 509 Syntactic Theory III (5) Barbara Citko Focus on primary readings in syntactic theory, from classic papers on constraints and the architecture of grammar to recently published articles. Prerequisite: LING 508 or permission of instructor. Offered: Sp.

LING 510 Introduction to Historical Linguistics (5) E. ALDRIDGE, Z. HANDEL Method and theory of historical linguistics. Covers phonological, syntactic, and semantic change. Also includes comparative reconstruction. Prerequisite: either LING 200, LING 201, ANTH/LING 203, or LING 400.

LING 514 Seminar in Comparative Linguistics (3) Nineteenth- and twentieth-century theories of phonological change. Prerequisite: LING 404 or permission of instructor. Instructors: Kaisse

LING 515 Topics in the History of Germanic Languages (5) Barrack, Voyles Topics in diachronic studies of Germanic languages such as Gothic, Old High German, Old Saxon.

LING 516 History of the Chinese Language (5) E. Aldridge, Z. Handel Provides an overview of the phonology, morphology, and grammar of Old and Middle Chinese and the most significant changes that have taken place from Old to Modern Chinese. Prerequisite: either LING 200, ANTH 203/LING 203, CHIN 342, or CHIN 442; recommended: An introductory linguistics course Offered: A.

LING 519 Mathematical Models of Grammar (3) Study of some mathematical models of language recognition, emphasizing context-free and context-sensitive grammars. Prerequisite: graduate standing in mathematics, linguistics, or psychology, or permission of instructor. Instructors: Ogihara

LING 520 Introduction to Statistics for Linguists (5) Introduction to statistical methods used in linguistics research. Focuses on understanding reports of statistical results and applying statistical methods to data sets. Prerequisite: LING 200 or LING 400; recommended: An introductory linguistics course. Offered: Sp.

LING 521 R for Linguists (5) A. *Wassink* Introduction to the R programming language and environment for character processing, validation, summarization, and visualization of linguistic data. Students learn to work with different datatypes (numeric, character strings, geographic information, lists) . Students produce scripts of utility to researchers in different linguistic subfields (including corpus linguistics, phonetics, sociolinguistics, syntax) . Prerequisite: LING 200 or LING 400; recommended: An introductory linguistics course. Offered: Sp.

LING 524 Seminar in Theoretical Linguistics (4, max. 8) Individual and joint research on selected topics in theoretical linguistics. Topics change each quarter. Typical topics are semantics, generative grammar, phonological theories. Prerequisite: LING 453, LING 463.

LING 525 Seminar in Theoretical Phonology (4, max. 12) Individual and joint research on selected topics in theoretical phonology. Topics vary. Typical offerings include phonology and the lexicon, syntax and phonology, phonological representations. Prerequisite: LING 452.

LING 530 Dialectology (3) The principles of dialect deviation as related to linguistic structure and usage. Prerequisite: LING 452, LING 462, LING 508, or permission of instructor. Offered: jointly with ANTH 530.

LING 531 Problems in Romance Linguistics (2-5, max. 15) Group seminar, or individual conferences are scheduled under this number to meet special needs. Prerequisite: permission of graduate program coordinator.

LING 532 Sociolinguistics I (5) Examines social variation in the phonology, morphology, syntax, and lexicon of languages and dialects. Includes nonstandard language, diglossia, pidgins and creoles, gender differences, bi- and multilingualism, ethnography of speaking, and language attitudes. Prerequisite: either LING 200 or LING 400. Instructors: Evans, Wassink Offered: jointly with ANTH 532; S.

LING 533 Topics and Methods in Sociolinguistic Theory (5) Examines field methods linguists use in socially oriented studies of language variation and change. Includes language attitudes, study of urban

dialects, syntactic variation, sampling and interview design. Discussion of issues related to recording, ethics, and analysis of large bodies of data. Prerequisite: LING 432. Instructors: Wassink

LING 534 Sociolinguistic Applications of Social Network Theory (5) Examines structure and content of social networks from a linguistic perspective. Reviews applications of graph theory and sociometry in sociolinguistics. Examines how language is embedded in personal networks and how the study of linkages between individuals can elucidate the regularity and direction of language change. Prerequisite: LING 400 and LING 432. Instructors: Wassink

LING 535 Advanced Sociolinguistics (5, max. 10) Explores perspective on language change and its mechanisms, understood in relation to the social context of language use in the speech community. Examines language-internal and -external motivations for change; phonological mergers and splits, chain-shifts, and diffusion of change through the lexicon. Prerequisite: LING 432 and LING 533. Instructors: Wassink

LING 541 Language Processing and Development 1 (5) Explores current research on language processing and development in adult native speakers and children, with a focus on sound and word-level representations. Topics include speech perception, word recognition, acquisition of phonology and word meanings, as well as a variety of methodologies that are used to study these mechanisms.

LING 542 Language Processing and Development 2 (5) Explores current research on language processing and development in adult native speakers and children, with a focus on the sentence-level representations. Topics include processing of syntactic/semantic representations, development of morpho-syntax, semantics and pragmatics, as well as a variety of methodologies that are used to study these mechanisms. Prerequisite: LING 200 OR LING 400. Offered: W.

LING 548 Second/Foreign Language Teaching Capstone Project (3-5) Involves a research (original or library) , materials development, or a teaching practicum. Offered: AWSpS.

LING 549 Second Language Learning (5) Issues related to the linguistic aspects of second language learning. Prerequisite: either LING 200, LING 201, LING 203, or LING 400. Offered: AS.

LING 550 Introduction to Linguistic Phonetics (5) Introduction to the articulatory and acoustic correlates of phonological features. Covers mapping of dynamic events to static presentations, phonetic evidence for phonological description, universal constraints on phonological structure, and implications of psychological speech-sound categorization for phonological theory. Prerequisite: either LING 200 or LING 400. Instructors: Wright, Wassink Offered: AWS.

LING 551 Phonology I: Introduction to Phonological Analysis (5) *Sharon L Hargus* Patterning of sounds and gestures in human languages; analysis in generative phonological framework. Prerequisite: LING 550 Offered: WSpS.

LING 552 Phonology II: Advanced Phonology (5) Optimality theory; phonetics-phonology interface. Prerequisite: LING 551. Instructors: Hargus, Kaisse

LING 553 Experimental Phonetics (5) Examines phonetic and phonological aspects of spoken language using experimental methods. Focuses on acoustic phonetics and speech perception. Significant time devoted to experimental design and hands-on data analysis techniques. Prerequisite: LING 550. Instructors: Wright Offered: A.

LING 554 Advanced Linguistic Phonetics (3, max. 9) Individual and joint projects on selected topics in theoretical and experimental phonetics. Topics may include articulatory timing, the phonetics phonology interface, and constraints and constraint interaction. Prerequisite: LING 450 or LING 452. Instructors: Wright, Wassink Offered: Sp.

LING 561 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 562 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of

transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 563 Advanced Syntax (2-3, max. 9) Advanced study in modern syntactic theory. Topics change each quarter. Typical topics are history of transformational grammar, anaphora, logical form. Prerequisite: LING 461, LING 462.

LING 565 Contrastive Linguistics (3) The attempt to look across linguistic systems for comparable and contrastive classes and subclasses. Problems of subcategorization and universal grammar. Three conceptually distinct models: structural, transfer grammar, generative. Prerequisite: LING 452, LING 463.

LING 566 Introduction to Syntax for Computational Linguistics (3) *Bender* Introduction to syntactic analysis and concepts with emphasis on the formally precise encoding in linguistic hypotheses and the design of grammars that can be scaled to practical applications. Coursework progressively builds up a consistent grammar for a fragment of English, while also considering data and phenomena from other languages. Offered: A.

LING 567 Knowledge Engineering for Deep Natural Language Processing (3) Techniques and theoretical issues relating to the development of knowledge engineering resources required for deep processing (symbolic or hybrid) , focusing on grammar engineering and semantic representations. Prerequisite: LING 566. Instructors: Bender

LING 570 Shallow Processing Techniques for Natural Language Processing (4) *Fei Xia* Techniques and algorithms for associating relatively surface-level structures and information with natural language corpora, including POS tagging, morphological analysis, preprocessing/segmentation, named-entity recognition, chunk parsing, and word-sense disambiguation. Examines linguistic resources that can be leveraged for these tasks (e.g., WordNet) . Prerequisite: a minimum grade of 2.7 in CSE 373; and either a minimum grade of 2.7 in MATH 394/STAT 394, a minimum grade of 3.0 in LING 473, or a passing grade on the CLMS placement exam. Offered: AW.

LING 571 Deep Processing Techniques for Natural Language Processing (4) *Gina-Anne Levow*

Algorithms for associating deep or elaborated linguistic structures with naturally occurring linguistic data (parsing/semantics/discourse) , and for producing natural language strings from input semantic representations (generation) . Prerequisite: a minimum grade of 2.7 in CSE 373; and either a minimum grade of 2.7 in MATH 394/STAT 394, a minimum grade of 3.0 in LING 473, or a passing grade on the CLMS placement exam. Offered: AW.

LING 572 Advanced Statistical Methods in Natural Language Processing (4) Covers several important machine learning algorithms for natural language processing including decision tree, kNN, Naive Bayes, transformation-based learning, support vector machine, maximum entropy and conditional random field. Students implement many of the algorithms and apply these algorithms to some NLP tasks." Prerequisite: LING 570. Instructors: Xia Offered: W.

LING 573 Natural Language Processing Systems and Applications (4) *G. LEVOW* Examines building coherent systems to handle practical applications. Particular topics vary. Possible topics include information retrieval/extraction, natural language query systems, dialogue systems, augmentative and alternative communications, computer-assisted language learning, language documentation, spell/grammar checking, and software localization. Prerequisite: LING 570, LING 571, LING 572. Offered: Sp.

LING 575 Topics in Computational Linguistics (3, max. 30) *E. BENDER* In-depth study of a particular area of computational linguistics, with hands-on experience. Prerequisite: LING 570 and 571, or permission of instructor. Offered: WSp.

LING 578 Semantic Theory I (5) Introduction to formal semantics and pragmatics. Basic skills for proposing compositional semantic rules for natural language data. Discussion of various semantic phenomena in natural language that are theoretically relevant. Prerequisite: graduate standing in Linguistics or permission of instructor. Instructors: Ogihara

LING 579 Semantic Theory II (5) Advanced introduction to the formal semantics of natural language. Emphasizes the interface between syntax and semantics. Prerequisite: LING 578

LING 580 Problems in Linguistics (2-4, max. 99.9)

Advanced study in current theories of syntax, semantics, phonology, or morphology. Can be repeated for credit.

LING 581 Morphology (5) Explores the structure of words and the processes by which they are formed. Morphological processes in a wide variety of languages. Prerequisite: either LING 450, LING 550, or equivalent.

LING 582 Capturing Brain Dynamics: A Combined Neuroscience and Engineering Approach (4) *A. LEE* Introduces methods for capturing brain dynamics using an emerging neuroimaging technique know as magnetoencephalography (MEG) . Uses techniques to examine perception and cognitive processes and their implications for future brain-computer-interface (BCI) design. Prepare students for interdisciplinary research in neuroscience and engineering. Offered: jointly with SPHSC 594; W.

LING 590 Graduate Fieldwork (1-10, max. 10) Individual consultation with faculty member and supervised practical experience in a broad range of industry, community, clinical settings dealing with linguistic issues. Offered: AWSpS.

LING 599 Linguistics Colloquium (1, max. 6) Seminar attended by faculty and graduate students to discuss research in progress and topics of general interest. Presentation of two seminars required for doctoral students. Prerequisite: permission of instructor.

LING 600 Independent Study or Research (*-)

LING 700 Master's Thesis (*-)

LING 800 Doctoral Dissertation (*-)

MATHEMATICS

MATH 098 Intermediate Algebra (0) Intermediate algebra equivalent to third semester of high school algebra. Includes linear equations and models, linear systems in two variables, quadratic equations, completing the square, graphing parabolas, inequalities, working with roots and radicals, distance formula, functions and graphs, exponential and logarithmic functions. Course awarded as

transfer equivalency only. Consult the Admissions Equivalency Guide website for more information.

MATH 100 Algebra (5) Similar to the first three terms of high school algebra. Assumes no previous experience in algebra. Open only to students [1] in the Educational Opportunity Program or [2] admitted with an entrance deficiency in mathematics. Offered: A.

MATH 102 Algebra (5) Similar to the first three terms of high school algebra. Assumes no previous experience in algebra. Open only to students [1] in the Educational Opportunity Program or [2] admitted with an entrance deficiency in mathematics. Prerequisite: minimum grade of 2.0 in MATH 100. Offered: AW.

MATH 103 Introduction to Elementary Functions (5) Continues the study of algebra begun in MATH 100 and MATH 102 with emphasis on functions (polynomial, rational, logarithmic, exponential, and trigonometric). Open only to students who have completed MATH 102. Prerequisite: minimum grade of 2.0 in MATH 102. Offered: WSp.

MATH 108 International Baccalaureate (IB) Mathematical Studies (5) NW Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

MATH 109 International Baccalaureate (IB) Standard Level Mathematics (5) NW Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

MATH 111 Algebra with Applications (5) NW, QSR Use of graphs and algebraic functions as found in business and economics. Algebraic and graphical manipulations to solve problems. Exponential and logarithm functions; various applications to growth of money. Recommended: completion of Department of Mathematics' Guided Self-Placement. Offered: AWS.

MATH 112 Application of Calculus to Business and Economics (5) NW, QSR Rates of change, tangent, derivative, accumulation, area, integrals in specific contexts, particularly economics. Techniques of differentiation and integration. Application to

problem solving. Optimization. Credit does not apply toward a mathematics major. Prerequisite: minimum grade of 2.0 in MATH 111. Offered: WSp.

MATH 115 Study Abroad Mathematics 1 (1-10, max. 15) Mathematics courses taken through a UW approved study abroad program. Content varies and must be individually evaluated.

MATH 120 Precalculus (5) NW, QSR Basic properties of functions, graphs; with emphasis on linear, quadratic, trigonometric, exponential functions and their inverses. Emphasis on multi-step problem solving. Recommended: completion of Department of Mathematics' Guided Self-Placement. Offered: AWSpS.

MATH 124 Calculus with Analytic Geometry I (5) NW, QSR First quarter in calculus of functions of a single variable. Emphasizes differential calculus. Emphasizes applications and problem solving using the tools of calculus. Recommended: completion of Department of Mathematics' Guided Self-Placement. Offered: AWSpS.

MATH 125 Calculus with Analytic Geometry II (5) NW Second quarter in the calculus of functions of a single variable. Emphasizes integral calculus. Emphasizes applications and problem solving using the tools of calculus. Prerequisite: either minimum grade of 2.0 in MATH 124, score of 3 on AB advanced placement test, or score of 3 on BC advanced placement test. Offered: AWSpS.

MATH 126 Calculus with Analytic Geometry III (5) NW Third quarter in calculus sequence. Introduction to Taylor polynomials and Taylor series, vector geometry in three dimensions, introduction to multivariable differential calculus, double integrals in Cartesian and polar coordinates. Prerequisite: either a minimum grade of 2.0 in MATH 125, or a score of 4 on BC advanced placement test. Offered: AWSpS.

MATH 134 Accelerated [Honors] Calculus (5) NW, QSR Covers the material of MATH 124, MATH 125, MATH 126; MATH 307, MATH 308. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for MATH 124 after taking MATH 134. For students with above average preparation, interest, and ability in mathematics. Offered: A.

MATH 135 Accelerated [Honors] Calculus (5) NW
Covers the material of MATH 124, MATH125, MATH 126; MATH 307, MATH 308. First year of a two-year accelerated sequence. May receive advanced placement (AP) credit for MATH 125 after taking MATH 135. For students with above average preparation, interest, and ability in mathematics. Prerequisite: Minimum grade of 2.0 in MATH 134. Offered: W.

MATH 136 Accelerated [Honors] Calculus (5) NW
Covers the material of MATH 124, MATH 125, MATH 126; MATH 307, MATH 308. First year of a two-year accelerated sequence. May not receive credit for both MATH 126 and MATH 136. For students with above average preparation, interest, and ability in mathematics. Prerequisite: minimum grade of 2.0 in MATH 135. Offered: Sp.

MATH 180 Topics in Mathematics for Non-Science Majors (3/5, max. 10) NW Current topics in mathematics. Topics vary.

MATH 197 Problem Solving in Mathematics (2, max. 4) NW Lectures and problem sessions in mathematics with applications. Enrollment restricted to EOP students only. Credit/no-credit only. Offered: AWSp.

MATH 198 Special Topics in Mathematics (1-5, max. 15) Independent reading in math. Does not count as credit toward a math major. Credit/no-credit only. Offered: AWSpS.

MATH 215 Study Abroad Mathematics 2 (1-10, max. 15) Mathematics courses taken through a UW approved study abroad program. Content varies and must be individually evaluated.

MATH 300 Introduction to Mathematical Reasoning (3) NW Mathematical arguments and the writing of proofs in an elementary setting. Elementary set theory, elementary examples of functions and operations on functions, the principle of induction, counting, elementary number theory, elementary combinatorics, recurrence relations. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136. Offered: AWSpS.

MATH 301 Elementary Number Theory (3) NW Brief introduction to some of the fundamental ideas of elementary number theory. Prerequisite: minimum

grade of 2.0 in MATH 126 and MATH 300, or minimum grade of 2.0 in MATH 136, or minimum grade of 2.0 in MATH 334.

MATH 307 Introduction to Differential Equations (3) NW Introductory course in ordinary differential equations. Includes first- and second-order equations and Laplace transform. Prerequisite: minimum grade of 2.0 in MATH 125. Offered: AWSpS.

MATH 308 Matrix Algebra with Applications (3) NW Systems of linear equations, vector spaces, matrices, subspaces, orthogonality, least squares, eigenvalues, eigenvectors, applications. For students in engineering, mathematics, and the sciences. Prerequisite: minimum grade of 2.0 in MATH 126. Offered: AWSpS.

MATH 309 Linear Analysis (3) NW First order systems of linear differential equations, Fourier series and partial differential equations, and the phase plane. Prerequisite: either a minimum grade of 2.0 in both MATH 307 and MATH 308 or minimum grade of 2.0 in MATH 136. Offered: AWSpS.

MATH 315 Study Abroad Mathematics 3 (1-10, max. 15) Mathematics courses taken through a UW approved study abroad program. Content varies and must be individually evaluated.

MATH 318 Advanced Linear Algebra Tools and Applications (3) Eigenvalues, eigenvectors, and diagonalization of matrices: nonnegative, symmetric, and positive semidefinite matrices. Orthogonality, singular value decomposition, complex matrices, infinite dimensional vector spaces, and vector spaces over finite fields. Applications to spectral graph theory, rankings, error correcting codes, linear regression, Fourier transforms, principal component analysis, and solving univariate polynomial equations. Prerequisite: a minimum grade of 3.0 in MATH 308.

MATH 324 Advanced Multivariable Calculus I (3) NW Topics include double and triple integrals, the chain rule, vector fields, line and surface integrals. Culminates in the theorems of Green and Stokes, along with the Divergence Theorem. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136. Offered: AWSpS.

MATH 327 Introductory Real Analysis I (3) NW

Covers number systems, fields, order, the least upper bound property, sequences, limits, \liminf and \limsup , series, convergence tests, alternating series, absolute convergence, re-arrangements of series, continuous functions of a real variable, and uniform continuity. Prerequisite: a minimum grade of 2.0 in either MATH 300 or MATH 334. Offered: AWSpS.

MATH 328 Introductory Real Analysis II (3) NW

Limits and continuity of functions, sequences, series tests, absolute convergence, uniform convergence. Power series, improper integrals, uniform continuity, fundamental theorems on continuous functions, theory of the Riemann integral. Prerequisite: minimum grade of 2.0 in MATH 327.

MATH 334 Accelerated [Honors] Advanced Calculus

(5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: either minimum grade of 2.0 in MATH 136, or minimum grade of 3.0 in all MATH 126 and MATH 307 and MATH 308. Offered: A.

MATH 335 Accelerated [Honors] Advanced Calculus

(5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses. Prerequisite: minimum grade of 2.0 in MATH 334. Offered: W.

MATH 336 Accelerated [Honors] Advanced Calculus

(5) NW Introduction to proofs and rigor; uniform convergence, Fourier series and partial differential equations, vector calculus, complex variables. Students who complete this sequence are not required to take MATH 300, MATH 309, MATH 324, MATH 327, MATH 328, and MATH 427. Second year of an accelerated two-year sequence; prepares students for senior-level mathematics courses.

Prerequisite: minimum grade of 2.0 in MATH 335.

Offered: Sp.

MATH 340 Abstract Linear Algebra (3) NW

Linear algebra from a theoretical point of view. Abstract vector spaces and linear transformations, bases and linear independence, matrix representations, Jordan canonical form, linear functionals, dual space, bilinear forms and inner product spaces.

Prerequisite: minimum grade of 2.0 in MATH 334 or 2.0 in each of MATH 300 and MATH 308.

MATH 342 Art of Problem Solving (3) NW

Explores the artful side of problem-solving, with examples from various fields across mathematics, including combinatorics, number theory, algebra, geometry, probability, and analysis. Offered: A.

MATH 380 Intermediate Topics in Undergraduate Mathematics (3, max. 12) NW

Covers intermediate topics in undergraduate mathematics.

MATH 381 Discrete Mathematical Modeling (3) NW

Introduction to methods of discrete mathematics, including topics from graph theory, network flows, and combinatorics. Emphasis on these tools to formulate models and solve problems arising in variety of applications, such as computer science, biology, and management science. Prerequisite: minimum grade of 2.0 in either CSE 142, CSE 143, or AMATH 301; minimum grade of 2.0 in either MATH 136 or MATH 308. Offered: AW.

MATH 394 Probability I (3) NW

Axiomatic definitions of probability; random variables; conditional probability and Bayes' theorem; expectations and variance; named distributions: binomial, geometric, Poisson, uniform (discrete and continuous), normal and exponential; normal and Poisson approximations to binomial. Transformations of a single random variable. Markov and Chebyshev's inequality. Weak law of large numbers for finite variance. Prerequisite: either a minimum grade of 2.0 in MATH 126, or a minimum grade of 2.0 in MATH 136. Offered: jointly with STAT 394; AWS.

MATH 395 Probability II (3) NW

Jointly distributed random variables; conditional distributions and densities; conditional expectations and variance; covariance, correlation, and Cauchy-Schwarz inequality; bivariate normal distribution; multivariate transformations; moment generating

functions; sums of independent random variables; Central Limit Theorem; Chernoff's inequality; Jensen's inequality. Prerequisite: either a minimum grade of 2.0 in MATH 394/STAT 394, or a minimum grade of 2.0 in STAT 340. Offered: jointly with STAT 395; WSpS.

MATH 396 Finite Markov Chains and Monte-Carlo Methods (3) NW Finite Markov chains; stationary distributions; time reversals; classification of states; classical Markov chains; convergence in total variation distance and L2; spectral analysis; relaxation time; Monte Carlo techniques: rejection sampling, Metropolis-Hastings, Gibbs sampler, Glauber dynamics, hill climb and simulated annealing; harmonic functions and martingales for Markov chains. Prerequisite: a minimum grade of 2.0 in MATH 308; and either a minimum grade of 2.0 in MATH 394/STAT 394 and STAT 395/MATH 395, or a minimum grade of 2.0 in STAT 340 and STAT 341, or a minimum grade of 2.0 in STAT 340 and STAT 395/MATH 395. Offered: jointly with STAT 396; Sp.

MATH 398 Special Topics in Mathematics (1-5, max. 15) Independent reading in math. Does not count as credit toward a math major. Credit/no-credit only. Offered: AWSpS.

MATH 399 Undergraduate Research (1-5, max. 15) Research opportunity for undergraduates. Offered: AWSp.

MATH 402 Introduction to Modern Algebra (3) NW Elementary theory of groups: Cosets and Lagrange's theorem. Homomorphisms, normal subgroups, quotient groups, and the fundamental isomorphism theorems. Cyclic and symmetric groups. Orders and Cauchy's theorem. Direct products. Automorphisms. Prerequisite: either minimum grade of 2.0 in MATH 300 and MATH 308, or MATH 334. Offered: AS.

MATH 403 Introduction to Modern Algebra (3) NW Elementary theory of rings and fields: polynomial rings. Ideals, homomorphisms, quotients, and fundamental isomorphism theorems. Fields and maximal ideals. Euclidean rings. Field extensions. Algebraic extensions. Vector spaces and degrees of extensions. Adjoining roots of polynomials. Finite fields. Straight edge and compass constructions. Prerequisite: minimum grade of 2.0 in MATH 402. Offered: W.

MATH 404 Introduction to Modern Algebra (3) NW Topics in algebra chosen from Galois theory, theory of modules, geometric group actions, and the theory of rings and fields. Specific content determined by instructor. Prerequisite: minimum grade of 2.0 in MATH 403. Offered: Sp.

MATH 407 Linear Optimization (3) NW Maximization and minimization of linear functions subject to constraints consisting of linear equations and inequalities; linear programming and mathematical modeling. Simplex method, elementary games and duality. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or AMATH 352. Offered: AW.

MATH 408 Nonlinear Optimization (3) NW Maximization and minimization of nonlinear functions, constrained and unconstrained; nonlinear programming problems and methods. Lagrange multipliers; Kuhn-Tucker conditions, convexity. Quadratic programming. Prerequisite: minimum grade of 2.0 in MATH 407 or MATH 464; minimum grade of 2.0 in either MATH 327 or MATH 334. Offered: W.

MATH 409 Discrete Optimization (3) NW Maximization and minimization problems in graphs and networks (shortest paths, minimum spanning trees, maximum flows, minimum cost flows); transportation and trans-shipment problems, NP-completeness. Prerequisite: minimum grade of 2.0 in MATH 407; and either a minimum grade of 2.0 in MATH 300, or a minimum grade of 2.0 in MATH 334. Offered: Sp.

MATH 411 Introduction to Modern Algebra with Applications I (3) NW Basic concepts of abstract algebra with an emphasis on problem solving, constructing proofs, and communication of mathematical ideas. Cannot be taken for credit if credit received for MATH 402 or MATH 403. Prerequisite: a minimum grade of 2.0 in either MATH 136 or MATH 308. Offered: AS.

MATH 412 Introduction to Modern Algebra with Applications II (3) NW Basic concepts of abstract algebra with an emphasis on problem solving, constructing proofs, and communication of mathematical ideas. Cannot be taken for credit if credit received for MATH 402 or MATH 403.

Prerequisite: a minimum grade of 2.0 in MATH 411.
Offered: WS.

MATH 415 Study Abroad Mathematics 4 (1-10, max. 15) Mathematics courses taken through a UW approved study abroad program. Content varies and must be individually evaluated.

MATH 420 History of Mathematics (3) NW Survey of the development of mathematics from its earliest beginnings through the first half of the twentieth century. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136. Offered: S.

MATH 424 Fundamental Concepts of Analysis (3) NW Focuses on functions of a real variable, including limits of functions, differentiation, Rolle's theorem, mean value theorems, Taylor's theorem, and the intermediate value theorem for derivatives. Riemann-Stieltjes integrals, change of variable, Fundamental Theorem of Calculus, and integration by parts. Sequences and series of functions, uniform convergence, and power series. Prerequisite: either a minimum grade of 2.0 in MATH 327, or a minimum grade of 2.0 in MATH 335. Offered: AWSpS.

MATH 425 Fundamental Concepts of Analysis (3) NW Introduction to metric spaces and multivariable differential calculus: Euclidean spaces, abstract metric spaces, compactness, Bolzano-Weierstrass property, sequences and their limits, Cauchy sequences and completeness, Heine-Borel Theorem, continuity, uniform continuity, connected sets and the intermediate value theorem. Derivatives of functions of several variables, chain rule, mean value theorem, inverse and implicit function theorems. Prerequisite: a minimum grade of 2.0 in either MATH 136 or MATH 308; and a minimum grade of 2.0 in either MATH 335 or MATH 424. Offered: WSp.

MATH 426 Fundamental Concepts of Analysis (3) NW Lebesgue measure on the reals. Construction of the Lebesgue integral and its basic properties. Monotone Convergence Theorem, Fatou's Lemma, and Dominated Convergence Theorem. Integration of series. Continuity and differentiability theorems for functions defined by integrals. Introduction to general measures and integration. Prerequisite: minimum grade of 2.0 in MATH 425. Offered: Sp.

MATH 427 Complex Analysis (3) NW Complex numbers; analytic functions; sequences and series;

complex integration; Cauchy integral formula; Taylor and Laurent series; uniform convergence; residue theory; conformal mapping. Topics chosen from: Fourier series and integrals, Laplace transforms, infinite products, complex dynamics; additional topics chose by instructor. Prerequisite: minimum grade of 2.0 in either MATH 327 or MATH 335. Offered: AS.

MATH 428 Complex Analysis (3) NW Continuation of MATH 427. Prerequisite: either minimum grade of 2.0 in MATH 427 or MATH 336 Offered: W.

MATH 441 Topology (3) NW Metric and topological spaces, convergence, continuity, finite products, connectedness, and compactness. Prerequisite: minimum grade of 2.0 in either MATH 327 or MATH 335. Offered: AS.

MATH 442 Differential Geometry (3) NW Examines curves in the plane and 3-spaces, surfaces in 3-space, tangent planes, first and second fundamental forms, curvature, the Gauss-Bonnet Theorem, and possible other selected topics. Prerequisite: either minimum grade of 2.0 in MATH 335, or a minimum grade of 2.0 in MATH 308 and a minimum grade of 2.0 in MATH 324; and minimum grade of 2.0 in MATH 441. Offered: W.

MATH 443 Differential Geometry (3) NW Further examines curves in the plane and 3-spaces, surfaces in 3-space, tangent planes, first and second fundamental forms, curvature, the Gauss-Bonnet Theorem, and possible other selected topics. Prerequisite: minimum grade of 2.0 in MATH 442. Offered: Sp.

MATH 444 Introduction to Geometries I (3) NW Concepts of geometry from multiple approaches; discovery, formal and informal reasoning, transformations, coordinates, exploration using computers and models. Topics selected from Euclidean plane and space geometry, spherical geometry, non-Euclidean geometries, fractal geometry. Prerequisite: either a minimum grade of 2.0 in MATH 334, or a minimum grade of 2.0 in MATH 300 and MATH 308. Offered: WS.

MATH 445 Introduction to Geometries II (3) NW Concepts of geometry from multiple approaches; discovery, formal and informal reasoning, transformations, coordinates, exploration using

computers and models. Topics selected from Euclidean plane and space geometry, spherical geometry, non-Euclidean geometries, fractal geometry. Prerequisite: a minimum grade of 2.0 in MATH 444. Offered: SpS.

MATH 461 Combinatorial Theory I (3) NW Basic counting techniques and combinatorial objects. Topics may include permutations, sets, multisets, compositions, partitions, graphs, generating functions, the inclusion-exclusion principle, bijective proofs, and recursions. Prerequisite: minimum grade of 2.0 in MATH 334, or minimum grade of 2.0 in MATH 300 and minimum grade of 2.0 in either MATH 136 or MATH 308.

MATH 462 Combinatorial Theory II (3) NW Structural theorems and methods in combinatorics, including those from extremal combinatorics and probabilistic combinatorics. Topics may include graphs, trees, posets, strategic games, polytopes, Ramsey theory, and matroids. Prerequisite: minimum grade of 2.0 in MATH 461 or CSE 421.

MATH 464 Numerical Analysis I (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Numerical methods in algebra, systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in either MATH 136, MATH 308, or MATH 335 Offered: A.

MATH 465 Numerical Analysis II (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite differences and difference equations. Numerical methods in algebra, systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in MATH 464. Offered: W.

MATH 466 Numerical Analysis III (3) NW Basic principles of numerical analysis, classical interpolation and approximation formulas, finite

differences and difference equations. Numerical methods in algebra, systems of linear equations, matrix inversion, successive approximations, iterative and relaxation methods. Numerical differentiation and integration. Solution of differential equations and systems of such equations. Prerequisite: minimum grade of 2.0 in either MATH 136, both MATH 307 and MATH 308, or MATH 335.

MATH 480 Advanced Topics in Undergraduate Mathematics (3, max. 12) Covers advanced topics in undergraduate mathematics.

MATH 491 Introduction to Stochastic Processes (3) NW Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queuing theory, stationary processes. Prerequisite: minimum grade of 2.0 in MATH 394/STAT 394 and MATH 395/STAT 395, or minimum grade of 2.0 in STAT 340 and STAT 341 and MATH 396/STAT 396. Offered: jointly with STAT 491; A.

MATH 492 Stochastic Calculus for Option Pricing (3) NW Introductory stochastic calculus mathematical foundation for pricing options and derivatives. Basic stochastic analysis tools, including stochastic integrals, stochastic differential equations, Ito's formula, theorems of Girsanov and Feynman-Kac, Black-Scholes option pricing, American and exotic options, bond options. Prerequisite: minimum grade of 2.0 in either STAT 395/MATH 395, or a minimum grade of 2.0 in STAT 340 and STAT 341. Offered: jointly with STAT 492.

MATH 496 Honors Senior Thesis (1-5) NW Problem seminar for Honors students. Cannot be repeated for credit. Offered: AWSp.

MATH 497 Special Topics in Mathematics for Teachers (2-9, max. 9) NW Study of selected areas of mathematics. Designed for the improvement of teachers of mathematics. Offered: jointly with EDC&I 478.

MATH 498 Special Topics in Mathematics (1-5, max. 15) Reading and lecture course intended for special needs of advanced students. Offered: AWSpS.

MATH 499 Undergraduate Research (8) NW

Summer research opportunity for undergraduates. Credit/no-credit only. Offered: S.

MATH 504 Modern Algebra (5) First quarter of a three-quarter sequence covering group theory; field theory and Galois theory; commutative rings and modules, linear algebra, theory of forms; representation theory, associative rings and modules; commutative algebra and elementary algebraic geometry. Prerequisite: MATH 404 or equivalent.

MATH 505 Modern Algebra (5) Continuation of MATH 504. Prerequisite: MATH 504.

MATH 506 Modern Algebra (5) Continuation of MATH 505. Prerequisite: MATH 505.

MATH 507 Algebraic Structures (3) First quarter of a three-quarter sequence covering homological algebra, advanced commutative algebra, and Lie algebras and representation theory. Specific topics include chain complexes, resolutions and derived functors, dimension theory, Cohen-Macaulay modules, Gorenstein rings, local cohomology, local duality, triangulated and derived categories, group cohomology, and structure and representation. Prerequisite: MATH 506 or equivalent.

MATH 508 Algebraic Structures (3) Second quarter of a three-quarter sequence covering homological algebra, advanced commutative algebra, and Lie algebras and representation theory. Specific topics include chain complexes, resolutions and derived functors, dimension theory, Cohen-Macaulay modules, Gorenstein rings, local cohomology, local duality, triangulated and derived categories, group cohomology, and structure and representation. Prerequisite: MATH 506.

MATH 509 Algebraic Structures (3) Third quarter of a three-quarter sequence covering homological algebra, advanced commutative algebra, and Lie algebras and representation theory. Specific topics include chain complexes, resolutions and derived functors, dimension theory, Cohen-Macaulay modules, Gorenstein rings, local cohomology, local duality, triangulated and derived categories, group cohomology, and structure and representation. Prerequisite: MATH 506.

MATH 510 Seminar in Algebra (2-5, max. 12)

Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only.

MATH 514 Networks and Combinatorial Optimization (3) Mathematical foundations of combinatorial and network optimization with an emphasis on structure and algorithms with proofs. Topics include combinatorial and geometric methods for optimization of network flows, matching, traveling salesmen problem, cuts, and stable sets on graphs. Special emphasis on connections to linear and integer programming, duality theory, total unimodularity, and matroids. Prerequisite: either MATH 308 or AMATH 352 any additional 400-level mathematics course. Offered: jointly with AMATH 514.

MATH 515 Optimization: Fundamentals and Applications (5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches. Prerequisite: Proficiency in linear algebra and advanced calculus/analysis; recommended: Strongly recommended: probability and statistics. Desirable: optimization, e.g. Math 408, and scientific programming experience in Matlab, Julia or Python. Offered: jointly with AMATH 515/IND E 515.

MATH 516 Numerical Optimization (3) Methods of solving optimization problems in finitely many variables, with or without constraints. Steepest descent, quasi-Newton methods. Quadratic programming and complementarity. Exact penalty methods, multiplier methods. Sequential quadratic programming. Cutting planes and nonsmooth optimization. Offered: jointly with AMATH 516.

MATH 518 Theory of Optimal Control (3)

Trajectories from ordinary differential equations with control variables. Controllability, optimality, maximum principle. Relaxation and existence of solutions. Techniques of nonsmooth analysis. Prerequisite: real analysis on the level of MATH 426; background in optimization corresponding to MATH 515. Offered: jointly with AMATH 518.

MATH 521 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 521; A.

MATH 522 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 522; W.

MATH 523 Advanced Probability (3) Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with STAT 523; Sp.

MATH 524 Real Analysis (5) First quarter of a three-quarter sequence covering the theory of measure and integration, point set topology, Banach spaces, L_p spaces, applications to the theory of functions of one and several real variables. Additional topics to be chosen by instructor. Prerequisite: MATH 426 or equivalent.

MATH 525 Real Analysis (5) Continuation of MATH 524. Prerequisite: MATH 524.

MATH 526 Real Analysis (5) Continuation of MATH 525. Prerequisite: MATH 525.

MATH 527 Functional Analysis (3) First of three-quarter sequence. Review of Banach, Hilbert, and L_p spaces; locally convex spaces (duality and separation theory, distributions, and function spaces); operators on locally convex spaces (adjoints, closed graph/open mapping and Banach-Steinhaus theorems); Banach algebras (spectral theory, elementary applications); spectral theorem for Hilbert space operators. Working knowledge of real variables, general topology, complex variables.

MATH 528 Functional Analysis (3) Continuation of MATH 527. Prerequisite: MATH 527.

MATH 529 Functional Analysis (3) Continuation of MATH 528. Prerequisite: MATH 528.

MATH 530 Seminar in Analysis (2-5, max. 12) Prerequisite: permission of graduate program coordinator. Credit/no-credit only.

MATH 534 Complex Analysis (5) First quarter of a three-quarter sequence covering complex numbers, analytic functions, contour integration, power series, analytic continuation, sequences of analytic functions, conformal mapping of simply connected regions, and related topics. Prerequisite: MATH 426.

MATH 535 Complex Analysis (5) Continuation of MATH 534. Prerequisite: MATH 534.

MATH 536 Complex Analysis (5) Continuation of MATH 535. Prerequisite: MATH 535.

MATH 544 Topology and Geometry of Manifolds (5) First quarter of a three-quarter sequence covering general topology, the fundamental group, covering spaces, topological and differentiable manifolds, vector fields, flows, the Frobenius theorem, Lie groups, homogeneous spaces, tensor fields, differential forms, Stokes's theorem, deRham cohomology. Prerequisite: MATH 404 and MATH 426 or equivalent.

MATH 545 Topology and Geometry of Manifolds (5) Continuation of MATH 544. Prerequisite: MATH 544.

MATH 546 Topology and Geometry of Manifolds (5) Continuation of MATH 545. Prerequisite: MATH 545.

MATH 547 Geometric Structures (3, max. 9) First quarter of a three-quarter sequence covering differential-geometric structures on manifolds, Riemannian metrics, geodesics, covariant differentiation, curvature, Jacobi fields, Gauss-Bonnet theorem. Additional topics to be chosen by the instructor, such as connections in vector bundles and principal bundles, symplectic geometry, Riemannian comparison theorems, symmetric spaces, complex manifolds, Hodge theory. Prerequisite: MATH 546

MATH 548 Geometric Structures (3, max. 9) Continuation of MATH 547. Prerequisite: MATH 547.

MATH 549 Geometric Structures (3, max. 9)

Continuation of MATH 548. Prerequisite: MATH 548.

MATH 550 Seminar in Geometry (2-5, max. 12)

Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only.

MATH 554 Linear Analysis (5) First quarter of a three-quarter sequence covering advanced linear algebra and matrix analysis, ordinary differential equations (existence and uniqueness theory, linear systems, numerical approximations), Fourier analysis, introductions to functional analysis and partial differential equations, distribution theory. Prerequisite: MATH 426 and familiarity with complex analysis at the level of MATH 427 (the latter may be obtained concurrently).

MATH 555 Linear Analysis (5) Continuation of MATH 554. Prerequisite: MATH 554.

MATH 556 Linear Analysis (5) Continuation of MATH 555. Prerequisite: MATH 555.

MATH 557 Introduction to Partial Differential Equations (3)

First quarter of a three-quarter sequence. Reviews the theory of distribution theory, weak derivatives, and Fourier transform; Laplace, heat, wave, Schrodinger equations; and notion of Euler-Lagrange equation and variational derivative. Prerequisite: either MATH 526 or MATH 556.

MATH 558 Introduction to Partial Differential Equations (3)

Continuation of MATH 557. Covers Sobolev spaces; boundary value problems; additional topics may include: Cauchy-Kowalevski theorem, first order equations, initial value problems, and variational methods. Prerequisite: MATH 557.

MATH 559 Introduction to Partial Differential Equations (3)

Continuation of MATH 558. Covers selected topics such as: introduction to microlocal analysis, Lax parametrix construction, Schauder estimates, Calderon-Zygmund theory, energy methods, and boundary regularity on rough domains. Prerequisite: MATH 558.

MATH 561 Foundations of Combinatorics (3) First quarter of a three-quarter sequence on combinatorics, covering topics selected from among

enumeration, generating functions, ordered structures, graph theory, algebraic combinatorics, geometric combinatorics, and extremal and probabilistic combinatorics. Prerequisite: familiarity with linear algebra, discrete probability, and MATH 504, 505, 506, which may be taken concurrently.

MATH 562 Foundations of Combinatorics (3) Second quarter of a three-quarter sequence on combinatorics, covering topics selected from among enumeration, generating functions, ordered structures, graph theory, algebraic combinatorics, geometric combinatorics, and extremal and probabilistic combinatorics. Prerequisite: MATH 561.

MATH 563 Foundations of Combinatorics (3) Third quarter of a three-quarter sequence on combinatorics, covering topics selected from among enumeration, generating functions, ordered structures, graph theory, algebraic combinatorics, geometric combinatorics, and extremal and probabilistic combinatorics. Prerequisite: MATH 562.

MATH 564 Algebraic Topology (3) First quarter of a three-quarter sequence covering classical and modern approaches; complexes and their homology theory; applications; fixed points, products and Poincare duality; axiomatic approach. Prerequisite: MATH 506 and MATH 544, or equivalent.

MATH 565 Algebraic Topology (3) Continuation of MATH 564. Prerequisite: MATH 564.

MATH 566 Algebraic Topology (3) Continuation of MATH 565. Prerequisite: MATH 565.

MATH 567 Algebraic Geometry (3) First quarter of a three-quarter sequence covering the basic theory of affine and projective varieties, rings of functions, the Hilbert Nullstellensatz, localization, and dimension; the theory of algebraic curves, divisors, cohomology, genus, and the Riemann-Roch theorem; and related topics. Prerequisite: MATH 506.

MATH 568 Algebraic Geometry (3) Continuation of MATH 567. Prerequisite: MATH 567.

MATH 569 Algebraic Geometry (3) Continuation of MATH 568. Prerequisite: MATH 568.

MATH 570 Seminar in Topology (2-5, max. 12)

Prerequisite: permission of graduate program coordinator. Credit/no-credit only.

MATH 574 Fundamental Concepts of Analysis (3)

Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 575 Fundamental Concepts of Analysis (3)

Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 576 Fundamental Concepts of Analysis (3)

Sets, real numbers, topology of metric spaces, normed linear spaces, multivariable calculus from an advanced viewpoint. Introduction to Lebesgue measure and integration. Intended for students in biostatistics and related fields; does not fulfill requirements for degrees in mathematics.

MATH 577 Lie Groups and Lie Algebras (3, max. 9)

Topics chosen from: root systems and reflection groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 578 Lie Groups and Lie Algebras (3, max. 9)

Topics chosen from: root systems and reflection groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 579 Lie Groups and Lie Algebras (3, max. 9)

Topics chosen from: root systems and reflection

groups; the structure, classification, and representation theory of complex semisimple Lie algebras, compact Lie groups, or semisimple Lie groups; algebraic groups; enveloping algebras; infinite-dimensional representation theory of Lie groups and Lie algebras; harmonic analysis on Lie groups. Prerequisite: MATH 506; MATH 526 or MATH 546.

MATH 580 Current Topics in Mathematics (2, max. 12)

Discussion of current research topics in mathematics, with emphasis on current departmental research projects and interests. Offered: AWSp.

MATH 581 Special Topics in Mathematics (1-5, max. 36)

Advanced topics in various areas of mathematics. Offered: A.

MATH 582 Special Topics in Mathematics (1-5, max. 36)

Advanced topics in various areas of mathematics. Offered: W.

MATH 583 Special Topics in Mathematics (1-5, max. 36)

Advanced topics in various areas of mathematics. Offered: Sp.

MATH 584 Applied Linear Algebra and Introductory Numerical Analysis (5)

Numerical methods for solving linear systems of equations, linear least squares problems, matrix eigen value problems, nonlinear systems of equations, interpolation, quadrature, and initial value ordinary differential equations. Prerequisite: either a course in linear algebra or permission of instructor. Offered: jointly with AMATH 584; A.

MATH 585 Numerical Analysis of Boundary Value Problems (5)

Numerical methods for steady-state differential equations. Two-point boundary value problems and elliptic equations. Iterative methods for sparse symmetric and non-symmetric linear systems: conjugate-gradients, preconditioners. Prerequisite: either AMATH 581, AMATH 584/MATH 584, or permission of instructor. Offered: jointly with AMATH 585; W.

MATH 586 Numerical Analysis of Time Dependent Problems (5)

Numerical methods for time-dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence

theory. Spectral and pseudospectral methods.
Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with AMATH 586/ATM S 581; Sp.

MATH 590 Seminar in Probability (2-5, max. 12)

Prerequisite: permission of instructor. Credit/no-credit only.

MATH 597 Seminar on Teaching Math (1, max. 3)

Issues in the teaching and learning of college mathematics, such as discovering and working with student background and expectations, increasing student engagement with course material, and evaluating student achievement. For graduate students who are, or soon will be, teaching mathematics courses on their own. Credit/no-credit only.

MATH 600 Independent Study or Research (*-)

MATH 700 Master's Thesis (*-)

MATH 800 Doctoral Dissertation (*-)

MUSIC

MUSIC

MUSIC 113 Pre-Core Ear Training (0-1, max. 1)

VLPA *Bernard, Durand, Hodge* Pre-core course in musicianship. Offered: ASp.

MUSIC 116 Elementary Music Theory (2) VLPA

For nonmusic majors. For people with no hands-on music experience. Rudiments of music; notation of time, small pitch structures (e.g., some scales, chords, rhythmic patterns) , some analysis.

MUSIC 117 Elementary Music Theory (2) VLPA

For nonmusic majors. For students who can read music, having some performance experience. Prerequisite: MUSIC 116.

MUSIC 118 Elementary Music Theory (2) VLPA

For nonmusic majors. For students who read music, have some performance experience, are familiar with scales, chords, intervals. Includes analysis of composition in various styles. Prerequisite: MUSIC 117.

MUSIC 119 Introduction to Music Theory and Musicianship (3) VLPA

Bernard, Durand, Hodge Basic elements of music theory: introduction to acoustics, major and minor scales, triads and seventh chords, keys, four-part writing, functional harmony, modes, simple forms, and jazz notation. Offered: A.

MUSIC 120 Survey of Music (5) VLPA

Studies in listening, with emphasis on the changing components of Western art music. Illustrated lectures, laboratory section meetings, and presentations by guest artists.

MUSIC 121 The Orchestra (2) VLPA

Development of the orchestra and its literature.

MUSIC 122 The Opera (2) VLPA

An introduction to opera through selected masterworks, from Monteverdi to the present. Primarily for nonmajors.

MUSIC 131 History of Jazz (5) VLPA

Extensive overview of important musicians, composers, arrangers, and stylistic periods of jazz history from emergence of the first jazz bands at the turn of the twentieth century through post-modern bebop era of the 1990s.

MUSIC 160 American Folk Music (5) VLPA, DIV

Explores the U.S. as a complex multicultural society through folk music traditions of European Americans, African Americans, Asian Americans, Native Americans, Mexican Americans, and Jewish Americans. How racial, ethnic, and cultural groups have influenced each other and the power dynamics; historical/contemporary inequities in race, ethnicity, class, national origin, and immigration status. Folk music as a means of protesting social injustices.

MUSIC 161 American Musical Theater (5) VLPA

Historical and stylistic study of the development of the American musical theater. European roots in opera and operetta. Contributions from jazz and popular music. Selected musicals studied.

MUSIC 162 American Popular Song (5) VLPA

Historical, social, and stylistic study of popular idioms from the late nineteenth century to the present. Most attention to contemporary idioms (rock, country-western, soul, hip-hop) . Various facets of the industry examined to learn how they influence taste and musical style.

MUSIC 185 The Concert Season (2) VLPA

Performances from the School of Music concert season, supplemented by lecture topics related to concert repertoire. Analysis of applicable musical topics appropriate for enhanced appreciation of historical and cultural contexts of works performed. Attendance at ten concerts required.

MUSIC 191 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session each week. Intended to develop skill in creative musical expression. For composition majors only.

MUSIC 200 Music, Child, and Family (3)

VLPA Campbell Study of music in childhood as part of socialization and enculturation of the child within family and community. Emphasis given to songs and music listening experiences provided by parents to nurture the child's musical, social, and intellectual development from infancy through middle childhood. For nonmajors.

MUSIC 201 First-Year Theory I (3) VLPA Introduction to tonal harmony and counterpoint; triadic progressions in root position; first and second species counterpoint; analysis of simple works. Prerequisite: minimum grade of 2.0 in MUSIC 119. Instructors: Bernard, Durand, Hodge Offered: W.

MUSIC 202 First-Year Theory II (3) VLPA Continued instruction in tonal harmony and counterpoint; triadic progressions with inversions; third and fourth species counterpoint; further analysis of basic forms. Prerequisite: minimum grade of 2.0 in MUSIC 201. Instructors: Bernard, Durand, Hodge Offered: Sp.

MUSIC 203 First-Year Theory III (3) VLPA Further introduction in tonal harmony and counterpoint; seventh chords; modulations to closely related keys; secondary dominants; introduction to chromaticism; emphasis on analysis and writing of four-part chorales in early eighteenth-century style. Prerequisite: minimum grade of 2.0 in MUSIC 202. Instructors: Bernard, Durand, Hodge Offered: A.

MUSIC 204 First-Year Ear Training I (0-1, max. 1)

VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 113; corequisite: MUSIC 201. Instructors: Bernard, Durand, Hodge Offered: W.

MUSIC 205 First-Year Ear Training II (0-1, max. 1)

VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 204; corequisite: MUSIC 202. Instructors: Bernard, Durand, Hodge Offered: Sp.

MUSIC 206 First-Year Ear Training III (0-1, max. 1)

VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in MUSIC 205; corequisite: MUSIC 203. Instructors: Bernard, Durand, Hodge Offered: AWSp.

MUSIC 216 Introductory Composition (2) VLPA

For students not majoring in composition. Prerequisite: MUSIC 119 and MUSIC 120.

MUSIC 217 Introductory Composition (2) VLPA

For students not majoring in composition. Prerequisite: MUSIC 216.

MUSIC 218 Introductory Composition (2) VLPA

For students not majoring in composition. Prerequisite: MUSIC 217.

MUSIC 240 Reed-Making Techniques (1, max. 6)

VLPA Applies basic reed-making principles and techniques. Individualized instruction allows students of all levels to take the course simultaneously.

MUSIC 250 World Music (3) VLPA/I&S, DIV

Introduction to world musical traditions, including both sound and socio-cultural dimensions of music. Topics include instruments, rhythm, melody, form, composition, improvisation, music in the family and community, politics, economy, religion, and case studies of major world musical traditions. Prerequisite: MUSIC 201; MUSIC 204.

MUSIC 251 Music Cultures of the World: the Americas (5) VLPA/I&S

Music of the Americas.

MUSIC 252 Music Cultures of the World (5)

VLPA/I&S Near East, Central Asia, Far East, South and Southeast Asia, Indonesia, and the Philippines. Content varies.

MUSIC 260 Orchestral Music (5) VLPA Orchestral music from its beginnings in the seventeenth century through recent developments; evolution of the symphony.

MUSIC 261 Mozart (5) VLPA Introduction to Mozart's music and to musical life in Habsburg Austria during the Enlightenment. Mozart's musical personality studied through masterpieces in all genres, with principal emphasis on listening. Ability to read music not required.

MUSIC 262 Introduction to Twentieth-Century Music (3) VLPA Starr Listener's survey of important composers and trends from Debussy through electronic music.

MUSIC 263 Opera (5) VLPA Rumph Contributions of music, text, and staging; study of representative works concentrating on problems of combining these elements into a composite work of art.

MUSIC 264 Sacred Music in the European Tradition (5) VLPA Surveys European and American sacred music from the twelfth to twentieth centuries, examining the important role of music in religious worship. Considers the means composers used to make musical works sound the way they do to convey the messages of the texts through music. Offered: jointly with RELIG 264.

MUSIC 270 World Popular Music (5) VLPA/I&S A global survey of popular music, including Latin America, Africa, Eastern Europe, the Middle East, Asia, and the Pacific. Emphasis on students' ability to recognize styles and to analyze the social and historical processes that have shaped them.

MUSIC 291 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session per week. Prerequisite: MUSIC 191.

MUSIC 300 Fundamentals of Music Technology (3) VLPA Introduction to the principles of music technology. Exploration of different categories of music software, in terms of their functionality as well as the fundamental basis of these theories. Prerequisite: MUSIC 203; MUSIC 206.

MUSIC 301 Second-Year Theory (3) VLPA Further study of modulation and chromatic harmony; analysis of eighteenth- and nineteenth-century short forms; technical exercises; model composition. Prerequisite: minimum grade of 2.0 in both MUSIC 203 and MUSIC 206. Instructors: Bernard, Durand, Hodge Offered: W.

MUSIC 302 Second-Year Theory (3) VLPA More advanced study in mid- to late nineteenth-century chromaticism and compositional style; analysis of representative works; technical exercises; model composition. Prerequisite: minimum grade of 2.0 in both MUSIC 301 and MUSIC 304; corequisite: MUSIC 305. Instructors: Bernard, Durand, Hodge Offered: Sp.

MUSIC 303 Second-Year Theory (3) VLPA Core theory sequence for majors. Introduction to the theory and analysis of twentieth-century music. Prerequisite: minimum grade of 2.0 in both MUSIC 302 and MUSIC 305; corequisite: MUSIC 306. Instructors: Bernard, Durand, Hodge Offered: A.

MUSIC 304 Second-Year Ear-Training I (0-1, max. 1) VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 203 and MUSIC 206. Instructors: Bernard, Durand, Hodge Offered: W.

MUSIC 305 Second-Year Ear-Training II (0-1, max. 1) VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 301 and MUSIC 304; corequisite: MUSIC 302. Instructors: Bernard, Durand, Hodge Offered: Sp.

MUSIC 306 Second-Year Ear-Training III (0-1, max. 1) VLPA Core ear-training sequence for majors. Prerequisite: minimum grade of 2.0 in both MUSIC 302 and MUSIC 305; corequisite: MUSIC 303. Instructors: Bernard, Durand, Hodge Offered: A.

MUSIC 307 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in Italian. Materials include texts from the basic vocal repertoire. Primarily for voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 308 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in French. Materials include texts from the basic vocal repertoire. Primarily for voice majors at freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 309 Diction for Singers (2) VLPA Application of basic rules of diction, enunciation, and articulation in German. Materials include texts from the basic vocal repertoire. Primarily for voice majors at

freshman and sophomore levels; nonmajors on a space-available basis.

MUSIC 318 Music Cultures of the World (5)

VLPA/I&S Folk and popular music in Western and Eastern Europe and the Americas. Content varies.

MUSIC 319 Afro-American Music (5) VLPA/I&S

Centers on Black music in the United States, but also clarifies the relationship of this music to the musics of other Afro-American cultures as well as to their African roots.

MUSIC 325 Music in Cinema (5) VLPA/I&S *Hodge*

Surveys representative film soundtracks from the past one hundred years. Examines the role of music and sound design within cinematic narrative form; explores theories of film music; and lays the groundwork for engaging film as a multimedia.

MUSIC 326 Repertoire (2) VLPA For music majors.

MUSIC 327 Repertoire (2) VLPA For music majors.

MUSIC 328 Repertoire (2) VLPA For music majors.

MUSIC 332 Music in European Society: Antiquity to 1700 (5) VLPA/I&S

Music and its relationship to aspects of European culture and society - philosophy, politics, social conditions, and the visual arts from antiquity to 1700.

MUSIC 333 Music in Western Culture (5) VLPA/I&S

Music in Europe and North America, drawn from classical, popular, jazz, opera, and musical theatre traditions. Emphasis on the relationship between musical works and their social, philosophical, political, and other contexts.

MUSIC 334 Band Arranging (2) VLPA Prerequisite: MUSIC 303.

MUSIC 336 Jazz Arranging (2) VLPA Writing in jazz style for various instrumental combinations.

Students should be able to arrange for modern jazz orchestra. Prerequisite: MUSIC 303.

MUSIC 344 Psychology of Music: Cognition (5)

VLPA/I&S Critical examination of questions, designs, and conclusions of previous research in a variety of areas related to music cognition including music

perception, music performance, musical development, musical affect, musical preference, social psychology, and neuroscience.

MUSIC 350 Choral Conducting (1) VLPA Overview of

choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 302; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 351 Choral Conducting (1) VLPA Overview of

choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 350; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 352 Choral Conducting (1) VLPA Overview of

choral conducting patterns. Score, voice warm-up, and intonation. Tempo fluctuation, left hand, diction, discipline. Designed for music and music education majors. Prerequisite: MUSIC 351; corequisite: MUSEN 307, MUSEN 350 or MUSEN 351.

MUSIC 366 Cylinders to Platters: 100 Years of Significant Recorded Music 1880-1980 (5) VLPA *T. COLLIER*

Music as reflected through the influences of the recording industry and the development of related technologies. Examines social and artistic impacts that the recording age has brought to American and European musical cultures.

MUSIC 367 Essential Skills in Jazz Improvisation I (2)

VLPA Addresses acquisition of crucial skills in jazz improvisation. Emphasizing strengthening inner time, control of form, and fundamental harmony while addressing motivic development through rhythmic exercises. Students engage in transcription and analysis of exemplarity solos by jazz legends.

MUSIC 368 Essential Skills in Jazz Improvisation II (2) VLPA

Addresses skills in jazz improvisation at a more complex level. Emphasizing control of complex cross rhythms and ear training. Harmonic knowledge acquired through improvisational techniques and analysis of selections from the American Songbook. Prerequisite: MUSIC 367

MUSIC 369 Essential Skills in Jazz Improvisation III (2) VLPA

Addresses skills in jazz improvisation at a more complex level. Emphasizing advanced

harmonic approaches that address extensions, altered extensions and resolutions, intervallic inventions, polytonality, chromatics, and triadic chromatics. Addresses improvisation in odd meter. Prerequisite: MUSIC 368.

MUSIC 379 Junior Recital (1) VLPA For participants in the Bachelor of Music degree program only.

MUSIC 380 Instrumental Conducting (1) VLPA Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: either MUSIC 212 or MUSIC 302. Instructors: Salzman

MUSIC 381 Instrumental Conducting (1) VLPA Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: MUSIC 380. Instructors: Salzman

MUSIC 382 Instrumental Conducting (1) VLPA Acquaints the beginning conductor with beat patterns and their expressive modifications, basic rehearsal techniques, and score study. Prerequisite: MUSIC 381. Instructors: Salzman

MUSIC 384 Ideas In Music (5) VLPA/I&S Taricani Examines selected sources and compositions of music from the Western tradition (from the tenth through the twentieth centuries), in relation to the intellectual background of the periods and countries that produced them. Musical studies accompanied by assigned readings in philosophical, religious, literary, and artistic texts in addition to the primary readings in musical history.

MUSIC 388 Jazz Pedagogy (2) VLPA Stylistic and esthetic developments in the performance of jazz. Key musical ingredients in the evolution of jazz as an art form and the skills commensurate with teaching these. Designed for music majors.

MUSIC 390 Special Topics in Music (3, max. 9) VLPA *Starr* Topics vary.

MUSIC 391 Composition (3, max. 9) VLPA One-hour private instruction and one-hour laboratory session each week. Prerequisite: MUSIC 291.

MUSIC 400 Computer Applications to Music (3, max. 9) VLPA Music workstation applications using microcomputers, music synthesizers, and analog-to-digital converters: music editing and score production, transcription, waveform and spectral analysis, and introduction to programming.

MUSIC 401 Digital Sound Synthesis (5) VLPA Introduction to software sound synthesis techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes acoustics and psychoacoustics; virtual synthesizers; wavetable synthesis; additive synthesis; ring, amplitude, and frequency modulation synthesis; granular synthesis; and noise and subtractive synthesis. Offered: jointly with DXARTS 461; A.

MUSIC 402 Digital Sound Processing (5) VLPA Introduction to digital sound processing techniques. Project-based course focused on creating experimental sound compositions framed by context of the Western Art Music Tradition. Includes digital effects; delay lines; introduction to digital filtering; FIR and IIR filters; reverberation; virtual-room acoustics and sound location; time-domain transformation of sound; and granulation and time stretching. Prerequisite: DXARTS 461/MUSIC 401. Offered: jointly with DXARTS 462; W.

MUSIC 403 Advanced Digital Sound Synthesis and Processing (5) VLPA Advanced sound processing and synthesis techniques. Includes sound time warping; analysis-synthesis techniques; linear predictive coding; the phase vocoder; frequency-domain sound transformations; introduction to physical modeling. Prerequisite: DXARTS 462/MUSIC 402. Offered: jointly with DXARTS 463; Sp.

MUSIC 405 Liturgics and Hymnology: Practical Applications I (3) VLPA Prepares organ majors and other advanced organ students to play hymns in a manner that inspires congregational singing. Includes a study of hymnology from the early church to contemporary hymns of today. Explores several denominational hymns and many styles of improvisation, including baroque, romantic, and contemporary techniques. Prerequisite: MUSIC 302; MUSIC 305; MUHST 212. Instructors: Cleveland Offered: A.

MUSIC 406 Liturgics and Hymnology: Practical Applications II (3) VLPA Surveys small and large choral works including anthems, oratorios, Requiem Masses, and Mass settings of major composers of the sixteenth century to present day. Resources drawn from the performing ensembles library, and from area church libraries, and include a detailed study of choral styles and editions. Prerequisite: either MUSIC 303, MUSIC 306, MUHST 210, or MUSIC 405. Instructors: Cleveland Offered: W.

MUSIC 407 Liturgics and Hymnology: Practical Applications III (3) VLPA Includes a survey of the necessary skills to run a successful music program in a church or synagogue. Provides an overview of traditional and contemporary liturgies, handbells, orchestral instruments and their use in worship and a special emphasis on the directing of children's choirs. Prerequisite: either MUSIC 303, MUSIC 306, MUHST 210, or MUSIC 406. Instructors: Cleveland Offered: Sp.

MUSIC 410 ElectroAcoustic Music: History and Analysis (3) VLPA Examines the music of major electro-acoustic composers. Emphasis on the relationship between technological resources and compositional advances. Addresses issues raised by the diversity of approaches to musical composition; relates particular creative contributions to the historical, cultural, and technological contexts in which they originated. Prerequisite: MUSIC 303; MUSIC 306; MUHST 210. Offered: Sp.

MUSIC 411 Free Improvisation/Modern Jazz Composition I (2) VLPA *Vu* Guides students through the process of experimentation while discovering and developing musical originality and striving for innovations in jazz. Students address conceptual approaches to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating and developing building blocks of musical material and form. Offered: A.

MUSIC 412 Free Improvisation/Modern Jazz Composition II (2) VLPA Continuation of MUSIC 411, working at a more developed and complex level to experiment and strive for originality and innovation in jazz. Students address conceptual approaches to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating

and developing building blocks of musical material and form. Prerequisite: MUSIC 411. Instructors: *Vu* Offered: W.

MUSIC 413 Free Improvisation/Modern Jazz Composition III (2) VLPA Continuation of MUSIC 411, working at a more advanced and complex level to experiment and strive for originality and innovation in jazz. Students address conceptual approaches to non-idiomatic group improvisation and original composition that incorporates and fosters improvisation, and explore techniques in generating and developing building blocks of musical material and form. Prerequisite: MUSIC 412. Instructors: *Vu* Offered: Sp.

MUSIC 414 Finding an American Voice (3) VLPA Investigation of why certain works have been received as characteristically and representatively "American" in nature, extending the inquiry concerning an "American voice" to arts like poetry and painting, along with music. Examples for study include music by composers such as Gershwin, and Dickenson's poetry, along with composers' settings of it. Instructor: Starr.

MUSIC 415 The American Musical (3) VLPA Advanced course in the American stage and film musical, emphasizing detailed study of representative works as totalities: *Show Boat*, *Porgy and Bess*, shows by Rodgers & Hammerstein and Sondheim, film musical starring Astaire and Rogers, and others. Contributions of composers, lyricists, choreographers, directors, and performers to development of the genre. Instructor: Starr.

MUSIC 416 The Blues (3) VLPA Investigation of the many forms, styles, and genres of music linked with the blues, and of the ways in which the blues has contributed to the shaping and essence of musical culture, from the early twentieth century to the present. Instructor: Starr.

MUSIC 417 Classical Music in America (3) VLPA History of classical music composers, performers, audiences, and institutions in America, with a critical look at the situation of these groups and institutions today, in light of how they arrived at their current status, and a consideration of what the future may hold for them. Instructor: Starr.

MUSIC 418 Baroque Ornamentation and Improvisation (3) VLPA *Terry* The study of ornamentation and improvisation for keyboard, woodwinds, voice, and strings of selected German, Italian, French, and English repertoire from 1600 to 1800.

MUSIC 420 Organ Improvisation and Service Playing I (2) VLPA Prepares students to improvise, especially for the church/synagogue service. Includes a brief study of hymnology, hymn elaboration, altered harmonizations, improvisation based on existing hymn tunes, interludes, chorale preludes, ornamented chorales. Prerequisite: MUSIC 303; MUSIC 306. Offered: A.

MUSIC 421 Organ Improvisation and Service Playing II (2) VLPA Continuation of MUSIC 420. Includes brief review of figured bass and functional harmony, free improvisation in simple antecedent/consequent ABA forms and more complex forms (rondo, theme, and variation), improvising partitas, interludes, improvisations based on plainchant. A survey of important improvisation texts. Prerequisite: MUSIC 420. Offered: W.

MUSIC 422 Organ Improvisation and Service Playing III (2) VLPA Continuation of MUSIC 421. Advanced improvisation: baroque improvisation techniques, fughetas, baroque praeludias and fantasias, canons, toccatas, duos, trios, and simple fugues. Prerequisite: MUSIC 421. Offered: Sp.

MUSIC 426 Advanced Jazz Arranging (2) VLPA Advanced arranging techniques for jazz ensembles of various sizes, exploring methods employed by Duke Ellington, Gil Evans, and others. Assignments include one original arrangement each for small-combo and full-jazz ensemble. Prerequisite: MUSIC 336. Offered: W.

MUSIC 427 Music of Africa (3) VLPA/I&S Music cultures of Africa. Traditional styles and more recent developments. Open to all students with an interest in the area. Prerequisite: MUSIC 317.

MUSIC 428 Music of North India (3) VLPA/I&S Classical music of North India, the Hindustani tradition with emphasis on the Dhrupad and Khyal styles.

MUSIC 429 String Orchestral Repertoire (2, max. 18) VLPA Intended for undergraduate BA/BM and BM music majors. Offered: AWSp.

MUSIC 430 Organology (3) VLPA Systematic study of musical instruments, involving the history, acoustical phenomena, and physical topologies of instruments from around the world, with emphasis on non-Western music.

MUSIC 433 Music of Latin America (3) VLPA/I&S The music of the Spanish-, French-, and Portuguese-speaking New World countries.

MUSIC 434 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 435 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 436 Pedagogy (2) VLPA Principles of effective studio teaching; survey and evaluation of teaching materials.

MUSIC 437 Studio Class (2, max. 24) VLPA Performance and pedagogical concepts. Topics vary. Offered: AWSp.

MUSIC 438 Problems in Contemporary Music Performance (3, max. 9) VLPA An active course examining and solving problems relevant to the successful performance of twentieth-century music. Preparation for complex rhythms, odd groupings, new notation, and extended performing techniques.

MUSIC 439 Music of Indonesia (3) I&S/VLPA Includes the traditions of Sumatra, Sunda, Java, Bali, Sunda Islands, and the Philippines. Open to students in music and to students with an interest in the area.

MUSIC 440 Music in Asian America (3) VLPA/I&S C. *SUNARDI* Introduces students to Asian American communities through examination of music and issues related to music, including migration, memory, gender, the body, tradition, and generation. Explores how Asian Americans have expressed their experiences and asserted their senses of identity through music, thereby making sense of and claiming Americanness. Offered: AWSp.

MUSIC 442 Comparative Analysis and Musicianship

(3) VLPA Analysis of selected world music genres, with an emphasis on concepts and skills that are required to perform.

MUSIC 443 Music and Community (3) VLPA S.

DUDLEY An introduction to theories and methods of community arts facilitation and community-building, including active engagement with local artists and organizations.

MUSIC 444 Music of the Near East (3) VLPA/I&S

Classical and folk musical traditions of Iran, Turkey, and the Arab world. Prerequisite: MUSIC 316.

MUSIC 445 Selected Topics in Ethnomusicology

(3/5, max. 15) VLPA/I&S Deals with areas not covered by other courses in ethnomusicology. Content varies with different instructors.

MUSIC 446 Music in American Cultures (3)

VLPA/I&S Compares musical history and experience of selected American cultures that have fed into the American musical mainstream or had significant popularity on its periphery. Case studies may include African Americans, Latino/a Americans, Jewish Americans, Asian Americans, or European Americans. Considerations of social identity as well as musical styles. Offered: jointly with AES 446.

MUSIC 447 Music of Southern India (3) VLPA/I&S

Classical music of South India, the Karnatic tradition, with emphasis on the concert repertoire.

MUSIC 448 Music of China (3) VLPA/I&S

Confucian philosophies that relate to music, theory, scale systems, cosmology. Development of instrumental styles, vocal and dramatic regional forms from early historical periods to the present.

MUSIC 449 Advanced Piano Repertoire (2, max. 6)

VLPA/I&S For piano majors who wish an in-depth survey of major areas of the piano repertoire. Prerequisite: MUSIC 328. Instructors: McCabe, Sheppard Offered: AWSp.

MUSIC 450 Percussion Education Institute (2) VLPA

Intensive four-week institute focusing on techniques in percussion, timpani, and mallet performance. Intended for music educators with little or no percussion experience desiring additional training to

enhance their careers as music teachers. Includes private instruction, master classes, and percussion ensemble participation. Prerequisite: MUSAP 217. Instructors: Collier, Crusoe

MUSIC 451 Summer Jazz Institute (1)

VLPA Brockman, Collier, Seales Intensive one-week institute designed for the serious jazz student as well as for music educators. Six hours of daily instruction in jazz theory, ear-training, improvisation, arranging, as well as emphasis on rehearsal and performance techniques through sectional workshops and small group "jam sessions."

MUSIC 452 Career Building for Musicians (2)

VLPA Joel F Durand Helps students identify the unique skill sets they develop as music majors and learn how to use and market these skills to create achievable and exciting career paths in music. Recommended: Music major status. Credit/no-credit only. Offered: AWSp.

MUSIC 454 Organ Pedagogy (3) VLPA Terry

Pedagogical approaches to organ techniques and performance practice; provides opportunity for practical application by means of student teaching. Offered: Sp, even years.

MUSIC 455 Choral Arranging (3) VLPA

Primarily for choral conductors who need to modify, arrange, or compose material to suit the capabilities of specific choral groups and performance situations.

MUSIC 457 Jazz Laboratory: Theory and Application of Rhythm (1) VLPA

Establishes a fundamental comprehension of the complex and nuanced rhythmic structures inherent in traditional and modern jazz. Through transcription, analysis, dictation, composition and performance. Students develop a personal understanding of, and the ability to execute, the detailed rhythmic language that defines this art form. Offered: A.

MUSIC 458 Organ Repertoire: Middle Ages through

Baroque (3) VLPA Analysis and performance practices of organ literature, Middle Ages through baroque period. Development of the organ as musical instrument. Prerequisite: either MUHST 400, MUHST 401, MUHST 402, MUHST 403, MUHST 406, or MUHST 407. Instructors: Terry Offered: A, even years.

MUSIC 459 Organ Repertoire: Bach to Present (3)

VLPA Analysis and performance practices of organ literature, classical period through the twentieth century. Development of the organ as a musical instrument. Prerequisite: either MUHST 408, MUHST 409, MUHST 410, MUHST 411, MUHST 412, MUHST 413, MUHST 414, MUHST 415, MUHST 417, MUHST 418, MUHST 419, MUHST 423, MUHST 424, or MUHST 426. Instructors: Terry Offered: W, even years.

MUSIC 460 Advanced Vocal Repertoire: Pre-Nineteenth-Century Art Songs (2, max. 6) VLPA

Professional preparation of pre-nineteenth-century songs with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 328.

MUSIC 461 Advanced Vocal Repertoire: Nineteenth-Century Art Songs (2, max. 6) VLPA

Professional preparation of works from the literature of nineteenth-century German lieder, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 460.

MUSIC 462 Advanced Vocal Repertoire: Twentieth-Century Art Songs (2, max. 6) VLPA

Preparation of works from the twentieth-century repertoire of French, German, Italian, Spanish, and English songs, with a view to total artistic-musical realization in performance. Appropriate style, character, balance, phrasing, diction, and projection for vocalists and pianists. Prerequisite: MUSIC 461.

MUSIC 464 Jazz Laboratory (1, max. 9) VLPA Forum for testing new technical skills, improvisational techniques, and jazz compositions and/or arrangements in a formal laboratory setting.

MUSIC 465 Acting for Singers (2, max. 6) VLPA

Workshop designed specifically for the singing actor, focusing on character analysis, movement, and audition department skills.

MUSIC 467 Advanced Jazz Improvisation I (1) VLPA

Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 369. Instructors: Collier, Seales

MUSIC 468 Advanced Jazz Improvisation II (1) VLPA

Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 467. Instructors: Collier, Seales

MUSIC 469 Advanced Jazz Improvisation III (1) VLPA

Performance techniques in jazz improvisation for the advanced student. Prerequisite: MUSIC 468. Instructors: Collier, Seales

MUSIC 470 Analysis of Tonal Music: Introduction to Schenker (3) VLPA

Introduction to the theories of Heinrich Schenker and their subsequent development; analysis of music from the common-practice period (1700-1900), with possible excursions into the twentieth century. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215. Instructors: Bernard

MUSIC 471 Introduction to Atonal Theory and Analysis (3) VLPA

Theory of atonal music, including the "classical" twelve-tone repertoire. Analysis of works by Schoenberg, Berg, Webern, and others. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215. Instructors: Bernard

MUSIC 472 Analysis of Twentieth Century Music, 1900-1950 (3, max. 6) VLPA

Analytical examination of musical works of the first half of the twentieth century in Europe and the United States, with emphasis on music other than that of the second Viennese school. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215. Instructors: Bernard, Durand, Hodge

MUSIC 473 Keyboard Harmony and Transposition (3) VLPA

Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: either both MUSIC 303 and MUHST 212 or both MUSIC 312 and MUHST 215. Instructors: Terry Offered: A, odd years.

MUSIC 474 Keyboard Harmony and Transposition (3) VLPA

Keyboard harmonization from the baroque period to present; transposition of vocal and instrumental pieces to different pitch levels. Prerequisite: MUSIC 473. Instructors: Terry Offered: W, odd years.

MUSIC 475 Figured Bass Realization (3) VLPA

Various styles of continuo realization for keyboardists, emphasizing Bach cantatas, Haydn symphonies, and Mozart operas. Prerequisite: MUSIC 474. Instructors: Terry Offered: Sp, odd years.

MUSIC 476 Advanced Vocal Repertoire: Seventeenth and Eighteenth Centuries (2) VLPA

Opera repertoire, 1600 to the Bel Canto era (Bellini, Rossini, Donizetti) ; style, traditions, embellishments in Italian, French, and German arias. Prerequisite: MUSIC 328.

MUSIC 477 Advanced Vocal Repertoire: Nineteenth Century (2) VLPA

Opera repertoire, the post Bel Canto era through Verdi, Puccini and verismo, and significant German, French, and Slavic repertoire. Prerequisite: MUSIC 476.

MUSIC 478 Advanced Vocal Repertoire: Twentieth Century (2) VLPA

Opera repertoire, twentieth-century opera literature (Barber, Menotti, Bartok, Dvorak) ; understanding of style, character, and overall artistic and musical needs of the present. Prerequisite: MUSIC 477.

MUSIC 479 Senior Recital (1) VLPA**MUSIC 480 The Anthropology of Music (3)**

VLPA/I&S Analysis of aspects of anthropological thought influential in ethnomusicology. Critical evaluation of dominant theoretical schools and modes of explanation, e.g., evolutionist, diffusionist, historical particularist, structuralist, functionalist, symbolist, and semiotic, through detailed examination of seminal texts. Offered: jointly with ANTH 430.

MUSIC 481 Choral Repertoire: Sixteenth and Seventeenth Centuries (3) VLPA

Boers, Wyers Sacred and secular choral literature from the Renaissance through the early baroque, covering Europe and England. Various genres and styles of major composers, including performance practice, rehearsals, and conducting.

MUSIC 482 Choral Repertoire: Eighteenth Century (3) VLPA

Boers, Wyers Sacred and secular choral literature of the baroque, covering mainland Europe and England. Choral works of Bach, his predecessors, and contemporaries. Stylistic analysis and study of performance practice.

MUSIC 483 Choral Repertoire: Nineteenth Century (3) VLPA

Boers, Wyers Sacred and secular choral literature of the nineteenth century, covering mainland Europe and England. Analysis of accompanied and a cappella choral works by major composers with implications for conducting and programming of literature.

MUSIC 484 Choral Repertoire: Twentieth Century (3) VLPA

Boers, Wyers Choral literature of the twentieth century, covering America, England, and mainland Europe. Various genres and styles, including score study and teaching strategies.

MUSIC 485 Topics in the Analysis of American Music (3, max. 9) VLPA

Bernard Includes close analytical study of specific repertoires of American music. Prerequisite: MUHST212 AND MUSIC302, or permission of instructor

MUSIC 487 Tonal Counterpoint (3) VLPA

Introduction to tonal counterpoint through exercises in analysis and composition, focusing on eighteenth-century styles. Study of melody principles of counterpoint in two and three voices, dance forms, inventions, fugue. Prerequisite: either MUSIC 311 or MUSIC 202. Instructors: Bernard, Hodge

MUSIC 489 Special Topics in Music Theory (3/5, max. 15) VLPA

Prerequisite: either both MUSIC 303 and MUHST 210 or both MUSIC 312 and MUHST 314. Instructors: Bernard, Durand, Hodge

MUSIC 491 Composition (3, max. 18) VLPA

One-hour private instruction and one-hour laboratory session each week. Prerequisite: MUSIC 391.

MUSIC 492 Opera Direction and Production (4)

VLPA Practical experience with problems of the theater.

MUSIC 493 Opera Direction and Production (4)

VLPA Practical experience with problems of the theater. Prerequisite: MUSIC 492.

MUSIC 495 Music of Japan (3) VLPA/I&S

Survey of major Japanese musical traditions. Open to students in music and East Asian area studies. Prerequisite: MUSIC 316.

MUSIC 496 Instrumentation (3) VLPA *Durand, Hodge* Survey of the basic characteristics and techniques of instruments of the orchestra and practical experience in scoring for various instrumental combinations. Also covers topics such as transcription of solo works for ensemble and basic arranging in jazz and other styles. Prerequisite: MUSIC 303; MUSIC 306.

MUSIC 497 Orchestration (3) VLPA Study of the instruments of orchestra and practical experience in combining them. Examines questions of timbre, acoustics, psychoacoustics, as well as orchestration analysis of a variety of works. Prerequisite: MUSIC 496.

MUSIC 498 Senior Thesis (3-, max. 9) VLPA Design and completion of an individual research project and writing of a thesis under supervision of a faculty member.

MUSIC 499 Undergraduate Research (*, max. 6)

MUSIC 504 Ethnographic Research in Music (3) *Campbell, Morrison* Seminar in ethnographic research in music, with attention to the nature of participant-observation and informal interviewing suitable to the discovery of the social and cultural life of individual musicians, and communities and institutions of music.

MUSIC 511 Seminar in Field and Laboratory Methods (3) Methodology of field research in ethnomusicology along with practical experience. Prerequisite: graduate student standing in ethnomusicology or permission of instructor.

MUSIC 512 Seminar in Ethnomusicology (3/5, max. 30) Deals with advanced theoretical and methodological problems in ethnomusicology, and with the relationship of ethnomusicology to allied disciplines. Prerequisite: graduate-student standing in ethnomusicology or permission of instructor.

MUSIC 520 Music in Higher Education (3) *Morrison* Philosophical and practical issues surrounding music within the context of higher education. Topics include mission and structure of music programs, development of teaching expertise, teacher/student evaluation, academic freedom, and job opportunities. Appropriate for all graduate music

students and does not require background in teaching or education.

MUSIC 523 Seminar in Music and Socialization (3, max. 9) The socialization process and music, including the interaction whereby music culture is learned. Prerequisite: MUSIC 345 or permission of instructor.

MUSIC 526 History of Theory (3) Ancient, medieval, early Renaissance.

MUSIC 527 History of Theory (3) *Bernard* Renaissance, baroque, early classic.

MUSIC 528 History of Theory (3) *Bernard* Classic, romantic, twentieth century.

MUSIC 530 Seminar in Music Cognition (3, max. 9) Study of research literature in cognition and music cognition, particularly as it relates to nonverbal musical experience. Prerequisite: MUSIC 344, or MUSIC 544, or permission of instructor.

MUSIC 531 Proseminar in Ethnomusicology (3) Theoretical and methodological issues in ethnomusicology based on historical and contemporary major writings. Critical evaluations of works with a broad view toward developing ethnomusicological research. Prerequisite: permission of instructor.

MUSIC 532 Opera Direction and Production (4/6, max. 12) Practical experience with problems of the opera theatre.

MUSIC 533 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological literature on the music cultures of Asia. Meets with MUSIC 316. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 534 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological literature on the music cultures of Africa, the Americas, and Oceania. Meets with MUSIC 317. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 535 Preceptorial Readings in Ethnomusicology (5) Significant ethnomusicological

literature on the music cultures of Europe and North America. Meets with MUSIC 318. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 536 Transcription and Analysis (3) Study of the methodological principles of transcription and analysis, together with practical exercises in developing transcription skills. Prerequisite: graduate student standing in ethnomusicology and permission of instructor.

MUSIC 540 Music in Asian America (3) *C. SUNARDI* Introduces students to Asian American communities through examination of music and issues related to music, including migration, memory, gender, the body, tradition, and generation. Explores how Asian Americans have expressed their experiences and asserted their senses of identity through music, thereby making sense of and claiming Americanness. Offered: AWSp.

MUSIC 542 Comparative Analysis and Musicianship (3) Analysis of selected world music genres, with an emphasis on concepts and skills that are required to perform.

MUSIC 543 Music and Community (3) *S. DUDLEY* An introduction to theories and methods of community arts facilitation and community-building, including active engagement with local artists and organizations.

MUSIC 544 Psychology of Music: Music Cognition (5) Critical examination of questions, designs, and conclusions of previous research in a variety of areas related to music cognition including music performance, musical creativity, musical affect, musical preference, social psychology, and neuroscience. Discusses the role of theory, method, and typical procedures for psychological research.

MUSIC 551 Practicum in Music Instruction (3, max. 9) Practical application and validation of results of investigation in curriculum, music teaching and learning, performance, and theoretical studies. Prerequisite: teaching experience, or permission of instructor.

MUSIC 553 Advanced Choral Techniques (2, max. 18) *Boers, Wyers* Practical application of technique and pedagogy related to choral music. Surveys major

choral repertoire. Concurrent enrollment in MUSIC 583 required.

MUSIC 559 Master's Recital (3, max. 6) Public performance for students in the Master of Music degree program. Prerequisite: permission of instructor and Master of Music program standing.

MUSIC 570 Seminar in Schenkerian Analysis (3, max. 9) Advanced work in Schenkerian analysis. Prerequisite: MUSIC 470. Instructors: Bernard

MUSIC 571 Seminar in Serialism (3, max. 9) Advanced theoretical and analytical work in serialism and other nontonal systems. Prerequisite: MUSIC 471, or equivalent. Instructors: Bernard

MUSIC 572 Advanced Topics in Computer Music (3) *Karpen* Topics vary. Offered: AWSpS.

MUSIC 573 Seminar in Tonal Analysis (3, max. 9) Modern theoretical and analytical methods appropriate to study of western music of the eighteenth and nineteenth centuries, conceived independently of or in response to the work of Heinrich Schenker. Prerequisite: MUSIC 470 or permission of instructor.

MUSIC 574 Analysis of Twentieth-Century Music: 1950 - Present (3) Analytical examination of major works of second half of twentieth century. Prerequisite: MUSIC 471; MUSIC 472, or permission of instructor. Instructors: Bernard, Durand, Hodge, Karpen

MUSIC 575 Seminar in Theory (3, max. 18) *Bernard* Development and discussion of current student and faculty research in compositional/analytical theory and metatheory.

MUSIC 576 Critical Theory of Music (3, max. 18) Philosophical foundations of the criticism of music, including relevant contemporary thought in the criticism of literature and the other arts.

MUSIC 577 Composers of the Twentieth Century (3, max. 9) Analytical examination of the work of a major composer of the twentieth century. Prerequisite: MUSIC 574, or permission of instructor. Instructors: Bernard, Durand, Hodge, Karpen

MUSIC 580 Advanced Conducting (3, max. 9)*Salzman***MUSIC 581 Advanced Conducting (3, max. 9)***Salzman***MUSIC 582 Advanced Conducting (3, max. 9)***Salzman***MUSIC 583 Advanced Choral Conducting (2, max. 18)** *Boers, Wyers*

MUSIC 590 Keyboard and Doctoral Lecture Recital or Concerto Recital (6, max. 18) Lecture recital or concerto recital for students in the Doctor of Musical Arts in piano performance, in harpsichord performance, and in organ performance degree programs.

MUSIC 591 Graduate Composition (*, max. 30)*Bernard, Durand, Karpen***MUSIC 599 Advanced Selected Topics (1-3, max. 27)**

Selected readings on current issues and problems in music. Prerequisite: permission of a supervising music faculty member.

MUSIC 600 Independent Study or Research (*-)**MUSIC 700 Master's Thesis (*-)****MUSIC 800 Doctoral Dissertation (*-)**

APPLIED MUSIC

MUSAP 133 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSIC 116.

MUSAP 134 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSAP 133.

MUSAP 135 Basic Keyboard (2) VLPA Keyboard harmony and simple keyboard pieces. Class instruction. Audition required. Prerequisite: MUSAP 134.

MUSAP 136 Basic Jazz Keyboard (2, max. 6)

VLPA Seales Basics of jazz and pop chord voicings, reading lead sheets, basic accompanying in various jazz and pop styles. Audition required.

MUSAP 137 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required.

MUSAP 138 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required. Prerequisite: MUSAP 137.

MUSAP 139 Class Instruction: Voice (1) VLPA Basic fundamentals of good singing: breathing, diction, voice focus. Materials include mainly early Italian art songs, some English and French songs. Audition required. Prerequisite: MUSAP 138.

MUSAP 205 String Techniques (2, max. 12) VLPA

Designed to prepare music education students to teach beginning and intermediate strings in the public schools.

MUSAP 210 Wind Techniques (2, max. 12) VLPA

Designed to prepare music education students to teach beginning and intermediate woodwinds and brass in the public schools.

MUSAP 217 Percussion Techniques (2, max. 4)

VLPA Collier The study of basic percussion techniques as they apply to music in the public schools. Acquaints the prospective music education major with percussion performance and teaching techniques.

MUSAP 218 Guitar Techniques (2, max. 4)

VLPA Partington Includes exercises to develop a good basic technique emphasizing correct position and movement of both hands, basic folk song accompaniments including a variety of strums, finger picking patterns, hammering on and bass runs, reading guitar music, classical pieces, special effects, and access to other styles. Offered: W.

MUSAP 233 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 135.

MUSAP 234 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 233.

MUSAP 235 Secondary Piano (2) VLPA Focus is on advanced keyboard skills and piano repertoire. Audition required. Prerequisite: MUSAP 234.

MUSAP 237 Secondary Class Instruction: Voice (2, max. 6) VLPA Continuation of basic fundamentals of good singing: breathing, diction, voice focus, and repertoire. Designed for students not yet prepared for private instruction. Audition required. Prerequisite: MUSAP 139.

MUSAP 239 Secondary Piano (2, max. 8) VLPA Intermediate level keyboard repertory. Private instruction. Audition required. Prerequisite: MUSAP 235.

MUSAP 389 World Music (2, max. 24) VLPA/I&S World music traditions taught by visiting native artists. Consult ethnomusicology staff for current offerings. Intended for undergraduate majors. Audition required. Credit/no-credit only.

MUSAP 442 Jazz and Non-Western Drumming Techniques (2/3, max. 18) VLPA *Collier* Focused study of American jazz drumming and/or hand drumming techniques of various world music cultures to broaden the skills of percussion students, preparing them for new demands of contemporary musical styles. Designed primarily for music undergraduates enrolled in the percussion program. Audition required.

MUSAP 443 Percussion Lab (1, max. 12) *Collier, Crusoe, Poor* Primarily for percussion majors. Includes techniques and topics not normally covered in private lessons. Non-percussion music majors with permission of instructor. Offered: AWSp.

MUSAP 589 World Music Laboratory (2, max. 24) World music traditions taught by visiting artists with emphasis on cultural pedagogy and traditional theory. The particular culture studied changes from year to year. Required of all graduate students in

ethnomusicology. Audition required. Credit/no-credit only.

MUSIC EDUCATION

MUSED 301 Techniques for Teaching Music to Children (2) VLPA Exercises and applied experiences in sight-singing and error detection, keyboard skills, record and instruments of the Orff ensemble relevant to the teaching of music to children. Prerequisite: either MUSIC 212 or MUSIC 302; MUSAP 135. Instructors: Campbell

MUSED 304 Introductory Music Methods I (2, max. 4) VLPA *Morrison* Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, and problems associated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Must be taken concurrently with MUSED 301; MUSED 340. Offered: A.

MUSED 305 Introductory Music Methods II (2, max. 4) VLPA *Morrison* Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, problems associated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Offered: W.

MUSED 306 Introductory Music Methods III (2, max. 4) VLPA *Morrison* Comprehensive examination of materials for training beginning vocal and instrumental students. Topics include recruiting, motivation, problems associated with evaluation. Methods of starting beginners and rehearsing ensembles are demonstrated with techniques addressing problems unique to public school ensemble instruction. Offered: Sp.

MUSED 340 Music in Education (3) VLPA An orientation to the broad scope of issues regarding music in the schools (K-12), including curriculum, the development of instructional strategies, and evaluation techniques.

MUSED 401 Tin Pan Alley: Concepts and Teaching Strategies for Music Educators (1) VLPA Overview of Tin Pan Alley phenomenon that dominated the American popular music industry for nearly 70 years. For music educators. Focuses on cooperative learning strategies and performance considerations in the school environment.

MUSED 402 Rock and Roll Roots for Music Educators (1) VLPA Overview of the musical and cultural roots of American Rock and Roll for music educators. Explores teaching strategies and performance possibilities in the school environment.

MUSED 403 Part-Time Student Teaching in Music (6) VLPA *Campbell, Morrison* Supervised teaching internship. Directed observations of distinguished teachers in an elementary or secondary music setting. Weekly seminars. Credit/no-credit only. Offered: AWSp.

MUSED 404 Full-Time Student Teaching in Music (15) VLPA Supervised teaching internship. Directed observations of distinguished teachers in an elementary or secondary music setting. Weekly seminars. Prerequisite: MUSED 403. Instructors: Campbell, Morrison Credit/no-credit only. Offered: AWSp.

MUSED 405 Marching Band Technique (2) VLPA *McDavid, Morrison, Salzman* Basics of marching and maneuvering discussed and used to write drill. Covers selection of music, use of marching procession, and show design. Students complete a drill for their own band or for an instrumentation determined by the instructor.

MUSED 410 Instrumental Rehearsal Techniques (3) VLPA *Salzman* Includes score preparation, rehearsal formats, and error detection.

MUSED 431 Curriculum in Music Education (3) VLPA *Campbell, Morrison* Principles and practices of curriculum design applied to the development of the music curriculum. Individual or group work on elementary and secondary school music curriculum projects.

MUSED 432 Comprehensive Music in the Secondary School (3) VLPA The teaching of music and its literature in music classes other than traditional

ensembles from grade six through adults. Prerequisite: MUSED 340.

MUSED 440 Music for Children (3) VLPA Identification and selection of appropriate objectives, materials, teaching strategies, and evaluation techniques used in teaching music from birth through grade five, with consideration of various approaches (e.g., Delcroze, Kodaly, Orff) for the musical development of children. Prerequisite: MUSED 302; MUSED 340 Instructors: Campbell

MUSED 442 Instrumental Curriculum: Methods and Materials (3) VLPA Study of the organization and administration of school instrumental music; the selection and use of materials and teaching strategies from beginning to advanced levels of instrumental instruction. Prerequisite: MUSED 340. Instructors: Morrison

MUSED 443 Choral Curriculum: Methods and Materials (3) VLPA Study of the organization and administration of school choral music; the selection and use of materials and teaching strategies from beginning to advanced levels of choral instruction. Prerequisite: MUSED 340.

MUSED 452 Ethnomusicology in the Schools (3) VLPA Issues, teaching materials, and techniques involved in incorporating music cultures of United States and related world music repertoires in K-12 classroom instruction. Prerequisite: MUSED 340. Instructors: Campbell

MUSED 453 Approaches to Classroom Instruction: K-12 (3) VLPA Examines such major instructional approaches as MMCP, Orff, Kodaly, and Dalcroze. Included are the philosophy of each and the methods, materials, and instructional skills needed for classroom application. Prerequisite: MUSED 403. Instructors: Campbell

MUSED 465 Classroom Management and Evaluation in Music Education (3) VLPA Provides future teachers with strategies and techniques for classroom management, motivation, assessment, and evaluation for applications to K-12 school music programs. Prerequisite: MUSED 340. Instructors: Morrison

MUSED 475 Teaching the Music of Selected Cultures (1, max. 6) VLPA *Campbell* Music and

culture of a specific world region with particular attention to songs, stories, and instrumental pieces applicable to the teaching of music and the arts in elementary and secondary schools.

MUSED 480 Music Methods for Classroom Teachers (3) VLPA *Campbell* Addresses the basic fundamentals of music and methods for teaching K-6 school children. Topics include repertoire appropriate for different age levels, methods and materials for integrating music into the K-6 curriculum.

MUSED 496 Special Topics in Music Education (1-3, max. 10) VLPA Special studies designed to reflect contemporary emphases and concerns in the music education profession.

MUSED 501 Introduction to Research in Music Education (3) *Campbell, Morrison* Seminar in research design and method with emphasis on identification of problems in music instruction, interpretation of data, and application of findings to classroom settings.

MUSED 502 Quantitative Research in Music Education (3) Seminar in quantitative research utilizing experimental, quasi-experimental, and descriptive design, with emphasis on the pursuit of solutions to pedagogical problems through appropriate research procedures, analysis, and interpretation of findings. Prerequisite: MUSED 501. Instructors: Campbell, Morrison

MUSED 522 Psychology of Music Learning and Teaching (3) *Campbell, Morrison* Examines previous research in areas related to music cognition, including music perception, music performance, musical creativity, musical affect, musical preference, and social psychology. Explores how this research relates to curriculum and practice in music education. Role of theory, method, and procedure for psychological research in music education.

MUSED 523 Tests and Measurement (3) *Campbell, Morrison* Examination of currently published aptitude and achievement tests in music and their uses in music education. Explores the basic methods for constructing classroom tests and their use in evaluation. Selected readings include researching test construction and application of tests and measurement to program evaluation.

MUSED 524 Seminar in Music Education (3) Special problems in the teaching and supervision of music in the elementary grades. Prerequisite: one year of teaching experience. Instructors: Campbell, Morrison

MUSED 525 Seminar in Music Education (3) Special problems in the teaching and administration of music in the secondary school and community college. Prerequisite: one year of teaching experience. Instructors: Campbell, Morrison

MUSED 530 Administration and Supervision in Music Education (3) *Campbell, Morrison* Survey of issues in policy and systems for facilities, student/personnel, technology, school/community relations, and special programs in music education. Focuses on evaluating and improving existing programs. Includes supervision of student teachers.

MUSED 535 Seminar in Musical Development (3) *Campbell, Morrison* Critical review of theories, methods of inquiry, designs, and conclusions of research in musical development from early childhood through adolescence. Emphasis on evaluating theories and methods of studying musical development and exploring their relationship to theories of general intellectual development; adult music cognition research; and curriculum and practice in music education.

MUSED 540 History of American Music Education (3) *Campbell, Morrison* A chronological examination of individual, social, and political events, and educational philosophies, that characterized the development of music instruction in American schools from colonial times to the present.

MUSED 542 Comparative Music Education (3) *Campbell, Morrison* A transcultural examination of philosophy and practice of music instruction.

MUSED 550 Proseminar in Music Education (3) *Campbell, Morrison* Examination of the major literature in the philosophy, history, psychology, and sociology of formal school music instruction.

MUSED 552 World Music Education (3) *Campbell* Seminar on issues of multiculturalism and the world music "movement" as they affect school music curriculum and instruction. Curricular content and cultural context examined in relation to teaching K-

12 students, teachers, and undergraduate students in music education programs. Offered: AWSpS.

MUSED 560 Contemporary Issues in Music Education (1-3, max. 6) Seminar focusing on review of literature on psychological and sociological aspects of music education, including historical and philosophical foundations of music education in the United States. Appropriate for MA students seeking guidance in preparation of topic for examinations. Prerequisite: MUSED 501. Instructors: Campbell, Morrison

MUSED 561 Seminar in Theories of Music Instruction (3, max. 9) Theories of music instruction, with special attention to curriculum, instructional procedures, and assessment of learning. Prerequisite: MUSED 501, or permission of instructor. Instructors: Campbell, Morrison

MUSED 575 Seminar in Music Education Research (1-3, max. 6) *Campbell, Morrison* Examines research and research-based issues relevant to music instruction and learning. Doctoral students should register each quarter until successful completion of general examination. Offered: A.

MUSIC ENSEMBLE

MUSEN 100 University Singers (1, max. 15) VLPA Credit/no-credit only.

MUSEN 110 Beginning Steelband (1, max. 3) VLPA Introduction to basic playing techniques for the steel pan, and teaches a variety of Caribbean music styles with emphasis on rhythmic ensemble. Offered: AWSp.

MUSEN 200 Men's Glee Club (1, max. 15) VLPA Non-auditioned ensemble open to all men in the campus community. Offers a number of performance opportunities throughout the year. Credit/no-credit only. Offered: AWSp.

MUSEN 201 Women's Chorus (1, max. 15) VLPA Non-auditioned ensemble open to all women in the campus community. Offers a number of performance opportunities throughout the year. Credit/no-credit only. Offered: AWSp.

MUSEN 210 Campus Philharmonia Orchestra (1, max. 15) VLPA Orchestral opportunity for non-majors. Meets once weekly, rehearses under the direction of the Masters and Doctoral orchestral conducting students. Serves as a laboratory for the conducting students. Performances are community outreach events which occur once per quarter. Major string, chamber orchestra, and symphonic repertoire rehearsed and performed.

MUSEN 300 University of Washington Symphony Orchestra (1, max. 15) VLPA Top orchestral ensemble, performing symphonic literature six to seven times per year. Includes rehearsals three times per week and collaborative performances with local institutions such as the Seattle Symphony. Open to all students. Auditions held at the beginning of each academic year; seating rotates

MUSEN 301 Wind Ensemble (1, max. 15) VLPA *Salzman*

MUSEN 302 Symphonic Band (1, max. 10) VLPA *Salzman*

MUSEN 303 Marching Band (1-2, max. 10) VLPA *McDavid*

MUSEN 304 Percussion Ensemble (1, max. 12) VLPA *Collier*

MUSEN 305 Brass Ensemble (1, max. 12) VLPA

MUSEN 306 Woodwind Ensemble (1, max. 12) VLPA *Shin*

MUSEN 307 Recital Choir (1, max. 15) VLPA *Boers* Choir presents two recital programs per quarter, surveying a wide variety of repertoire of all styles and periods. Credit/no-credit only.

MUSEN 308 Guitar Ensemble (1, max. 18) VLPA *Partington* Study and performance works for two, three, and four guitars and one guitar with various solo instruments or voice. Designed for guitar performance majors. Other instrumentalists may register with instructor's permission. Offered: AWSp.

MUSEN 309 Concert Band (1, max. 10) VLPA *Salzman* Open for membership without

audition to students from any major field of study as well as faculty and community members. Also a forum for music majors to refine skills on primary or secondary instruments. Offered: AWSpS.

MUSEN 325 Accompanying (2, max. 30) VLPA

MUSEN 340 Vocal Jazz Ensemble (1, max. 6) VLPA
Credit/no-credit only.

MUSEN 345 Jazz Workshop (1, max. 12)
VLPA *Collier, Seales*

MUSEN 346 Studio Jazz Ensemble (1, max. 6) VLPA

MUSEN 347 Opera Chorus (1, max. 12) VLPA

MUSEN 350 University Chorale (1, max. 12)
VLPA *Wyers* Credit/no-credit only.

MUSEN 351 Chamber Singers (1, max. 15)
VLPA *Boers*

MUSEN 361 Piano Ensemble (1, max. 3) VLPA Study and performance of works for four hands at one or two pianos. Designed for upper-level piano majors or students with equivalent ability.

MUSEN 368 Harp Ensemble (1, max. 12) VLPA

MUSEN 369 Baroque Chamber Ensemble (1, max. 18) VLPA *Terry*

MUSEN 375 Opera Workshop (1, max. 6) VLPA
Preparation of operatic repertoire. Intended for the mature voice student.

MUSEN 381 Chamber Music (1, max. 18) VLPA

MUSEN 382 Opera Theatre (2, max. 6) VLPA Public performance of roles in opera.

MUSEN 383 Collegium Musicum (1, max. 6) VLPA

MUSEN 384 Modern Music Ensemble (1, max. 6)
VLPA *Durand* Exploration of notation and performance problems in modern music; preparation for public performance.

MUSEN 389 World Music Ensemble (1, max. 12)
VLPA Ensemble performance in a variety of world music traditions, taught by visiting artists. Content varies. Credit/no-credit only. Offered: AWSp.

MUSEN 410 Steelband (1, max. 12) VLPA Performing and arranging techniques for the steelband, and percussion, in a variety of Caribbean and Latin American music styles, including calypso, soca, reggae, and salsa. Credit/no-credit only. Offered: AWSp.

MUSEN 411 Gamelan Ensembles (1, max. 15)
VLPA *Sunardi* Explores gamelan ensembles; percussion ensembles primarily associated with musical cultures on the Indonesian islands of Java, Madura, Bali, and Lombok. Introduces basic playing techniques of selected styles of gamelan. Includes instruction in the instruments in a gamelan through study of compositions. Offered: AWSpS.

MUSEN 446 Advanced Studio Jazz Ensemble (1, max. 9) VLPA Preparation and performance of material appropriate to large jazz ensemble concerts, clinics, and radio and television broadcasts.

MUSEN 500 University of Washington Symphony Orchestra (1, max. 9) Top orchestral ensemble, performing symphonic literature six to seven times per year. Includes rehearsals three times per week and collaborative performances with local institutions such as the Seattle Symphony. Open to all students. Auditions held at the beginning of each academic year; seating rotates.

MUSEN 501 Wind Ensemble (1, max. 9) *Salzman*

MUSEN 502 Symphonic Band (1, max. 6)

MUSEN 503 Marching Band (1-2, max. 10) *McDavid*

MUSEN 504 Percussion Ensemble (1, max. 9) *Collier*

MUSEN 505 Brass Ensemble (1, max. 9)

MUSEN 506 Woodwind Ensemble (1, max. 9) *Shin*

MUSEN 507 Recital Choir (1, max. 9) Choir presents two recital programs per quarter, surveying a wide variety of repertoire of all styles and periods. Credit/no-credit only.

MUSEN 508 Guitar Ensemble (1, max. 9) *Partington*
Study and performance works for two, three, and four guitars and one guitar with various solo instruments or voice. Designed for guitar performance majors. Other instrumentalists may register with instructor's permission. Offered: AWSp.

MUSEN 509 Concert Band (1, max. 6)

MUSEN 511 Gamelan Ensembles (1, max. 15)
Sunardi Explores gamelan ensembles; percussion ensembles primarily associated with musical cultures on the Indonesian islands of Java, Madura, Bali, and Lombok. Introduces basic playing techniques of selected styles of gamelan. Includes instruction in the instruments in a gamelan through study of compositions. Offered: AWSpS.

MUSEN 525 Accompanying (2, max. 18)

MUSEN 540 Vocal Jazz Ensemble (1, max. 9)
Credit/no-credit only.

MUSEN 545 Jazz Workshop (1, max. 9) *Collier, Seale, Vu*

MUSEN 546 Studio Jazz Ensemble (1, max. 9)
Credit/no-credit only.

MUSEN 547 Opera Chorus (1, max. 9)

MUSEN 550 University Chorale (1, max. 9) *Wyers*
Credit/no-credit only.

MUSEN 551 Chamber Singers (1, max. 9) *Boers*

MUSEN 561 Piano Ensemble (1, max. 9) Study and performance of works for four hands at one or two pianos. Designed for upper-level piano majors or students with equivalent ability.

MUSEN 568 Harp Ensemble (1, max. 9)

MUSEN 569 Baroque Chamber Ensemble (1, max. 9)
Terry

MUSEN 575 Opera Workshop (1, max. 9)
Preparation of operatic repertoire. Intended for the mature voice student.

MUSEN 580 Sinfonietta (1, max. 9)

MUSEN 581 Chamber Music (1, max. 9)

MUSEN 582 Opera Theatre (2, max. 18) Public performance of roles in opera.

MUSEN 583 Collegium Musicum (1, max. 9)

MUSEN 584 Modern Music Ensemble (1, max. 9)
Durand Exploration of notation and performance problems in modern music; preparation for public performance. Credit/no-credit only.

MUSEN 589 World Music Ensemble (1, max. 12)
VLPA Ensemble performance in a variety of world music traditions, taught by visiting artists. Content varies. Credit/no-credit only. Offered: AWSp.

MUSIC HISTORY

MUHST 210 Introduction to the History of Western Music I (3) VLPA Introduction to the critical study of Western music history, including representative composers, works, and genres, as well as significant concepts and issues. Origins of Western music. Prerequisite: MUSIC 120; either MUSIC 203 or MUSIC 206, which may be taken concurrently. Instructors: Taricani Offered: A.

MUHST 211 Introduction to the History of Western Music II (3) VLPA Introduction to the critical study of Western music history, including representative composers, works, and genres, as well as significant concepts and issues. Baroque and classical periods. Prerequisite: MUSIC 203, MUSIC 206; either a minimum grade of 3.0 in MUSIC 120 or minimum score of 80% on music history placement test. Instructors: Rumph, Starr, Taricani Offered: W.

MUHST 212 Introduction to the History of Western Music III (3) VLPA Introduction to the critical study of Western music history including representative composers, works, and genres as well as significant concepts and issues - nineteenth and twentieth centuries. Prerequisite: minimum grade of 2.0 in MUHST 211. Instructors: Starr Offered: Sp.

MUHST 301 Music and the American Experience (3) VLPA/I&S Survey of American music from the colonial period to the present day, with emphasis on in-depth examination of representative works from both cultivated and vernacular traditions.

Prerequisite: MUHST 210; MUSIC 303; MUSIC 306.
Instructors: Starr Offered: WSp.

MUHST 310 Perspectives in Music History (3, max. 6) VLPA/I&S Overview of different stylistic periods in music history. Perspectives include music and philosophy, music and gender, and music and text. Students develop an insight into the manner in which similar questions have been approached in diverse cultures and periods. Prerequisite: MUHST 210; MUSIC 303; MUSIC 306. Offered: WSp.

MUHST 311 Beethoven in Western Culture (3) VLPA/I&S Comprehensive study of Beethoven's works and their nineteenth- and twentieth-century reception, with consideration of how Western culture has used Beethoven's music in its constructions of subjectivity, genius, and national and other collective identities. Prerequisite: MUSIC 303; MUSIC 306; MUHST 210. Offered: WSp.

MUHST 400 Medieval Music: To 1400 (3) VLPA *Taricani* Critical readings on issues in medieval music. Works to be studied include repertory from chant, motets, and sacred and secular music of the Middle Ages.

MUHST 401 Early British Music: 1300-1700 (3) VLPA *Taricani* Examines the history of British music from its earliest polyphony through the music of Purcell. Stylistic features of English music studied, including medieval polyphony, Tudor music, Elizabethan music, and seventeenth-century music through Purcell.

MUHST 402 Late Renaissance Secular Music: 1525-1630 (3) VLPA *Taricani* The madrigal in Italy, England, and Germany. The Chanson, Jannequin through Lassus.

MUHST 403 Late Renaissance Sacred and Instrumental Music: 1525-1630 (3) VLPA *Taricani* Latin church music. Willaert through G. Gabrieli; early Reformation church music, Walther through Gibbons; instrumental music, Cabezon, the English virginal school, and Sweelinck.

MUHST 404 Baroque Keyboard Music (3) VLPA Forms and styles: Frescobaldi through J.S. Bach and C.P.E. Bach.

MUHST 405 Orchestral Music: 1620-1760 (3) VLPA Corelli through the Mannheim School. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 406 Baroque Choral Music (3) VLPA Monteverdi through Handel. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Bozarth

MUHST 407 Baroque Opera (3) VLPA Monteverdi through Handel.

MUHST 408 Keyboard Music: 1760-1830 (3) VLPA Haydn through Schubert. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Bozarth

MUHST 409 Chamber Music: 1760-1830 (3) VLPA Haydn through Schubert. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 410 Orchestral Music: 1760-1830 (3) VLPA Haydn through early Berlioz.

MUHST 411 Art Song, 1760-1830 (3) VLPA The art song in European culture during the classical and early Romantic periods. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 412 Choral Music: 1750-1830 (3) VLPA Large works for chorus and orchestra, Haydn through Beethoven.

MUHST 413 Opera: 1750-1830 (3) VLPA *Rumph* Gluck through Bellini.

MUHST 414 Keyboard Music: 1830-1915 (3) VLPA Schumann through Debussy. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Bozarth

MUHST 415 Chamber Music: 1830-1915 (3) VLPA Schumann through Ravel. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 416 Orchestral Music: 1830-1915 (3) VLPA Schumann and Mendelssohn through early

Schoenberg and Stravinsky. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, MUSIC 306.

MUHST 417 Art Song: 1830-1915 (3) VLPA The Lieder of Schumann, Brahms, Wolf, Strauss, Mahler, and Schoenberg. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Bozarth

MUHST 418 Choral Music: 1830-1915 (3) VLPA *Bozarth* Selected choral masterpieces. Mendelssohn through Schoenberg.

MUHST 419 Opera: 1830-1915 (3) VLPA German, French, and Italian operatic traditions. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Rumph

MUHST 420 Authenticity and Performance (3) VLPA The practical and philosophical issues raised by historically informed performance of early music on period instruments. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 421 Music Criticism (3) VLPA Study of the various forms of music criticism, with an emphasis on the writing of valid examples and evaluation of one's own work along with that of others - classmates, journalists, and academic critics. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Starr

MUHST 422 Gender and Music (3) VLPA/I&S, DIV Investigates how gender issues have shaped the creation and perception of music; introduces women composers and their music. Topics include writing women's biography; creation of the music canon; gender issues in opera; intertwining issues of race, class, and gender, blues women; and popular music. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Tsou Offered: W.

MUHST 423 Twentieth-Century Music to 1945 (3) VLPA Intensive study of selected composers and works exemplifying the new vocabularies, grammars, and styles of the early part of the twentieth century. Prerequisite: minimum grade of 2.0 in each of

MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Starr

MUHST 424 Music Since 1945 (3) VLPA Diversity of the contemporary musical scene. Vocabularies appropriate for the description and understanding of the new music, developed through study of representative composers and works, and appropriate readings. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Starr

MUHST 425 Jazz History and Analysis (3) VLPA Major eras and styles of jazz with emphasis on technical aspects of jazz music: composition, arranging, improvisation practices. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Collier

MUHST 426 American Popular Music (3) VLPA An in-depth consideration of American popular music styles and repertory from about 1920 to the present day. Analysis of representative pieces; consideration of critical and aesthetic issues relating to popular music; relationship of popular music to "art" music and to American culture and society. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Starr

MUHST 429 Music, Literature, and the Arts (3) VLPA Literary and visual art works that include musical subject matter and forms; musical genres that incorporate other arts such as opera and ballet. Related philosophical writings. Includes works of a particular time period or investigation of a specific problem in comparative arts. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306.

MUHST 497 Special Topics in Music History (1-5, max. 15) VLPA Topics vary each quarter. Prerequisite: minimum grade of 2.0 in each of MUHST 210, MUSIC 303, and MUSIC 306. Instructors: Bozarth, Rumph, Taricani, Tsou

MUHST 500 Seminar in Methods of Music Research (3) Rumph, Taricani Explores various critical approaches to research in music at the graduate level, examining specialized bibliographical resources, controversial arguments about musical issues, and other matters of musical criticism required to begin advanced study of music.

Prerequisite for all graduate music history courses except MUHST 515.

MUHST 503 Readings in Medieval and Renaissance Music (5) Musical styles, genres, and forms of the Middle Ages and Renaissance. Focuses upon musicological problems and controversy related to music composed circa 1000 - 1600. Prerequisite: permission of instructor. Instructors: Taricani

MUHST 504 Seminar in Medieval Music (3, max. 6)
Prerequisite: MUHST 500. Instructors: Taricani

MUHST 505 Seminar in Renaissance Music (3, max. 6)
Prerequisite: MUHST 500. Instructors: Taricani

MUHST 506 Seminar in Baroque Music (3, max. 6)
Prerequisite: MUHST 500. Instructors: Bozarth

MUHST 508 Seminar in the Viennese Classical Period: 1760-1830 (3, max. 6) Prerequisite: MUHST 500. Instructors: Bozarth

MUHST 509 Seminar in Nineteenth-Century Music: 1830-1890 (3, max. 6) Prerequisite: MUHST 500. Instructors: Bozarth, Rumph

MUHST 510 Seminar in Music Since 1890 (3, max. 6)
Prerequisite: MUHST 500. Instructors: Starr

MUHST 515 Seminar in Medieval and Renaissance Notation (5) *Taricani* Gregorian chant through sixteenth-century prints.

MUHST 519 Seminar in Modern Editorial Procedures (5) *Bozarth* Study of modern procedures for preparing critical editions. Related areas of study may include analysis of musical style and historical and performance problems inherent in works being edited.

MUHST 520 Seminar in American Music (3, max. 6)
Research in the life, works, and times of composers in the United States from colonial days to the present. Prerequisite: MUHST 500. Instructors: Starr

MUHST 537 Seminar on Opera (3, max. 6)
Prerequisite: MUHST 500.

MUSIC PERFORMANCE

MUSICP 300 Private Instruction for Non-Majors: Voice (2, max. 44) VLPA *Harper* Intended for undergraduate non-majors. Audition required.

MUSICP 301 Private Instruction for Non-Majors: Piano (2, max. 44) VLPA *McCabe, Seales, Sheppard* Intended for undergraduate non-majors. Audition required.

MUSICP 302 Private Instruction for Non-Majors: Organ (2, max. 44) VLPA *Terry* Intended for undergraduate non-majors. Audition required.

MUSICP 303 Private Instruction for Non-Majors: Harpsichord (2, max. 44) VLPA *Terry* Intended for undergraduate non-majors. Audition required.

MUSICP 304 Private Instruction for Non-Majors: Violin (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 305 Private Instruction for Non-Majors: Violoncello (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 306 Private Instruction for Non-Majors: Double Bass (2, max. 44) VLPA *Lieberman* Intended for undergraduate non-majors. Audition required.

MUSICP 307 Private Instruction for Non-Majors: Flute (2, max. 44) VLPA *Shin* Intended for undergraduate non-majors. Audition required.

MUSICP 308 Private Instruction for Non-Majors: Oboe (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 309 Private Instruction for Non-Majors: Clarinet (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 310 Private Instruction for Non-Majors: Bassoon (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 311 Private Instruction for Non-Majors: Saxophone (2, max. 44) VLPA *Brockman* Intended for undergraduate non-majors. Audition required.

MUSICP 312 Private Instruction for Non-Majors: Horn (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 313 Private Instruction for Non-Majors: Trumpet (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 314 Private Instruction for Non-Majors: Trombone (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 315 Private Instruction for Non-Majors: Tuba (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 316 Private Instruction for Non-Majors: Harp (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 317 Private Instruction for Non-Majors: Percussion (2, max. 44) VLPA *Collier, Crusoe* Intended for undergraduate non-majors. Audition required.

MUSICP 318 Private Instruction for Non-Majors: Guitar (2, max. 44) VLPA *Partington* Intended for undergraduate non-majors. Audition required.

MUSICP 319 Private Instruction for Non-Majors: Viola da Gamba (2, max. 44) VLPA Intended for undergraduate non-majors. Audition required.

MUSICP 320 Private Instruction: Voice (3, max. 45) VLPA *Thomas Harper* Intended for undergraduate majors. Audition required.

MUSICP 321 Private Instruction: Piano (3, max. 45) VLPA *Craig Sheppard, Marc A Seales, Robin L McCabe* Intended for undergraduate majors. Audition required.

MUSICP 322 Private Instruction: Organ (3, max. 45) VLPA *Carole R Terry* Intended for undergraduate majors. Audition required.

MUSICP 323 Private Instruction: Harpsichord (3, max. 45) VLPA *Carole R Terry* Intended for undergraduate majors. Audition required.

MUSICP 324 Private Instruction: Violin (3, max. 45) VLPA *Ronald G Patterson* Intended for undergraduate majors. Audition required.

MUSICP 325 Private Instruction: Violoncello (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 326 Private Instruction: Double Bass (3, max. 45) VLPA *Barry Lieberman* Intended for undergraduate majors. Audition required.

MUSICP 327 Private Instruction: Flute (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 328 Private Instruction: Oboe (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 329 Private Instruction: Clarinet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 330 Private Instruction: Bassoon (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 331 Private Instruction: Saxophone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 332 Private Instruction: Horn (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 333 Private Instruction: Trumpet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 334 Private Instruction: Trombone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 335 Private Instruction: Tuba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 336 Private Instruction: Harp (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 337 Private Instruction: Percussion (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 338 Private Instruction: Guitar (3, max. 45) VLPA *Partington* Intended for undergraduate majors. Audition required.

MUSICP 339 Private Instruction: Viola da Gamba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 340 Private Instruction: Timpani (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 341 Private Instruction: Mallet Percussion (3, max. 45) VLPA *Collier* Intended for undergraduate majors. Audition required.

MUSICP 342 Private Instruction: Jazz Drum Set (3, max. 45) VLPA Primarily for jazz studies and percussion majors. Audition required for non-majors.

MUSICP 343 Private Instruction for Non-Majors: Viola (2, max. 44) VLPA *Watras* Intended for undergraduate non-majors. Audition required.

MUSICP 363 Private Instruction: Viola (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 420 Private Instruction: Voice (3, max. 45) VLPA *Thomas Harper* Intended for undergraduate majors. Audition required.

MUSICP 421 Private Instruction: Piano (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 422 Private Instruction: Organ (3, max. 45) VLPA *Terry* Intended for undergraduate majors. Audition required.

MUSICP 423 Private Instruction: Harpsichord (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 424 Private Instruction: Violin (3, max. 45) VLPA *Patterson* Intended for undergraduate majors. Audition required.

MUSICP 425 Private Instruction: Violoncello (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 426 Private Instruction: Double Bass (3, max. 45) VLPA *Lieberman* Intended for undergraduate majors. Audition required.

MUSICP 427 Private Instruction: Flute (3, max. 45) VLPA *Shin* Intended for undergraduate majors. Audition required.

MUSICP 428 Private Instruction: Oboe (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 429 Private Instruction: Clarinet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 430 Private Instruction: Bassoon (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 431 Private Instruction: Saxophone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 432 Private Instruction: Horn (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 433 Private Instruction: Trumpet (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 434 Private Instruction: Trombone (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 435 Private Instruction: Tuba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 436 Private Instruction: Harp (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 437 Private Instruction: Percussion (3, max. 45) VLPA *Collier, Crusoe* Intended for undergraduate majors. Audition required.

MUSICP 438 Private Instruction: Guitar (3, max. 45) VLPA *Partington* Intended for undergraduate majors. Audition required.

MUSICP 439 Private Instruction: Viola da Gamba (3, max. 45) VLPA Intended for undergraduate majors. Audition required.

MUSICP 440 Private Instruction: Timpani (3, max. 45) VLPA *Crusoe* Intended for undergraduate majors. Audition required.

MUSICP 441 Private Instruction: Mallet Percussion (3, max. 45) VLPA *Collier* Intended for undergraduate majors. Audition required.

MUSICP 442 Jazz Drum Set (3, max. 45) VLPA
Individual instruction in drum set techniques.
Prerequisite: minimum of 18 credits of MUSICP 342.
Instructors: Poor Offered: AWSp.

MUSICP 463 Private Instruction: Viola (3, max. 45) VLPA *Watras* Intended for undergraduate majors. Audition required.

MUSICP 494 Private Instruction: Jazz (3, max. 45) VLPA *Collier, Seales, Vu* Guides students through the process of historical examination of jazz while discovering and developing musical originality. Addresses jazz methods and approaches, aiming for mastery in jazz performance in a one-on-one environment with instrumentalists chosen from the core jazz instrumentation of trumpet, piano, bass, and drums. Offered: AWSp.

MUSICP 495 Private Instruction: Free Improvisation (3, max. 45) VLPA *Bergman, Hodge, Karpen, Vu* Guides students through the process of discovering and developing musical originality in improvised music. Students aim for mastery of improvised performance in a one-on-one environment with instructor chosen from various School of Music faculty. Primarily for jazz majors. Offered: AWSp.

MUSICP 500 Private instruction for Non-Majors: Voice (2, max. 44) Harper Intended for graduate non-majors. Audition required.

MUSICP 501 Private Instruction for Non-Majors: Piano (2, max. 44) *Robin L McCabe, Marc A Seales, Craig Sheppard* Intended for graduate non-majors. Audition required.

MUSICP 502 Private Instruction for Non-Majors: Organ (2, max. 44) *Carole R Terry* Intended for graduate non-majors. Audition required.

MUSICP 503 Private Instruction for Non-Majors: Harpsichord (2, max. 44) *Carole R Terry* Intended for graduate non-majors. Audition required.

MUSICP 504 Private Instruction for Non-Majors: Violin (2, max. 44) *Patterson* Intended for graduate non-majors. Audition required.

MUSICP 505 Private Instruction for Non-Majors: Violoncello (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 506 Private Instruction for Non-Majors: Double Bass (2, max. 44) *Barry Lieberman* Intended for graduate non-majors. Audition required.

MUSICP 507 Private Instruction for Non-Majors: Flute (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 508 Private Instruction for Non-Majors: Oboe (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 509 Private Instruction for Non-Majors: Clarinet (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 510 Private Instruction for Non-Majors: Bassoon (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 511 Private Instruction for Non-Majors: Saxophone (2, max. 44) *Brockman* Intended for graduate non-majors. Audition required.

MUSICP 512 Private Instruction for Non-Majors: Horn (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 513 Private Instruction for Non-Majors: Trumpet (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 514 Private Instruction for Non-Majors: Trombone (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 515 Private Instruction for Non-Majors: Tuba (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 516 Private Instruction for Non-Majors: Harp (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 517 Private Instruction for Non-Majors: Percussion (2, max. 44) *Thomas W Collier* Intended for graduate non-majors. Audition required.

MUSICP 518 Private Instruction for Non-Majors: Guitar (2, max. 44) *Michael Partington* Intended for graduate non-majors. Audition required.

MUSICP 519 Private Instruction for Non-Majors: Viola da Gamba (2, max. 44) Intended for graduate non-majors. Audition required.

MUSICP 520 Private Instruction: Voice (3, max. 45) *Harper* Intended for graduate majors. Audition required.

MUSICP 521 Private Instruction: Piano (3, max. 45) *McCabe, Sheppard* Intended for graduate majors. Audition required.

MUSICP 522 Private Instruction: Organ (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 523 Private Instruction: Harpsichord (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 524 Private Instruction: Violin (3, max. 45) *Patterson* Intended for graduate majors. Audition required.

MUSICP 525 Private Instruction: Violoncello (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 526 Private Instruction: Double Bass (3, max. 45) *Lieberman* Intended for graduate majors. Audition required.

MUSICP 527 Private Instruction: Flute (3, max. 45) *Shin* Intended for graduate majors. Audition required.

MUSICP 528 Private Instruction: Oboe (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 529 Private Instruction: Clarinet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 530 Private Instruction: Bassoon (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 531 Private Instruction: Saxophone (3, max. 45) *Brockman* Intended for graduate majors. Audition required.

MUSICP 532 Private Instruction: Horn (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 533 Private Instruction: Trumpet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 534 Private Instruction: Trombone (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 535 Private Instruction: Tuba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 536 Private Instruction: Harp (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 537 Private Instruction: Percussion (3, max. 45) *Collier, Crusoe* Intended for graduate majors. Audition required.

MUSICP 538 Private Instruction: Guitar (3, max. 45) *Partington* Intended for graduate majors. Audition required.

MUSICP 539 Jazz Drum Set (3, max. 45) *Poor* Individual instruction in drum set techniques. Offered: AWSp.

MUSICP 540 Private Instruction: Timpani (3, max. 45) *Crusoe* Intended for graduate majors. Audition required.

MUSICP 541 Private Instruction: Mallet Percussion (3, max. 45) *Collier* Intended for graduate majors. Audition required.

MUSICP 542 Private Instruction: Viola da Gamba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 543 Private Instruction for Non-Majors: Viola (2, max. 44) *Melia Watras* Intended for graduate non-majors. Audition required. Offered: AWSpS.

MUSICP 563 Private Instruction: Viola (3, max. 45) *Watras* Intended for Master's degree candidates. Audition required. Offered: AWSpS.

MUSICP 570 Private Instruction: Voice (3, max. 45) *Harper* Intended for graduate majors. Audition required.

MUSICP 571 Private Instruction: Piano (3, max. 45) *McCabe, Sheppard* Intended for graduate majors. Audition required.

MUSICP 572 Private Instruction: Organ (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 573 Private Instruction: Harpsichord (3, max. 45) *Terry* Intended for graduate majors. Audition required.

MUSICP 574 Private Instruction: Violin (3, max. 45) *Patterson* Intended for graduate majors. Audition required.

MUSICP 575 Private Instruction: Violoncello (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 576 Private Instruction: Double Bass (3, max. 45) *Lieberman* Intended for graduate majors. Audition required.

MUSICP 577 Private Instruction: Flute (3, max. 45) *Shin* Intended for graduate majors. Audition required.

MUSICP 578 Private Instruction: Oboe (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 579 Private Instruction: Clarinet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 580 Private Instruction: Bassoon (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 581 Private Instruction: Saxophone (3, max. 45) *Brockman* Intended for graduate majors. Audition required.

MUSICP 582 Private Instruction: Horn (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 583 Private Instruction: Trumpet (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 584 Private Instruction: Trombone (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 585 Private Instruction: Tuba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 586 Private Instruction: Harp (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 587 Private Instruction: Percussion (3, max. 45) *Collier, Crusoe* Intended for graduate majors. Audition required.

MUSICP 588 Private Instruction: Guitar (3, max. 45) *Partington*

MUSICP 590 Private Instruction: Timpani (3, max. 45) *Crusoe* Intended for graduate majors. Audition required.

MUSICP 591 Private Instruction: Mallet Percussion (3, max. 45) *Collier* Intended for graduate majors. Audition required.

MUSICP 592 Private Instruction: Viola da Gamba (3, max. 45) Intended for graduate majors. Audition required.

MUSICP 593 Private Instruction: Viola (3, max. 45) *Watras* Intended for Doctoral degree candidates. Audition required. Offered: AWSpS.

MUSICP 594 Private Instruction: Jazz (3, max. 45) *Collier, Seales, Vu* Guides students through the process of historical examination of jazz while

discovering and developing musical originality. Addresses jazz methods and approaches, aiming for mastery in jazz performance in a one-on-one environment with instrumentalists chosen from the core jazz instrumentation of trumpet, piano, bass, and drums. Offered: AWSp.

MUSICP 595 Private Instruction: Free Improvisation (3, max. 45) *Bergman, Hodge, Karpen, Vu* Guides students through the process of discovering and developing musical originality in improvised music. Students aim for mastery of improvised performance in a one-on-one environment with instructor chosen from various School of Music faculty. Primarily for jazz majors. Offered: AWSp.

NEAR EASTERN LANGUAGES AND CIVILIZATION

ARABIC

ARAB 101 Elementary Arabic (5) Develops the four communicative language skills: listening, speaking, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 105 or ARAB 411 taken for credit. First in a sequence of three.

ARAB 102 Elementary Arabic (5) Develops the four communicative language skills: listening, speaking, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 105 or ARAB 411 taken for credit. Second in a sequence of three. Prerequisite: ARAB 101.

ARAB 103 Elementary Arabic (5) Develops the four communicative language skills: listening, speaking, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 105 or ARAB 411 taken for credit. Third in a sequence of three. Prerequisite: ARAB 102.

ARAB 105 Intensive Elementary Arabic (15)

Develops the four communicative language skills: listening, speaking, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 101-ARAB 103, ARAB 411-ARAB 413 taken for credit. If Arabic is the student's language of admission only 10 credits count towards graduation

ARAB 199 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Arabic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

ARAB 201 Intermediate Arabic (5) VLPA Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 205 taken for credit. First in a sequence of three. Prerequisite: either ARAB 103 or ARAB 105.

ARAB 202 Intermediate Arabic (5) VLPA Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 205 taken for credit. Second in a sequence of three. Prerequisite: ARAB 201.

ARAB 203 Intermediate Arabic (5) VLPA Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 205 taken for credit. Third in a sequence of three. Prerequisite: ARAB 202.

ARAB 205 Intensive Intermediate Arabic (15) VLPA Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking,

reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 201, ARAB 202, ARAB 203 taken for credit. Prerequisite: either ARAB 103 or ARAB 105.

ARAB 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Arabic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

ARAB 401 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression through discussions, debates, presentations, and written work. Taught in Arabic. Prerequisite: ARAB 203 or 205. Offered: S.

ARAB 402 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression through discussions, debates, presentations, and written work. Taught in Arabic. Prerequisite: ARAB 401.

ARAB 403 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression through discussions, debates, presentations, and written work. Taught in Arabic. Prerequisite: ARAB 402.

ARAB 404 Arabic Short Stories (5) VLPA Introduces student to prominent twentieth-century Arab authors via selected examples of their short stories, read in Arabic. Emphasizes use of literature as a popular technique for teaching basic language skills (i.e. listening, speaking, reading, and writing) and language areas (i.e. vocabulary, grammar, and pronunciation) . Prerequisite: either ARAB 203 or ARAB 205.

ARAB 405 Modern Arabic Poetry (3) VLPA

Neoclassical poetry of the nineteenth and twentieth centuries, and the development of modern verse. Prerequisite: either ARAB 203 or ARAB 205. Instructors: DeYoung

ARAB 406 Development of Modern Arabic Prose (5)

VLPA Modern essays, fiction, and ideological writings. Prerequisite: either ARAB 203 or ARAB 205.

ARAB 407 Grammatical and Lexical Arabic Texts (3)

VLPA Introduction to concepts and terminology of Arabic grammar and lexicography through readings from scholars such as Sibawayh, Ibn Aqil, and Ibn Manzur. Prerequisite: either ARAB 203 or ARAB 205.

ARAB 408 Historical Texts (3) VLPA/I&S

Readings in Arab historians with particular reference to scholars such as Tabari, Ibn al-Jawzi, and Ibn al-Athir. Prerequisite: either ARAB 203 or ARAB 205.

ARAB 409 Quran and Its Interpretation (3) VLPA

Reading of selected passages from the Quran in relation to their interpretation in classical commentaries (tafsir) and in legal texts (ahkam al-Quran) . Focus on the various types of classical scholarship applied to the text of the Quran (ulum al-Quran) . Prerequisite: either ARAB 203 or ARAB 205.

ARAB 410 Islamic Theological and Mystical Literature (3) VLPA

Reading of selected texts representative of Islamic theological and mystical schools. Prerequisite: either ARAB 203 or ARAB 205.

ARAB 411 Arabic through Song (5) VLPA/I&S

Emphasizes history, language, and culture explored, learned, and analyzed via songs. Considers how song reflects and portrays language and its usage; current and past events; and cultural nuances. Prerequisite: either ARAB 203 or ARAB 205.

ARAB 412 Introduction to Classical Arabic (5) VLPA

Reading the Qur'an, Hadith, and poetry in Classical Arabic (CA) . Students study selected texts, listen to Qur'anic recitations, and poetry, mastering many advanced grammatical structures and acquiring a working vocabulary in CA. Prerequisite: ARAB 203 or ARAB 205.

ARAB 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: ARAB 423.

ARAB 496 Special Studies in Arabic (3-5, max. 15) VLPA Topics vary. Offered occasionally by visiting or resident faculty.

ARAB 499 Undergraduate Research (1-6, max. 18)

ARAB 511 Elementary Arabic (5) Develops the four communicative language skills: listening, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 515 or ARAB 411, ARAB 412, ARAB 413 taken for credit. First in a sequence of three.

ARAB 512 Elementary Arabic (5) Develops the four communicative language skills: listening, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 515 or ARAB 411, ARAB 412, ARAB 413 taken for credit. Second in a sequence of three. Prerequisite: ARAB 511.

ARAB 513 Elementary Arabic (5) Develops the four communicative language skills: listening, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 515 or ARAB 411, ARAB 412, ARAB 413 taken for credit. Third in a sequence of three. Prerequisite: ARAB 512.

ARAB 515 Intensive Elementary Arabic (15) Develops the four communicative language skills: listening, reading, and writing. Stresses communication skills and emphasizes the links between language and culture, using mainly Modern Standard Arabic, with exposure to Egyptian Colloquial Arabic. Cannot be taken for credit if ARAB 511, ARAB 512, ARAB 513, or ARAB 411, ARAB 412, ARAB 413 taken for credit. Offered: S.

ARAB 521 Intermediate Arabic (5) Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing.

Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 525 taken for credit. Prerequisite: either ARAB 515 or ARAB 513.

ARAB 522 Intermediate Arabic (5) Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 525 taken for credit. Prerequisite: ARAB 521.

ARAB 523 Intermediate Arabic (5) Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 525 taken for credit. Prerequisite: ARAB 522.

ARAB 525 Intensive Intermediate Arabic (15) Explores aspects of Arab culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing. Students also learn more about Arab society in general and about features of Arab culture that influence the use of the language in daily life. Focuses on developing communication skills. Cannot be taken for credit if ARAB 521, ARAB 522, ARAB 523 taken for credit. Prerequisite: either ARAB 513 or ARAB 515. Offered: S.

ARAB 541 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression through discussions, debates, presentations, and written work. Taught in Arabic.

ARAB 542 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression

through discussions, debates, presentations, and written work. Taught in Arabic.

ARAB 543 Current Issues in Arab Media (5) Studies authentic, unedited Arabic language materials from Arabic media. Topics include politics, economics, business, sports, and women's issues. Emphasis on developing fluency in oral and written expression through discussions, debates, presentations, and written work. Taught in Arabic. Prerequisite: ARAB 542

ARAB 544 Arabic Short Stories (5) VLPA Introduces student to prominent twentieth-century Arab authors via selected examples of their short stories, read in Arabic. Emphasizes use of literature as a popular technique for teaching basic language skills (i.e. listening, speaking, reading, and writing) and language areas (i.e. vocabulary, grammar, and pronunciation) . Prerequisite: either ARAB 203 or 205.

ARAB 546 Development of Modern Arabic Prose (5) VLPA Modern essays, fiction, and ideological writings. Prerequisite: ARAB 523.

ARAB 551 Arabic through Song (5) Emphasizes history, language, and culture explored, learned, and analyzed via songs. Considers how song reflects and portrays language and its usage; current and past events; and cultural nuances. Prerequisite: either ARAB 523 or ARAB 525

ARAB 552 Introduction to Classical Arabic (5) Reading the Qur'an, Hadith, and poetry in Classical Arabic (CA) . Students study selected texts, listen to Qur'anic recitations, and poetry, mastering many advanced grammatical structures and acquiring a working vocabulary in CA. Prerequisite: Completion of ARAB 523 or ARAB 525.

ARAB 596 Special Studies in Arabic (3-5, max. 15) Topics vary. Offered occasionally by visiting or resident faculty.

ARAB 600 Independent Study or Research (*-)

ARAMAIC

ARAMIC 201 Biblical Aramaic (5) VLPA Fundamentals of Aramaic grammar and the

differences that distinguish Aramaic from Hebrew; includes select Aramaic portions of the Bible. Emphasis on grammar and comprehension. Designed for students with some knowledge of Hebrew. Prerequisite: either BIBHEB 103 or BIBHEB 105.

ARAMIC 423 Readings in Syriac (3) VLPA Readings from selected passages in Biblical and Christian literature with emphasis on writings of late antique and medieval Christian communities of Syria, Iraq, and Iran until the Mongol invasions. Prerequisite: ARAMIC 412. Offered: Sp.

ARAMIC 521 Biblical Aramaic (5) Fundamentals of Aramaic grammar and the differences that distinguish Aramaic from Hebrew; includes select Aramaic portions of the Bible. Emphasizes grammar and comprehension. Designed for students with some knowledge of Hebrew. Prerequisite: either BIBHEB 513 or BIBHEB 515.

BIBLICAL HEBREW

BIBHEB 101 Elementary Biblical Hebrew (5) Introduction to biblical (classical) Hebrew beginning with the alphabet. Integrates core vocabulary and basic grammar with reading short selections directly from the Hebrew Bible.

BIBHEB 102 Elementary Biblical Hebrew (5) Continues the introduction to the biblical (classical) Hebrew with additional readings from the Hebrew Bible. Prerequisite: BIBHEB 101.

BIBHEB 103 Biblical Hebrew Prose (5) VLPA Explores select prose sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: BIBHEB 102.

BIBHEB 105 Intensive Elementary Biblical Hebrew (15) VLPA Intensive study of grammar with oral and written drills and reading of simple texts. Cannot be taken for credit if BIBHEB 101, BIBHEB 102, BIBHEB 103 previously taken.

BIBHEB 199 Study Abroad (1-15, max. 15) Credit for elementary Hebrew in an approved Study Abroad

program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

BIBHEB 201 Biblical Hebrew Poetry (5) VLPA

Explores select poetic sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasis on close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: either BIBHEB 103 or BIBHEB 105.

BIBHEB 202 Inscriptions from Biblical Times (5)

VLPA Surveys Northwest Semitic inscriptions that bear significantly on our understanding of Biblical history and ancient Hebrew including the Moabite stone, Israelite ostraca, Siloam engraving, Gezer calendar, Deir Alla (Gilead) inscriptions, the Asherah texts, Ammonite fragments, and Phoenician monuments. Prerequisite: BIBHEB 201.

BIBHEB 203 Biblical Prophetic Texts (5) VLPA

Examines the language, style, and literary sophistication of biblical prophetic texts within the context of ancient Near Eastern prophecies. Prerequisite: BIBHEB 103.

BIBHEB 204 The Book of Job (5) VLPA Examines the language, style, and literary sophistication of the biblical Book of Job within the context of ancient near Eastern dispute poetry and correlates close readings of the book in the original Hebrew language with various interpretations it has received since antiquity. Prerequisite: BIBHEB 103.

BIBHEB 205 Readings in Medieval Hebrew Poetry

(3) VLPA *Scott B. Noegel* A close examination of Medieval Hebrew poetry. Among the poems we shall study will include works by Yehudah Halevi, Shlomo ibn Gabirol, Moshe ibn Ezra, and Abraham ibn Ezra. Focus will be on the literary sophistication of this poetry. Prerequisite: BIBHEB 103 or MODHEB 103. Offered: WSp.

BIBHEB 206 Magic and the Bible: Tales of Cult and Wonder (5) VLPA

S. Noegel Examines biblical Hebrew texts that raise questions concerning the degree to which ancient Israelites engaged in "magical" practices as found elsewhere in the ancient Near East. Attention is paid also to the texts' language, style, and literary aspects and to

comparative materials. Prerequisite: BIBHEB 103 or permission of instructor. Offered: W.

BIBHEB 207 The Book of Proverbs (5) VLPA

S. Noegel Examines the language, style, and sophistication of the biblical Book of Proverbs within the context of ancient Near Eastern proverb collections and correlates close readings of the book in the original Hebrew language with various interpretations it has received since antiquity. Prerequisite: BIBHEB 103 Offered: Sp.

BIBHEB 399 Study Abroad (1-15, max. 15) Credit for intermediate Hebrew in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

BIBHEB 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: BIBHEB 203.

BIBHEB 496 Special Studies in Biblical Hebrew (3-5, max. 15) VLPA Topics vary.

BIBHEB 499 Undergraduate Research (1-6, max. 18)

BIBHEB 511 Elementary Biblical Hebrew (5)

Introduction to biblical (classical) Hebrew beginning with the alphabet. Integrates core vocabulary and basic grammar with reading short selections directly from the Hebrew Bible.

BIBHEB 512 Elementary Biblical Hebrew (5)

Continues the introduction to the biblical (classical) Hebrew with additional readings from the Hebrew Bible. Prerequisite: BIBHEB 511.

BIBHEB 513 Biblical Hebrew Prose (5) Explores select prose sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasizes close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: BIBHEB 512.

BIBHEB 515 Intensive Elementary Biblical Hebrew

(1) Intensive introduction to biblical (classical) Hebrew beginning with the alphabet. Integrates core vocabulary and basic grammar with reading short selections from the Hebrew Bible. Offered: S.

BIBHEB 521 Biblical Hebrew Poetry (5) Explores select poetic sections of the Hebrew Bible (Old Testament) in conjunction with English translations and commentaries. Emphasizes close readings, the grammatical insights of textual criticism, and the interpretive strategies and agendas of the English translations. Prerequisite: either BIBHEB 513 or BIBHEB 515.

BIBHEB 522 Inscriptions from Biblical Times (5) Surveys Northwest Semitic inscriptions that bear significantly on our own understanding of Biblical history and ancient Hebrew including the Moabite stone, Israelite ostraca, Siloam engraving, Gezer calendar, Deir Alla (Gilead) inscriptions, the Asherah texts, Ammonite fragments, and Phoenician monuments. Prerequisite: BIBHEB 521.

BIBHEB 523 Biblical Prophetic Texts (5) Examines the language, style, and literary sophistication of biblical prophetic texts within the context of ancient Near Eastern prophecies. Prerequisite: either BIBHEB 103 or permission of instructor.

BIBHEB 524 The Book of Job (5) Examines the language, style, and literary sophistication of the biblical Book of Job within the context of ancient near Eastern dispute poetry and correlates close readings of the book in the original Hebrew language with various interpretations it has received since antiquity. Prerequisite: BIBHEB 103 or BIBHEB 513.

BIBHEB 525 Readings in Medieval Hebrew Poetry (3) *S. NOEGEL* A close examination of Medieval Hebrew poetry. Among the poems we shall study will include works by Yehudah Halevi, Shlomo ibn Gabirol, Moshe ibn Ezra, and Abraham ibn Ezra. Focus will be on the literary sophistication of this poetry. Prerequisite: BIBHEB 103/513 or MODHEB 103/513. Offered: WSp.

BIBHEB 526 Magic and the Bible: Tales of Cult and Wonder (5) *Scott B. Noegel* Examines biblical Hebrew texts that raise questions concerning the degree to which ancient Israelites engaged in "magical" practices as found elsewhere in the ancient Near East. Attention is paid also to the texts' language, style, and literary aspects and to comparative materials. Prerequisite: BIBHEB 513 or permission of instructor Offered: W.

BIBHEB 527 The Book of Proverbs (5) *S. Noegel* Examines the language, style, and sophistication of the biblical Book of Proverbs within the context of ancient Near Eastern proverb collections and correlates close readings of the book in the original Hebrew language with various interpretations it has received since antiquity. Prerequisite: BIBHEB 513 or permission of instructor Offered: Sp.

BIBHEB 596 Special Studies in Biblical Hebrew (3-5, max. 15) Topics vary.

BIBHEB 600 Independent Study or Research (*-)

CHAGATAI

CHGTAI 401 Chagatai I (5) VLPA Expansion of reading skills learned in intermediate Turkic languages and introduction of the basic Chagatai Arabic orthographic conventions and linguistic characteristics of textual sources. Develops skills necessary for fluent manuscript reading and comprehending Chagatai primary texts written in Islamic Central Asia from the fifteenth to the early twentieth centuries. Prerequisite: either TKIC 405, TKIC 423, TKIC 429, KAZAKH 205, UYGUR 203, or UZBEK 203.

CHGTAI 402 Chagatai II (5) VLPA Expansion of reading skills learned in intermediate Turkic languages and introduction of the basic Chagatai Arabic orthographic conventions and linguistic characteristics of textual sources. Develops skills necessary for fluent manuscript reading and comprehending Chagatai primary texts written in Islamic Central Asia from the fifteenth to the early twentieth centuries. Prerequisite: CHGTAI 401.

CHGTAI 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: CHGTAI 402.

CHGTAI 496 Special Studies in Chagatai (3-5, max. 15) VLPA Topics Vary.

CHGTAI 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

CHGTAI 541 Chagatai I (5) Expansion of reading skills learned in intermediate Turkic languages and introduction of the basic Chagatai Arabic

orthographic conventions and linguistic characteristics of textual sources. Develops skills necessary for fluent manuscript reading and comprehending Chagatai primary texts written in Islamic Central Asia from the fifteenth to the early twentieth centuries. Prerequisite: either two years of study of any Turkic language or permission of instructor.

CHGTAI 542 Chagatai II (5) Expansion of reading skills learned in intermediate Turkic languages and introduction of the basic Chagatai Arabic orthographic conventions and linguistic characteristics of textual sources. Develops skills necessary for fluent manuscript reading and comprehending Chagatai primary texts written in Islamic Central Asia from the fifteenth to the early twentieth centuries. Prerequisite: CHGTAI 541.

CHGTAI 596 Special Studies in Chagatai (3-5, max. 15) Topics vary.

CHGTAI 600 Independent Study or Research (*-)

COPTIC

COPTIC 101 Introduction to Sahidic Coptic (5) M. Williams Covers elements of grammar of the Sahidic dialect of the Coptic language. Offered: A.

COPTIC 102 Reading in Coptic (5) M. Williams Readings from ancient Coptic literature. Offered: W.

COPTIC 103 Reading in Coptic (5) M. Williams Readings from ancient Coptic literature. Offered: Sp.

COPTIC 511 Introduction to Sahidic Coptic (5) M. WILLIAMS Covers elements of grammar of the Sahidic dialect of the Coptic language. Offered: A.

COPTIC 512 Reading in Coptic (5) M. WILLIAMS Readings from ancient Coptic literature. Offered: W.

COPTIC 513 Reading in Coptic (5) M. WILLIAMS Readings from ancient Coptic literature. Offered: Sp.

EGYPTIAN

EGYPT 101 Hieroglyphic Egyptian I (5) Provides an introduction to hieroglyphic Egyptian as written

during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. No prior knowledge required.

EGYPT 102 Hieroglyphic Egyptian II (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. Prerequisite: EGYPT 101.

EGYPT 103 Hieroglyphic Egyptian III (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. Prerequisite: EGYPT 102.

EGYPT 422 Readings in Coptic (3) VLPA Readings from ancient Coptic Christian literature, with emphasis on the Nag Hammadi texts. Prerequisite: EGYPT 411.

EGYPT 423 Readings in Coptic (3) VLPA Readings from ancient Coptic Christian literature, with emphasis on the Nag Hammadi texts. Prerequisite: EGYPT 411.

EGYPT 511 Hieroglyphic Egyptian I (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. No prior knowledge required.

EGYPT 512 Hieroglyphic Egyptian II (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. Prerequisite: EGYPT 511.

EGYPT 513 Hieroglyphic Egyptian III (5) Provides an introduction to hieroglyphic Egyptian as written during the Middle Kingdom (circa 2040-1782 BCE) . Students learn to read and write basic hieroglyphics so they can read a complete Egyptian text. Prerequisite: EGYPT 512.

GE'EZ

GEEZ 101 Classical Ethiopic (5) One of the most important Semitic languages of the Near East and East Africa, and the classical language of modern day Ethiopia and Eritrea, a region known as the "Horn of Africa". Introduces the basic alphabet and fundamental grammar of classical Ethiopic, or Ge'ez.

GEEZ 511 Classical Ethiopic (5) One of the most important Semitic languages of the Near East and East Africa, and the classical language of modern day Ethiopia and Eritrea, a region known as the "Horn of Africa". Introduces the basic alphabet and fundamental grammar of classical Ethiopic, or Ge'ez.

KAZAKH

KAZAKH 101 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening, speaking, reading, and writing in Kazakh. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kazakh language through the cultural contexts. Cannot be taken for credit if KAZAKH 105 taken. First in a sequence of three.

KAZAKH 102 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening, speaking, reading, and writing in Kazakh. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kazakh language through the cultural contexts. Cannot be taken for credit if KAZAKH 105 taken. Second in a sequence of three. Prerequisite: KAZAKH 101.

KAZAKH 103 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening, speaking, reading, and writing in Kazakh. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kazakh language through the cultural contexts. Cannot be taken for credit if KAZAKH 105 taken. Third in a sequence of three. Prerequisite: KAZAKH 102.

KAZAKH 105 Intensive Elementary Kazakh (15) Intensive study of grammar, with oral and written drill and reading of simple texts in Kazak. Covers

first-year Kazak. Cannot be taken for credit if KAZAKH 101, KAZAKH 102, KAZAKH 103 taken.

KAZAKH 201 Intermediate Kazakh (5) VLPA

Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Kazakh. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kazakh. Prerequisite: either KAZAKH 103 or KAZAKH 105.

KAZAKH 202 Intermediate Kazakh (5) VLPA

Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Kazakh. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kazakh. Prerequisite: KAZAKH 201.

KAZAKH 203 Intermediate Kazakh (5) VLPA

Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Kazakh. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kazakh. Prerequisite: KAZAKH 202.

KAZAKH 205 Intensive Intermediate Kazakh (15)

VLPA Allows students to complete second-year Kazak in one quarter. Reading of selected texts in modern literary Kazak, with emphasis on grammar, syntax, and oral practice. Prerequisite: either KAZAKH 103 or KAZAKH 105.

KAZAKH 401 Kazakh through Culture I (5) VLPA

Designed to increase your functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Kazakh. Prerequisite: KAZAKH 203.

KAZAKH 402 Kazakh through Culture II (5) VLPA

Designed to increase your functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and

communicative skills learned in intermediate Kazakh.
Prerequisite: KAZAKH 401.

KAZAKH 403 Kazakh through Culture III (5) VLPA
Designed to increase your functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Kazakh.
Prerequisite: KAZAKH 402.

KAZAKH 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either KAZAKH 205 or TKIC 405.

KAZAKH 496 Special Studies in Kazakh (3-5, max. 15) VLPA Topics vary.

KAZAKH 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

KAZAKH 511 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening speaking, and writing. Covers basic Kazakh grammar and introduces some aspect of Kazakh culture.

KAZAKH 512 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening speaking, and writing. Covers basic Kazakh grammar and introduces some aspect of Kazakh culture.
Prerequisite: KAZAKH 511.

KAZAKH 513 Elementary Kazakh (5) Emphasizes on the four basic language skills: listening speaking, and writing. Covers basic Kazakh grammar and introduces some aspect of Kazakh culture.
Prerequisite: KAZAKH 512.

KAZAKH 521 Intermediate Kazakh (5) Builds on first-year Kazakh. Explores aspects of Kazakh culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing.
Prerequisite: KAZAKH 513.

KAZAKH 522 Intermediate Kazakh (5) Builds on first-year Kazakh. Explores aspects of Kazakh culture and emphasizes all skills of language acquisition:

listening, speaking, reading, and writing.
Prerequisite: KAZAKH 521.

KAZAKH 523 Intermediate Kazakh (5) Builds on first-year Kazakh. Explores aspects of Kazakh culture and emphasizes all skills of language acquisition: listening, speaking, reading, and writing.
Prerequisite: KAZAKH 522.

KAZAKH 541 Kazakh through Culture I (5) Designed to increase functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Prerequisite: KAZAKH 523.

KAZAKH 542 Kazakh through Culture II (5) Designed to increase functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Prerequisite: KAZAKH 541.

KAZAKH 543 Kazakh through Culture III (5) Designed to increase functional proficiency in speaking, reading, writing, and comprehending the Kazakh language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Prerequisite: KAZAKH 522.

KAZAKH 596 Special Studies in Kazakh (3-5, max. 15) Topics vary.

KAZAKH 600 Independent Study or Research (*-)

KYRGYZ

KYRGYZ 101 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. First in a sequence of three.

KYRGYZ 102 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on

exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. Second in a sequence of three. Prerequisite: KYRGYZ 101.

KYRGYZ 103 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. Third in a sequence of three. Prerequisite: KYRGYZ 102.

KYRGYZ 105 Intensive Elementary Kyrgyz (15) Intensive study of grammar with oral and written drill of selected texts.

KYRGYZ 201 Intermediate Kyrgyz (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kyrgyz. First in a sequence of three. Prerequisite: KYRGYZ 103.

KYRGYZ 202 Intermediate Kyrgyz (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kyrgyz. Second in a sequence of three. Prerequisite: KYRGYZ 201.

KYRGYZ 203 Intermediate Kyrgyz (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kyrgyz. Third in a sequence of three. Prerequisite: KYRGYZ 202.

KYRGYZ 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either KYRGYZ 105 or TKIC 403.

KYRGYZ 496 Special Studies in Krygyz (3-5, max. 15) VLPA Topics vary.

KYRGYZ 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

KYRGYZ 511 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. First in a sequence of three.

KYRGYZ 512 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. Second in a sequence of three. Prerequisite: KYRGYZ 511.

KYRGYZ 513 Elementary Kyrgyz (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Kyrgyz. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Kyrgyz language through the cultural contexts. Third in a sequence of three. Prerequisite: KYRGYZ 512.

KYRGYZ 521 Intermediate Kyrgyz (5) Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kyrgyz. First in a sequence of three. Prerequisite: KYRGYZ 513.

KYRGYZ 522 Intermediate Kyrgyz (5) Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Kyrgyz. Second in a sequence of three. Prerequisite: KYRGYZ 521.

KYRGYZ 523 Intermediate Kyrgyz (5) Designed to strengthen and develop further skills in listening, speaking, reading, and writing and to deepen an understanding of the cultural context of Kyrgyz. Emphasis on the expansion and refinement of linguistic and communicative skills learned in

elementary Kyrgyz. Third in a sequence of three.
Prerequisite: KYRGYZ 523.

KYRGYZ 596 Special Studies in Kyrgyz (3-5, max. 15)

Topics vary.

KYRGYZ 600 Independent Study or Research (*-)

MODERN HEBREW

MODHEB 100 Introduction to Hebrew Language and Culture (2) VLPA/I&S

Introduces modern Hebrew language and culture, focusing on fundamental structures of the language, the revival of Hebrew in modern times, and connections between contemporary usage and Jewish traditions. Topics include: the alphabet, the verb system, the Hebrew calendar, Jewish and Israeli holidays, names, songs, popular sayings, and more. Credit/no-credit only.

MODHEB 101 Elementary Modern Hebrew (5)

Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if MODHEB 105 taken) . First in a sequence of three.

MODHEB 102 Elementary Modern Hebrew (5)

Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if MODHEB 105 taken) . Second in a sequence of three. Prerequisite: MODHEB 101.

MODHEB 103 Elementary Modern Hebrew (5)

Modern Israeli Hebrew. Core vocabulary, grammar, conversational text, and oral and written communication. Excerpts from modern Hebrew prose and poetry. (Cannot be taken for credit if MODHEB 105 taken) . Third in a sequence of three. Prerequisite: MODHEB 102.

MODHEB 105 Intensive Elementary Modern

Hebrew (15) Intensive study of grammar, with oral and written drill and reading of simple texts. (Cannot be taken for credit if MODHEB 101, MODHEB 102, MODHEB 103 taken.)

MODHEB 199 Study Abroad (1-15, max. 15) Credit for elementary Hebrew in an approved Study Abroad

program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

MODHEB 200 Hebrew Conversation (2) VLPA/I&S

Builds upon skills in Modern Hebrew and promotes cultural proficiency as an integrated and essential component of language learning. Enhances communication through the acquisition and use of vocabulary and structure of the Hebrew language in authentic cultural and social contexts. Prerequisite: either MODHEB 103 or MODHEB 105. Credit/no-credit only.

MODHEB 201 Intermediate Modern Hebrew (5)

VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. First in a sequence of three. Prerequisite: either MODHEB 103 or MODHEB 105.

MODHEB 202 Intermediate Modern Hebrew (5)

VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Second in a sequence of three. Prerequisite: MODHEB 201.

MODHEB 203 Intermediate Modern Hebrew (5)

VLPA Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Third in a sequence of three. Prerequisite: MODHEB 202.

MODHEB 399 Study Abroad (1-15, max. 15) Credit for intermediate Hebrew in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

MODHEB 401 Introduction to Hebrew Literature (3)

VLPA Literary texts and analysis. Grammar, composition, and dictionary skills. Primarily modern texts - short poetry, fiction, and essays - with some selections as well from Biblical passages, the liturgy, midrash, and medieval poetry. Prerequisite: MODHEB 203.

MODHEB 402 Introduction to Hebrew Literature (5)

VLPA Modern Hebrew literary texts and analysis, with continued emphasis on grammar and composition. Review of language skills and dictionary work to reinforce the students' knowledge

of Hebrew and to foster improved competence in reading, discussion, and writing. Also covers fundamentals of narrative theory as students practice close readings of texts. Prerequisite: MODHEB 203.

MODHEB 403 Introduction to Hebrew Literature (3) VLPA Literary texts and analysis. Grammar, composition, and dictionary skills. Primarily modern texts short poetry, fiction, and essays with some selections as well from Biblical passages, the liturgy, midrash, and medieval poetry. Prerequisite: MODHEB 203.

MODHEB 404 Hebrew Poetry (5) VLPA Selections of poetry by prominent twentieth-century Hebrew poets whose texts comment or elaborate on biblical texts. Original source considered side-by-side with modern poetry, to examine ways recent literature models itself on, draws upon, and revises traditional sources. Prerequisite: MODHEB 203.

MODHEB 405 Hebrew Fiction (5) VLPA Selections of fiction by prominent modern Hebrew writers, including S. Y. Agnon, Aharon Appelfeld, David Shahar, Aharon Megged, and others. Prerequisite: MODHEB 203.

MODHEB 406 Hebrew Poems and Prayers (5) VLPA Introduces students to traditional Jewish prayers and examines Modern Hebrew poems that draw on these classical sources and reframe or reimagine the language of faith. Topics to be converged include: blessings, synagogue prayer services, High holiday prayers, the Sabbath, prayers of mourning, and debate over gender and prayer. Prerequisite: MODHEB 203.

MODHEB 407 Hebrew in Song (5) VLPA Selections of Israeli folksong, pop, rock, children's songs, and musika mizrahit. While building vocabulary and improving dictionary and composition skills, students examine the role of popular song in the construction of modern Hebrew culture and Israeli identity. Prerequisite: MODHEB 203.

MODHEB 408 Modern Hebrew Prose (5) VLPA *Naomi B Sokoloff* Modern Hebrew prose texts, including essays, journalism, social media, and fiction. Emphasis on vocabulary, grammar, and composition skills. Prerequisite: MODHEB 203.

MODHEB 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: MODHEB 203.

MODHEB 496 Special Studies in Modern Hebrew (3-5, max. 15) VLPA Topics vary. Prerequisite: MODHEB 203.

MODHEB 499 Undergraduate Research (1-6, max. 18)

MODHEB 511 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Covers core vocabulary, grammar, conversational text, and oral and written communications.

MODHEB 512 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Covers core vocabulary, grammar, conversational text, and oral and written communications. Prerequisite: MODHEB 511.

MODHEB 513 Elementary Modern Hebrew (5) Modern Israeli Hebrew. Covers core vocabulary, grammar, conversational text, and oral and written communications. Prerequisite: MODHEB 512.

MODHEB 515 Intensive Elementary Modern Hebrew (15) Intensive study of modern Israeli Hebrew. Covers core vocabulary, grammar, conversational text, and oral and written communications. Offered: S.

MODHEB 521 Intermediate Modern Hebrew (5) Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: either MODHEB 511 or MODHEB 515.

MODHEB 522 Intermediate Modern Hebrew (5) Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: MODHEB 521.

MODHEB 523 Intermediate Modern Hebrew (5) Readings of selected texts in modern Hebrew with continuing emphasis on grammar, syntax, composition, and conversation. Prerequisite: MODHEB 522.

MODHEB 542 Introduction to Hebrew Literature (5)

Modern Hebrew literary texts and analysis, with continued emphasis on grammar and composition. Review of language skills and dictionary work to reinforce the students' knowledge of Hebrew and to foster improved competence in reading, discussion, and writing. Also covers fundamentals of narrative theory as students practice close readings of texts.

MODHEB 545 Hebrew Fiction (5) Selections of fiction by prominent modern Hebrew writers, including S. Y. Agnon, Aharon Appelfeld, David Shahar, Aharon Megged, and others. Prerequisite: MODHEB 523

MODHEB 546 Hebrew Poems and Prayers (5)

Introduces students to traditional Jewish prayers and examines Modern Hebrew poems that draw on these classical sources and reframe or reimagine the language of faith. Topics to be converged include: blessings, synagogue prayer services, High holiday prayers, the Sabbath, prayers of mourning, and debate over gender and prayer.

MODHEB 596 Special Studies in Modern Hebrew (3-5, max. 15) Topics vary.

MODHEB 600 Independent Study or Research (*-)

NEAR EASTERN LANGUAGES AND CIVILIZATION

NEAR E 101 Gateway to the Near East (5) VLPA/I&S

Provides general introduction to the peoples, cultures, and languages of the Near East, both past and present. No previous knowledge of the Near East required. Offered: W.

NEAR E 196 Introductory Studies in Near Eastern Languages and Civilizations (1-5, max. 15) I&S

Offered occasionally by visitors or resident faculty. Content varies.

NEAR E 199 Study Abroad (1-15, max. 15) Credit for lower division NEAR E courses in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

NEAR E 201 Introduction to the Ancient Near East (5) VLPA/I&S

Surveys the peoples, places, and

events of the ancient Near East. Examines the cultures of Mesopotamia, Egypt, Canaan, and Israel with an eye to each culture's cultural contributions. Pays special attention to shared cultural elements as well as distinguishing characteristics of the peoples of these regions.

NEAR E 202 Introduction to the Hebrew Bible: Old Testament (5) VLPA/I&S

Examines the Hebrew Bible (Old Testament) in translation and its relationship with literatures of ancient Near East. Comparisons drawn between Biblical text and literary works of Canaan, Egypt, Greece, Mesopotamia. Emphasis on the sophisticated literary techniques employed by Biblical writers. Cannot be taken for credit if credit earned in NEAR E 240. Offered: jointly with RELIG 240.

NEAR E 203 Introduction to the Archaeology of Western Anatolia: Cross Roads of the Ancient World (5) I&S

S. SELOVER An introduction to the archaeology the western coast of Anatolia and its often-neglected place in the ancient Near Eastern and Classical worlds. The class will cover the cities of Troy and Ephesus, and the civilizations of the Phrygians, Lydians, Carians, Lycians and the Ionians in Anatolia. Offered: AWSpS.

NEAR E 207 Introduction to the Archaeology of Ancient Iran (5) I&S

Introduction to the archaeology of ancient Iran (Persia) from the earliest inhabitants to the end of Sasanian period (circa 10,000 BDE-651 CE). Covers the archaeology from various time periods in chronological order, with an emphasis on the archaeology and culture of the Achaemendid (Persian) period.

NEAR E 208 Introduction To Ancient Near Eastern Archeology (5) I&S/VLPA

Archaeological cultures of the ancient Near East, from 10,000 BCE to 332 BCE, including the civilizations of Mesopotamia (modern day Iraq), Egypt, the Levant (modern day Israel, Jordan, Syria and Lebanon), Anatolia (modern day Turkey) and Persia (modern day Iran).

NEAR E 209 Introduction To Ancient Egyptian

Archeology (5) VLPA/I&S *Stephanie Selover* Survey of the archaeology, art, and architecture of ancient Egypt from the prehistoric cultures of the Nile Valley (c. 10,000 BCE) until the end of the New Kingdom (c. 1000 BCE), exploring Egyptian gods, divine kings, pyramids, temples, mummification, society,

government, religion, medicine, magic, sex, childbirth, and death. Offered: jointly with ARCHY 212.

NEAR E 229 Introduction to Islamic Civilization (5) VLPA/I&S Covers major developments in the formative, classical, and modern periods of Islamic civilization from seventh century Arabia to the contemporary Muslim world. Looks at the development of Islamic religious thought and legal practice as well as the Muslim polities, cultures, and intellectual traditions of Asia, Africa, Europe, and America. May not be taken for credit if credit earned in NEAR E 210. Offered: jointly with JSIS A 210.

NEAR E 230 Introduction to Muslim Beliefs and Practices (5) VLPA/I&S Examines the origins and development of central beliefs in various Muslim traditions; such as monotheism, prophecy, divine judgment, and predestination. Looks at ritual and socio-cultural practices in Muslim societies in Asia, Africa, and Europe. Offered: jointly with RELIG 211.

NEAR E 231 Introduction to the Quran (5) VLPA/I&S A literary, historical, and theological introduction to the Quran. Looks at the historical circumstances of the text's compilation; its collection and redaction; its narrative structure; its rhetorical strategies; its major themes; its connections to and departures from the Hebrew Bible and the New Testament; commentary and exegesis; translation; and its impact on political and religious thought. Offered: jointly with RELIG 212.

NEAR E 232 Introduction to the Modern Middle East (5) I&S Major social and political trends in the Middle East during the 18th, 19th, and 20th centuries. Basic principles of Islam and its diversity, changing balance of power during the early modern period; European colonialism and withdrawal; pan-Arabism, nationalism, feminism and religious resurgence. Offered: jointly with JSIS A 215.

NEAR E 243 Iranian Culture and Civilization (5) VLPA/I&S Explores the culture and civilization of this Middle Eastern society through a multi-disciplinary approach that includes such manifestations as architecture, carpet-weaving, story-telling, and the composition of poetry.

NEAR E 244 Voices of the Iranian Revolution (5) VLPA/I&S Includes critical readings of the 1979

Iranian Revolution as represented in essays, fiction, poetry, memoir, speeches, film, and other arts. Examines the ways that writers, artists, politicians, and intellectuals have depicted the origins and development of the Islamic Republic and the legacy of the revolution in Iranian society and culture today.

NEAR E 257 Introduction to Central Asian Turkic Literature in Translation (5) VLPA Provides an overview of the major periods of Central Asian Turkic literature including: the Pre-Islamic Period (eighth-tenth centuries), the Islamic Period (tenth-twentieth centuries), the Modern Period (1905-1991), and the Post-Colonial period (1991-present). Centers on the Turkic peoples who lived under Russia and Soviet colonial rule.

NEAR E 258 Introduction to Kyrgyz Writer Chingiz Aitmatov (5) VLPA/I&S Introduces the form and content of the work of the Kyrgyz writer, Chingiz Aitmatov, while also examining his life and influence on the people of Central Asia.

NEAR E 259 Introduction to the Writers and Intellectuals of Central Asia under Soviet Colonialism (5) VLPA/I&S, DIV Discusses the lives and works of Kazakh, Kyrgyz Turkmen, and Uzbek poets and writers and intellectuals who lived during the Soviet period from 1917-1991.

NEAR E 261 Turkic Peoples of Central Asia (3) I&S History of the Turkic peoples, AD 552 to present. Emphasis on current status of Turkic peoples in Central Asia. Geographical distribution, demographic data, reactions and adaptations to changes resulting from the 1917 revolution. Turkic viewpoint on past and present developments. Offered: jointly with JSIS A 261.

NEAR E 262 Central Asian Country Profiles: Introduction to Kazakhstan (5) VLPA/I&S Examines developments in Kazakhstan after the country gained independence from the Soviet Union in 1991. Part of a series on Central Asia.

NEAR E 264 Central Asian Country Profiles: Introduction to Uzbekistan (5) VLPA/I&S Survey of the Uzbek people and their history. Examines developments in Uzbekistan after the country gained independence from the Soviet Union in 1991. Part of a series on Central Asia.

NEAR E 265 Introduction to Central Asian Turkic Literature in Translation (3) VLPA Introduces the foundations of modern Uzbek literature; the common Turkic literature of the eighth-century and the more recent Chagatay-Uzbek literature. Focuses on post-Soviet literature since 1991. After independence Uzbek writers were able to express themselves without censorship and prosecution.

NEAR E 266 The Modern Middle East and Central Asia (5) I&S Ethnographic overview of Muslim societies in the middle east and central Asia from various anthropological perspectives. Examines the unity and diversity of Muslim communities and acquaints students with the significant linguistic, cultural, and political diversity of Muslim societies. Helps students develop an understanding of Islam as a lived experience.

NEAR E 267 Folktales Along the Silk Road (3) VLPA/I&S Introduces student to the Silk Road connecting China and Europe through the cities of Samarkand, Bukhara, and Constantinople, now Istanbul. Applies comparative-historical and sociological method in folktale research, i.e. compares Western European stories and motifs with tales from the Silk Road while paying attention to the environment of storytelling.

NEAR E 268 Introduction to the Silk Road (5) I&S Introduces students to the Silk Road as a site of cultural exchange between peoples, and of political, economic, and intellectual exchange between regions and continents. Themes include ecology, empire, ethnicity, language, religion, and the arts. Considers the Silk Road as a forerunner and symbol of modern globalization. Offered: jointly with JSIS A 268.

NEAR E 270 The Turks: A Global Perspective (5) I&S Introduction to the history of the Turks, as a distinctive cultural and linguistic community set against a global backdrop. Examines the rich experiences of Turk history, and their interactions with peoples and cultures across Asia, the Middle East, and Europe.

NEAR E 271 Cultural History of Turkey: From Empire to Nation (5) VLPA/I&S Topics include: social, economic, and political structures of Ottoman and Turkish Anatolia; language, literature, and artistic tradition; social status of women, literacy and

illiteracy, the secular enterprise of Kemal Ataturk; Islamic fundamentalism, educational institutions, Kurdish nationalism.

NEAR E 285 Religion, Violence, and Peace: Patterns Across Time and Tradition (5) I&S Investigates the complex relationship between violence and peace in a variety of religious traditions. Examines case studies from the ancient Near East, medieval East Asia, and the contemporary West from the standpoint of lived experiences and contemporary theories derived from several academic disciplines. Offered: jointly with HUM 205/RELIG 205; W.

NEAR E 286 Themes in Near Eastern Literature (5) VLPA/I&S Significant and interesting aspects of Near Eastern culture and society as represented by literary themes. Aspects of Near Eastern life and art such as women, minority groups, mysticism, and modern literature. Content varies. May not be taken for credit if credit earned in NEAR E 330.

NEAR E 287 The Near East in Song (2, max. 8) VLPA Surveys popular song at it has shaped modern culture and identity in the near East. Topics vary. May be repeated for credit if the student has not previously studies the same topic with the same instructor. All texts in English; no previous knowledge of other languages required. Credit/no-credit only.

NEAR E 288 Introduction to the Horn of Africa (5) I&S, DIV *Joel T Walker, Hamza M. Zafer* Explores history, culture, and peoples of the Horn of the Africa. By placing Ethiopia, Eritrea, and Somalia at the center of inquiry, invites reconsideration of standard narratives of world history that all too often ignore or marginalize the region. Includes a broad range of assignments examining art, literature, and societies of the Horn, including vibrant Diaspora communities in America. Offered: jointly with HSTAFM 288; A.

NEAR E 296 Special Studies in Near Eastern Languages and Civilization (1-5, max. 15) I&S Offered occasionally by visitors or resident faculty.

NEAR E 301 Art of the Ancient Near East (3) VLPA S. *NOEGEL* Examines the artistic remains of ancient Egypt and Mesopotamia (3000 BCE-550 BCE), with some attention to architecture. Topics examined include: art as ritual power, the relationship

between text and image, art and cosmology, visual propaganda, and the legacy of ancient Near Eastern art.

NEAR E 305 The Biblical Prophets (3) VLPA/I&S

Explores the Biblical prophets (in translation) within their Near Eastern contexts. Historicity, literary and rhetorical sophistication, and ideological agendas. Seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible required. Offered: jointly with RELIG 315.

NEAR E 306 The History of Biblical Interpretation (3)

VLPA/I&S Traces Biblical interpretation and translation technique from the earliest translations of the Hebrew Bible (Old Testament) to the various historical literary, deconstructionist, and holistic strategies of more recent times. Adopts a "hands-on" approach to the material and explores various hermeneutics by applying them in class. Offered: jointly with RELIG 306.

NEAR E 307 From Israelites to Jews: the First Six Centuries BCE (3) VLPA/I&S Traces the Israelites, from the Babylonian destruction of the Jerusalemite Temple (586 BCE) to events following the destruction of the second Temple (first century CE). Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible required. Offered: jointly with JEW ST 317.

NEAR E 308 Gender and Sexuality in the Ancient Near East (3) I&S/VLPA, DIV Investigates and critically assesses trends and topics in recent studies of gender and sexuality in the ancient Near East, pertaining especially to texts, artifacts, art and images from ancient Mesopotamia, Egypt and the Levant. Explores ancient Near Eastern taxonomies and functions of gender and sexuality, and examines social, political and religious forces that inform and construct gendered categories of gods, humans, and their worlds. Prerequisite: No prerequisites; recommended: NEAR E 201, Introduction to the Ancient Near East Offered: AWSp.

NEAR E 309 Death and Afterlife in the Ancient World (3) VLPA/I&S Explores human yearnings, obsessions, fears, and aspirations associated with death and afterlife by examining major political, military, social, economic, religious, literary, artistic,

and architectural phenomena directly connected to the way ancient cultures, such as Egypt, Mesopotamia, Israel, and the Levant, have conceptualized death.

NEAR E 311 The Archaeology of Biblical Israel (5)

I&S Archaeology of ancient Israel (southern Levant). Covers the known archaeological material and Biblical and other contemporaneous textual sources to explore this topic, covering the archaeological cultures from the Middle Bronze Age to the end of the Babylonian Exile (2000-300 BCE).

NEAR E 312 Looting and Loss: The Recent Destruction of Cultural Heritage Sites in the Middle East (5) I&S

Explores the history and context of recent politicization, looting, and destruction of archaeological and cultural sites in the Middle East, as well as the associated human toll, with primary focus on the current state of modern Syria and Iraq. Covers the politics of archaeology in the Middle East from the First Gulf War to more recent times.

NEAR E 313 Ancient Technologies of the Near East (5) I&S

Introduction to ancient pyrotechnic technologies. Covers the laboratory methods used by modern archaeologists to study ancient ceramics, glass and metals, the methodologies behind the creation of these materials, and the invention of these technologies in the Near East, with brief comparisons with China and the New World. Offered: jointly with ARCHY 313.

NEAR E 314 The Archeology of Early Islam (5) I&S

Introduction to the archaeology of early Islam, from 632 to 1000 CE with the study of the rise (and occasional fall) of Islam in Arabia, Egypt, and Spain/Portugal through a survey of the local architecture and material culture. Students study key archaeological sites and histories of these regions.

NEAR E 316 Israeli Identities (5) VLPA, DIV

Examines fiction and film, as well as selected poetry, popular songs, and essays, to explore diverse groups within contemporary Israeli society. Topics include the sabra ideal, holocaust survivors, Sephardic/Mizrahi communities, religious and secular Jews, Israel's Arab minority, and questions of gender.

NEAR E 317 Jewish Life in Literature and Film (5)

VLPA/I&S Major themes of Jewish life treated in

modern narrative and cinema. Topics include religious tradition and modernity. Jewish immigration to America, responses to the Holocaust and Zionism. Offered: jointly with JEW ST 318.

NEAR E 318 Literature and the Holocaust (5) VLPA, DIV Examines fiction, poetry, memoir, diaries, monuments, film, and pop culture from several languages and cultural milieus, with emphases on English and Hebrew. Topics include survivor testimony, shaping of collective memory, the second generation, Holocaust education and children's literature, gender and the Holocaust, and fantasy and humor as responses to catastrophe. May not be taken for credit if credit earned in NEAR E 441. Offered: jointly with C LIT 318.

NEAR E 320 Prayer and Poetry in the Jewish and Islamic Traditions (5) VLPA/I&S Examines elements of traditional Jewish and Muslim prayers and worship with poems that draw on those classical sources. Introduces students to the language and practice of prayer for both Jews and Muslims. Examines poets from Europe, the Americas, Israel, and the Islamic world. Taught in English.

NEAR E 321 Israel in Film (2) VLPA/I&S Presents films that introduce students to important aspects of Israeli culture. Topics include: Zionism, the Holocaust, immigration, religious and secular communities, mizrachim, Russians, army service, war and trauma, LGBT themes, and Israel's Arab minority.

NEAR E 325 Modern Hebrew Literature in English (3) VLPA Major developments in Hebrew literature from the Enlightenment to the current Israeli literature.

NEAR E 328 Bioethics: Secular and Jewish Perspectives (3) I&S, DIV *Hadar Khazzam-Horovitz* Legal, ethical, scientific, and Jewish religious perspectives on contemporary medical and biomedical research practices. Legal and civil rights of women, people with disabilities, minors and minority or marginalized groups. Key differences between secular and Biblical/Rabbinic approaches in interpretation, analysis and application of bioethics, doctor-patient relationships; reproductive methods; abortion; euthanasia; and stem cell research. Offered: jointly with B H 339/JEW ST 339.

NEAR E 329 Classical Arabic Literature in Translation (5) VLPA Examines development of Arabic literature from its beginnings through the fall of the Abbasid dynasty and the Mongols. Coincided with period when Arabic language and literature were dominant forces in Islamic civilization. Topics include: Pre-Islamic poetry, impact of Islam on the literature, court poetry, and the rise of Arabic prose.

NEAR E 330 Colonialism, Nationalism, and the Modern Arabic Novel (5) VLPA/I&S Examines how representative novels from the modern canon in Arabic have both endorsed and critiqued aspects of nationalism and colonialist ideology.

NEAR E 331 Thousand and One Nights (5) VLPA Examines the major story cycles of the Thousand-and-One-Nights collection in their social and historical contexts.

NEAR E 332 Arab American Writers (5) VLPA/I&S Explores the influences of Arab American writing both in the United States and the Arab world during the nineteenth and twentieth centuries. Discusses issues of emigration to the United States from the Arab world and its impact on the formation of a distinctive Arab American identity.

NEAR E 333 Prophecy in Judaism, Christianity, and Islam (3) I&S Looks at the phenomenon of prophecy in Jewish, Christian, and Muslim thought and writing from antiquity to modernity. Traces the development of prophetic expression in the Hebrew Bible, the New Testament, and the Quran. Surveys major themes and covers various eras, including prophecy in the American context.

NEAR E 334 Culture of the Arab World (5) VLPA/I&S General survey of the linguistic, geographical, historical, social, religious, and cultural aspects of the modern Arab world, including the Arabic language, family, and the Arab experience in the United States. Examines Arab American relations, the role of the past and of social change, and Arab art and music.

NEAR E 335 Language Conflict and Identity in the Middle East and North Africa (5) VLPA/I&S Explores social and linguistic aspects of the languages and cultures of the Middle East and North Africa, focusing on the relationship between language and national/ethnic identity from the perspective of

group conflict. Considers language policies in colonial and post-colonial states, and individual strategies of accommodation and resistance to these policies.

NEAR E 336 Islam in Jewish Contexts, Judaism in Muslim Contexts (5) VLPA/I&S An introduction to the Jewish-Muslim encounter: a look at exchange, symbiosis, liminality, and confrontation between these two kindred religio-cultural systems, from the rise of Islam, to the end of its Classical Age - six centuries wherein the majority of the world's Jews lived among Muslim majorities.

NEAR E 337 Egyptian Cinema: Glamour on the Nile (5) VLPA History and development of Egyptian cinema. Examines a range of topics, including: the transition to sound, the differentiation into film genres, the nationalization of the film industry in the 1960s, the role of the director as auteur, and the recovery of the Egyptian film industry after 2000.

NEAR E 343 Classical Persian Literature in Translation (5) VLPA/I&S Introduces themes, forms, and historical development of Persian literature from the 10th to 19th centuries CE. Topics includes lyric and epic forms, Sufism, premodern poetics, and reception history of English translations. Reading include Rumi, Hafez, Khayyam, Ferdowsi, Sa'di among others. No prior knowledge of Persian language or literature required.

NEAR E 344 Modern Persian Literature in Translation (5) VLPA/I&S Introduces Persian literature from early modernizing projects in the 19th century up to today. Includes poetry, fiction, essays, and film. Examines various ways that Persian writers define modernity in their own works and respond to writers in other languages and traditions. No prior knowledge of Persian language or literature required.

NEAR E 345 Persian Literature in Translation (5) VLPA Designed to familiarize students with an expanding collection of works translated from Persian literature, both classical and modern, into English. Focuses on a few representative texts and offers interpretations of the culture through close readings. Prior acquaintance with Persian culture not required.

NEAR E 350 Archaeology of Ancient Near Eastern Warfare and Empire (5) I&S *S. Selover* Surveys the archaeological remnants of war, warfare, and empire in the ancient Near East, from the rise of earliest cities to the Roman period (circa 3000 BCE-30 CE), with a focus on the cultural consequences of violence and warfare on various ancient Near Eastern cultures.

NEAR E 357 Peoples and Cultures of Central and Inner Asia (5) I&S Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 357/JSIS A 357.

NEAR E 358 Islam and Muslims in China (5) I&S Introduces the lived experiences of Muslims in contemporary China. Examines Muslims' understanding of their faith; the relationship of Islam to the political, economic, and social lives of Muslims; how Islam shapes people's sense of culture and identity; and unity and diversity of various Chinese Muslim communities.

NEAR E 359 Language and Ethnic Identity in China (5) VLPA/I&S Analysis of the political, social, and linguistic contexts of languages of China's fifty-six nationalities and the ongoing process of Chinese nation-state building efforts from sociolinguistic and ethnographic perspectives. Examines the relationship of linguistic diversity to social and cultural identity and the role of language in the construction of ethnic identities.

NEAR E 360 Oral Literature of the Turkic Peoples of Central Asia I: The Heroic Epos (3) VLPA/I&S Representative heroic poems of Central Asian Turkic peoples now living in the Central Asian Republics and China. Origin of the heroic epos, its relation to the romantic epos and other oral literary genres. Art of the singer and his role in nomadic Turkic society. Emphasis on *Manas*, the monumental epos of Kirghiz.

NEAR E 371 Love and Empire: Cultural History of the Ottoman Empire through Literature (3-5) VLPA/I&S Approaches Ottoman literature through translations

and scholarly articles in English. Evaluates this particular literary tradition as an imperial production, through an analysis and critical reading of course materials.

NEAR E 372 Modern Turkish Literature in Translation (3) VLPA Covers major theoretical issues concerning Ottoman court literature and Turkish epic and troubadour poetry. Major writers and works of modern Turkish literature read and analyzed in their social, political, and theoretical contexts. Previous study of Turkish literature not required.

NEAR E 385 Modern Near Eastern Literature in English Translation (3) VLPA Contemporary cultures of the Middle East studied through exposure to a representative sample of their literary work. Texts selected address major issues in Middle Eastern societies, e.g., tradition versus modernity, national identity and the challenge of the West, Arab-Israeli conflict.

NEAR E 386 The Middle East through Cinema (5, max. 12) VLPA Analyzes the function of cinema in shaping communal and individual identities in Middle Eastern cultures. Examines topics including religious transformation, violence, identity, gender, immigration, and exile through film screenings, discussions, and supplementary readings. May not be taken for credit if credit earned in NEAR E 410.

NEAR E 391 Writing Seminar for NELC Majors and Graduate Students (3) VLPA *S. NOEGEL* Seminar offers undergraduate majors and graduate students in the department with a close, systematic, and sustained experience with expository writing. All writing and rewriting will focus on subjects that relate to the Near East. Offered: A.

NEAR E 396 Intermediate Studies in Near Eastern Languages and Civilization (1-5, max. 15) Offered occasionally by visitors or resident faculty.

NEAR E 399 Study Abroad (1-15, max. 15) Credit for NEAR E 200-400-level courses in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: A/W/SpS.

NEAR E 429 Islamic Mystical Literature in English (5) VLPA Readings from the works of principal Sufi writers and poets.

NEAR E 430 Muslim Scripture, Historiography, and Exegesis (3) VLPA/I&S Examines the origins and development of early and classical Muslim thought. Provides an in-depth survey of the three key genres of early and classical Muslim writing: scripture (Quran), historiography (Maghazi, Sira, and Tabaqat), and exegesis (Tafsir and Ta'wil). Offered: jointly with RELIG 430.

NEAR E 431 Arabic Linguistics (5) VLPA/I&S Studies Arabic through modern linguistic analysis. Covers Arabic's phonology, morphology, syntax, and semantics, and discusses the history of Arabic as well as the frequently debated issue of diglossia in Arabic-speaking countries. Equal attention given to the linguistic features of both FuS'Ha Arabic and modern Arabic dialects. Prerequisite: ARAB 102.

NEAR E 432 Arabic Sociolinguistics (5) VLPA/I&S Focuses on how Arabic is used by native speakers in various social contexts. Examines diglossia (co-existence of Modern Standard Arabic with the Arabic vernacular), linguistic variation in the Arab world, and the effect of variables such as education, social status, politics, and gender. Prerequisite: ARAB 101.

NEAR E 441 Literature and the Holocaust (5) VLPA Examines fiction, poetry, memoir, diaries, monuments, film, and pop culture from several languages and cultural milieus, with emphases on English and Hebrew. Topics include survivor testimony, shaping of collective memory, the second generation, Holocaust education and children's literature, gender and the Holocaust, and fantasy and humor as responses to catastrophe.

NEAR E 457 Turkic Linguistics (5) VLPA Survey of the nature and structure of the Turkic languages, focusing on phonology, morphology, syntax, lexicon, writing systems, history and cultural context, subgrouping and diversification, and linguistic theoretical principles for their description and analysis.

NEAR E 485 Digital Media: The Middle East and Central Asia (5) VLPA Hands-on, project-based approach to imaging, new media, electronic text, databases, metadata and accessibility, rights

management, and other issues central to contemporary humanities research on the Middle East and Central Asia.

NEAR E 486 Methodologies in Near Eastern Studies (5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism. Offered: jointly with JSIS A 491.

NEAR E 490 Supervised Study (1-6, max. 18) Special work in Near Eastern studies for graduates and undergraduates.

NEAR E 491 Senior Seminar in Near Eastern Languages and Civilization (2) Covers issues of methodology as well as linguistic, philosophical, literarily critical, rhetorical critical etc. topics. Focuses on developing academic presentation and communication skills. Includes supervised readings and group discussion. Credit/no-credit only.

NEAR E 496 Advanced Studies in Near Eastern Languages and Civilization (3-5, max. 15) I&S Offered occasionally by visitors or resident faculty. Content varies.

NEAR E 497 Honors Thesis (5) Participants identify a specific thesis topic and conduct individual research under the direction of a thesis adviser, culminating in an Honors thesis. Open only to juniors and seniors in the Departmental Honors Program.

NEAR E 498 Senior Essay (5) VLPA/I&S Supervised individual research and writing of a major paper during the senior year. Offered: AWSp.

NEAR E 499 Undergraduate Research (1-6, max. 18)

NEAR E 501 Art of the Ancient Near East (3) S. NOEGEL Examines the artistic remains of ancient Egypt and Mesopotamia (3000 BCE-550 BCE) , with some attention to architecture. Topics examined include: art as ritual power, the relationship between text and image, art and cosmology, visual propaganda, and the legacy of ancient Near Eastern art.

NEAR E 505 The Biblical Prophets (3) Noegel Explores the Biblical prophets (in translation) within their Near Eastern contexts. Historicity, literary and rhetorical sophistication, and ideological agendas. Seeks to uncover the meaning and distinctiveness of Israelite prophecy within the context of the larger Near East. No knowledge of the Bible required.

NEAR E 506 The History of Biblical Interpretation (3) Noegel Traces Biblical interpretation and translation technique from the earliest translations of the Hebrew Bible (Old Testament) to the various historical literary, deconstructionist, and holistic strategies of more recent times. Adopts a 'hands-on' approach to the material and explores various hermeneutics by applying them in class.

NEAR E 507 From Israelites to Jews: the First Six Centuries BCS (3) Noegel Traces the Israelites, from the Babylonian destruction of the Jerusalemite Temple (586 BCE) to events following the destruction of the second Temple (first century CE) . Focuses on primary historical and literary sources as well as archaeological and artistic evidence. No knowledge of Hebrew or the Bible required.

NEAR E 508 Gender and Sexuality in the Ancient Near East (3) I&S/VLPA, DIV Investigates and critically assesses trends and topics in recent studies of gender and sexuality in the ancient Near East, pertaining especially to texts, artifacts, art and images from ancient Mesopotamia, Egypt and the Levant. Explores ancient Near Eastern taxonomies and functions of gender and sexuality, and examines social, political and religious forces that inform and construct gendered categories of gods, humans, and their worlds. Prerequisite: No prerequisites; recommended: NEAR E 201, Introduction to the Ancient Near East Offered: AWSp.

NEAR E 509 Death and Afterlife in the Ancient World (3) Explores human yearnings, obsessions, fears, and aspirations associated with death and afterlife by examining major political, military, social, economic, religious, literary, artistic, and architectural phenomena directly connected to the way ancient cultures, such as Egypt, Mesopotamia, Israel, and the Levant, have conceptualized death.

NEAR E 511 The Archaeology of Biblical Israel (5) Archaeology of ancient Israel (southern Levant) . Covers the know archaeological material and Biblical

and other contemporaneous textual sources to explore this topic, covering the archaeological cultures from the Middle Bronze Age to the end of the Babylonian Exile (2000-300 BCE) .

NEAR E 513 Ancient Technologies of the Near East (5) Introduction to ancient pyrotechnic technologies. Covers the laboratory methods used by modern archaeologists to study ancient ceramics, glass and metals, the methodologies behind the creation of these materials, and the invention of these technologies in the Near East, with brief comparisons with China and the New World. Offered: jointly with ARCHY 513.

NEAR E 515 Israel: Dynamic Society and Global Flashpoint (5) *Barzilai, Burstein, Migdal, Pianko, Sokoloff* Introduces the people, institutions, and culture of Israel in the context of larger global forces. Examines domestic, regional, and international elements, both historically and in the contemporary period, that have shaped Israel's culture, politics, and special role in world affairs. Topics include nationalism, ethnicity, politics, religion, film, literature, and culture.

NEAR E 520 Prayer and Poetry in the Jewish and Islamic Traditions (5) Examines elements of traditional Jewish and Muslim prayers and worship with poems that draw on those classical sources. Introduces students to the language and practice of prayer for both Jews and Muslims. Examines poets from Europe, the Americas, Israel, and the Islamic world. Taught in English.

NEAR E 529 Classical Arabic Literature in Translation (5) Examines development of Arabic literature from its beginnings through the fall of the Abbasid dynasty and the Mongols. Coincided with period when Arabic language and literature were dominant forces in Islamic civilization. Topics include: Pre-Islamic poetry, impact of Islam on the literature, court poetry, and the rise of Arabic prose.

NEAR E 530 Colonialism, Nationalism, and the Modern Arabic Novel (5) *DeYoung* Examines how representative novels from the modern canon in Arabic have both endorsed and critiqued aspects of nationalism and colonialist ideology.

NEAR E 531 Thousand and One Nights (5) Examines the major story cycles of the Thousand-and-One-

Nights collection in their social and historical contexts.

NEAR E 532 Arab American Writers (5) Explores the influences of Arab American writing both in the United States and the Arab world during the nineteenth and twentieth centuries. Discusses issues of emigration to the United States from the Arab world and its impact on the formation of a distinctive Arab American identity.

NEAR E 533 Prophecy in Judaism, Christianity, and Islam (5) Looks at the phenomenon of prophecy in Jewish, Christian, and Muslim thought and writing from antiquity to modernity. Traces the development of prophetic expression in the Hebrew Bible, the New Testament, and the Quran. Surveys major themes and covers various eras, including prophecy in the American context.

NEAR E 534 Culture of the Arab World (5) General survey of the linguistic, geographical, historical, social, religious, and cultural aspects of the modern Arab world, including the Arabic language, family, and the Arab experience in the United States. Examines Arab American relations, the role of the past and of social change, and Arab art and music.

NEAR E 535 Language Conflict and Identity in the Middle East and North Africa (5) *VLPA/I&S* Explores social and linguistic aspects of the languages and cultures of the Middle East and North Africa, focusing on the relationship between language and national/ethnic identity from the perspective of group conflict. Considers language policies in colonial and post-colonial states, and individual strategies of accommodation and resistance to these policies.

NEAR E 536 Islamic Law (2-5) Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with LAW B 556.

NEAR E 537 Muslim Scripture, Historiography, and Exegesis (5) Examines the origins and development of early and classical Muslim thought. Provides an in-depth survey of the three key genres of early and classical Muslim writing: scripture (Quran) , historiography (Maghazi, Sira, and Tabaqat) , and exegesis (Tafsir and Ta'wil) .

NEAR E 538 Arabic Linguistics (5) VLPA/I&S Studies Arabic through modern linguistic analysis. Covers Arabic's phonology, morphology, syntax, and semantics, and discusses the history of Arabic as well as the frequently debated issue of diglossia in Arabic-speaking countries. Equal attention given to the linguistic features of both FuS'Ha Arabic and modern Arabic dialects. Prerequisite: ARAB 512.

NEAR E 539 Arabic Sociolinguistics (5) Focuses on how Arabic is used by native speakers in various social contexts. Examines diglossia (co-existence of Modern Standard Arabic with the Arabic vernacular), linguistic variation in the Arab world, and the effect of variables such as education, social status, politics, and gender. Prerequisite: NEAR E 534.

NEAR E 540 Islamic Poetry and Poetics (3)

NEAR E 541 Islam in Jewish Contexts, Judaism in Muslim Contexts (3) An introduction to the Jewish-Muslim encounter: a look at exchange, symbiosis, liminality, and confrontation between these two kindred religio-cultural systems, from the rise of Islam, to the end of its Classical Age - six centuries wherein the majority of the world's Jews lived among Muslim majorities.

NEAR E 543 Classical Persian Literature in Translations (5) Introduces themes, forms, and historical development of Persian literature from the 10th to 19th centuries CE. Topics include lyric and epic forms, Sufism, premodern poetics, and reception history of English translations. Reading include Rumi, Hafiz, Khayyam, Ferdowsi, Sa'di among others. No prior knowledge of Persian language or literature required.

NEAR E 544 Modern Persian Literature in Translations (5) Introduces Persian literature from early modernizing projects in the 19th century up to today. Includes poetry, fiction, essays, and film. Examines various ways that Persian writers define modernity in their own works and respond to writers in other languages and traditions. No prior knowledge of Persian language or literature required.

NEAR E 545 Persian Literature in Translations (5) Designed to familiarize students with an expanding collection of works translated from Persian literature, both classical and modern, into English.

Focuses on a few representative texts and offers interpretations of the culture through close readings. Prior acquaintance with Persian culture not required.

NEAR E 557 Turkic Linguistics (5) Survey of the nature and structure of the Turkic languages, focusing on phonology, morphology, syntax, lexicon, writing systems, history and cultural context, subgrouping and diversification, and linguistic theoretical principles for their description and analysis.

NEAR E 558 Peoples and Cultures of Central and Inner Asia (5) Introduces Central and Inner Asia with a multidisciplinary, comparative survey of the cultures and societies of contemporary China's Inner Asia (Mongolia, Xinjiang-Eastern Turkestan, Tibet, and Manchuria), the contemporary Muslim Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), and the adjacent areas of Afghanistan and Iran. Offered: jointly with ANTH 522/JSIS D 572.

NEAR E 559 Islam and Muslims in China (5) Introduces the lived experiences of Muslims in contemporary China. Examines Muslims' understanding of their faith; the relationship of Islam to the political, economic, and social lives of Muslims; how Islam shapes people's sense of culture and identity; and unity and diversity of various Chinese Muslim communities.

NEAR E 560 Language and Ethnic Identity in China (5) Analysis of the political, social, and linguistic contexts of languages of China's fifty-six nationalities and the ongoing process of Chinese nation-state building efforts from sociolinguistic and ethnographic perspectives. Examines the relationship of linguistic diversity to social and cultural identity and the role of language in the construction of ethnic identities.

NEAR E 571 Love and Empire: Cultural History of the Ottoman Empire through Literature (3) Survey of the nature and structure of the Turkic languages, focusing on phonology, morphology, syntax, lexicon, writing systems, history and cultural context, subgrouping and diversification, and linguistic theoretical principles for their description and analysis.

NEAR E 572 Modern Turkish Literature in Translation (3) Covers major theoretical issues concerning Ottoman court literature and Turkish epic and troubadour poetry. Major writers and works of modern Turkish literature read and analyzed in their social, political, and theoretical contexts. Previous study of Turkish literature not required.

NEAR E 584 Egyptian Cinema: Glamour on the Nile (5) History and development of Egyptian cinema. Examines a range of topics, including: the transition to sound, the differentiation into film genres, the nationalization of the film industry in the 1960s, the role of the director as auteur, and the recovery of the Egyptian film industry after 2000.

NEAR E 585 Digital Media: The Middle East and Central Asia (5) Hands-on, project-based approach to imaging, new media, electronic text, databases, metadata and accessibility, rights management, and other issues central to contemporary humanities research on the Middle East and Central Asia.

NEAR E 586 Middle East through Cinema (5, max. 12) Analyzes the function of cinema in shaping communal and individual identities in Middle Eastern cultures. Examines topics including religious transformation, violence, identity, gender, immigration, and exile through film screenings, discussions, and supplementary readings.

NEAR E 587 Teaching Arabic as a Foreign/Second Language (3) Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials; includes participation at the departmental and university-wide fall orientation; required for beginning teaching assistants of Near Eastern Languages. Credit/no-credit only.

NEAR E 588 Methodologies in Near Eastern Studies (5) Investigates prevalent approaches through a survey of scholarship on Near and Middle Eastern civilizations across time periods, cultures, and communities. Examines discourses developed on polytheistic and monotheistic religions, imperial and nationalist social systems, and ideological frameworks, such as Orientalism.

NEAR E 589 Research Methods (3) Introduction to research in Islamic civilization. Research methods,

primary sources, evidence and documentation, reference works, transliteration systems, scholarly writing style.

NEAR E 590 Seminar on Near Eastern Civilization and Thought (3-5, max. 30) Content varies.

NEAR E 591 Writing Seminar for NELC Majors and Graduate Students (3) VLPA S. NOEGEL Seminar offers undergraduate majors and graduate students in the department with a close, systematic, and sustained experience with expository writing. All writing and rewriting will focus on subjects that relate to the Near East. Offered: A.

NEAR E 596 Special Studies in Near Eastern Languages and Civilization (3-5, max. 15) Offered occasionally by visitors or resident faculty. Content varies.

NEAR E 600 Independent Study or Research (*-)

NEAR E 700 Master's Thesis (*)

PERSIAN

PRSAN 101 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. First in a sequence of three.

PRSAN 102 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Second in a sequence of three. Prerequisite: PRSAN 101.

PRSAN 103 Elementary Persian (5) Conversation, pronunciation, and graded reading. Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Third in a sequence of three. Prerequisite: PRSAN 102.

PRSAN 105 Intensive Elementary Persian (15) Intensive study of grammar with oral and written drills and reading of simple texts. Cannot be taken

for credit if PRSAN 101, PRSAN 102, PRSAN 103 previously taken.

PRSAN 106 Intensive Elementary Tajik (15) Intensive study of grammar with oral and written drill and reading of selected texts in Tajik, the literary language spoken and written in the Central Asian Republic of Tajikistan.

PRSAN 199 Study Abroad (1-15, max. 15) Credit for elementary Persian in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

PRSAN 201 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. First in a sequence of three. Prerequisite: either PRSAN 103 or PRSAN 105.

PRSAN 202 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Second in a sequence of three. Prerequisite: PRSAN 201.

PRSAN 203 Intermediate Persian (5) VLPA Reading of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Third in a sequence of three. Prerequisite: PRSAN 202.

PRSAN 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Persian in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

PRSAN 401 Introduction to Persian Literature (5) VLPA Selected texts from modern and classical Persian poetry and prose. Provides insights into Iranian culture and its past and present achievements in literature. Prepares the student for

a more comprehensive and critical study of Persian literature. Prerequisite: PRSAN 203. Offered: S.

PRSAN 402 Classical Persian Literature: A Survey (5) VLPA History of Persian literature from Rudaki to Hafiz. Studies epic, lyric, and mystic traditions placed in historical settings. Covers the most important genres such as the Qasida, the Ghazal, the Ruba' i and the Masnavi. Prerequisite: PRSAN 203. Offered: S.

PRSAN 403 Modern Persian Literature: A Survey (5) VLPA Development of poetry and prose after Iran felt and absorbed the impact of Western cultures. Periods and genres. Works of such authors as Jamalzadeh, Hedayat, Dehkoda, Al-e Ahmad, Nima, Sepehri, and Forugh. Prerequisite: PRSAN 203.

PRSAN 404 Critical Readings in Modern Persian (5) Designed to develop critical reading and writing skills. Heavily focused on literary texts. Prerequisite: PRSAN 203. Offered: S.

PRSAN 405 Media Persian (5) Designed to develop critical readings and writing skills for accessing and interpreting contemporary Persian media, including newspapers, popular press, and broadcast media. Prerequisite: either PRSAN 203 or PRSAN 423.

PRSAN 454 The Epic Tradition in Iran (3) VLPA Focuses on the Shahnameh of Firdawsi: explores the ancient legends that gave rise to it and follows the fortunes of epic poetry after Firdawsi, touching on the rise, development, and decline of romance in classical Persian literature. Prerequisite: PRSAN 423.

PRSAN 455 The Persian Ghazal (3) VLPA The Ghazal as the leading medium for lyrical expression in classical Persian tradition. Follows this genre from conception to culmination in the poetry of Hafiz. Conventions and devices of the Ghazal. Development placed in historical and social context. Prerequisite: PRSAN 433.

PRSAN 456 Sufism: Thought and Expression (3) VLPA/I&S Dynamics of mystical thought and expression as evolved in the writings of the great Sufi masters and reflected in the poetry of Sana' i, Attar, Rumi, and others. The fundamental unity of the mystical vision, with special attention to the peculiarities of individual style and expression. Prerequisite: PRSAN 433.

PRSAN 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: PRSAN 423.

PRSAN 496 Special Studies in Persian (3-5, max. 15)
VLPA Topics vary.

PRSAN 499 Undergraduate Research (1-6, max. 18)

PRSAN 511 Elementary Persian (5) Includes conversation, pronunciation, and graded reading. Covers Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words.

PRSAN 512 Elementary Persian (5) Includes conversation, pronunciation, and graded reading. Covers Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Prerequisite: PRSAN 511.

PRSAN 513 Elementary Persian (5) Includes conversation, pronunciation, and graded reading. Covers Persian alphabet and basic sentence constructions. Offers rudimentary conversational and reading ability with a vocabulary of about two thousand words. Prerequisite: PRSAN 512.

PRSAN 515 Intensive Elementary Persian (15)
Intensive study of grammar with oral and written drills and reading of simple texts. Offered: S.

PRSAN 521 Intermediate Persian (5) Study of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Prerequisite: either PRSAN 513 or PRSAN 515.

PRSAN 522 Intermediate Persian (5) Study of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Prerequisite: PRSAN 521.

PRSAN 523 Intermediate Persian (5) Study of simple texts with emphasis on reading and writing, conversation skills, grammar, and syntax. Builds a

vocabulary of standard Persian in preparation for advanced reading and comprehension of literary texts. Prerequisite: PRSAN 522.

PRSAN 541 Introduction to Persian Literature (5)
Selected texts from modern to classical Persian poetry and prose. Provides insights into Iranian culture and its past and present achievements in literature. Prepares the student for a more comprehensive and critical study of Persian literature. Prerequisite: PRSAN 523.

PRSAN 542 Classical Persian Literature: A Survey (5)
Advanced Persian language. History of Persian literature from Rudaki to Hafiz. Studies epic, lyric, and mystic traditions placed in historical settings. Covers the most important genres such as the Qasida, the Ghazal, the Ruba'i and the Masnavi. Prerequisite: PRSAN 523.

PRSAN 543 Modern Persian Literature: A Survey (5)
Development of poetry and prose after Iran felt and absorbed the impact of Western cultures. Periods and genres. Works of such authors as Jamalzadeh, Hedayat, Dehkoda, Al-e Ahmad, Nima, Sepehri, and Forugh. Prerequisite: PRSAN 523.

PRSAN 544 Critical Readings in Modern Persian (5)
Advanced-level Persian study designed to develop critical reading and writing skills. Heavily focused on literary texts. Prerequisite: PRSAN 523.

PRSAN 545 Media Persian (5) Advanced Persian language study designed to develop skills for accessing and interpreting contemporary Persian media, including newspapers, popular press, and broadcast media. Prerequisite: PRSAN 523.

PRSAN 596 Special Studies in Persian (3-5, max. 15)
Topics vary.

PRSAN 600 Independent Study or Research (*-)

TURKIC

TURKIC 199 Study Abroad (1-15, max. 15) Credit for elementary Turkic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

TURKIC 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Turkic in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements.

TURKIC 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either CHGTAI 402, KAZAKH 205, UYGUR 203, UZBEK 203, TKIC 404, TKIC 405, or TKIC 423.

TURKIC 496 Special Studies in Turkic Languages (3-5, max. 15) VLPA Topics vary.

TURKIC 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

TURKIC 596 Special Studies in Turkic Languages (3-5, max. 15) Topics vary.

TURKIC 600 Independent Study or Research (*-)

TURKISH

TKISH 101 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. First in a sequence of three. Cannot be taken for credit if TKISH 105 taken.

TKISH 102 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. Second in a sequence of three. Cannot be taken for credit if TKISH 105 taken. Prerequisite: TKISH 101.

TKISH 103 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded reading. Latin characters used throughout. Third in a sequence of three. Cannot be taken for credit if TKISH 105 taken. Prerequisite: TKISH 102.

TKISH 105 Intensive Elementary Turkish (15) Introduces modern Turkish. Focuses on pronunciation and conversation; grammar and composition; and graded reading. Uses Latin characters throughout. Cannot be taken for credit if

credit earned in TKISH 101, TKISH 102, and TKISH 103.

TKISH 199 Study Abroad (1-15, max. 15) Credit for elementary Turkish in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKISH 201 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. First in a sequence of three. Prerequisite: either TKISH 103 or TKISH 105.

TKISH 202 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. Second in a sequence of three. Prerequisite: TKISH 201.

TKISH 203 Intermediate Turkish (5) VLPA Introduction to modern Turkish literature. Third in a sequence of three. Prerequisite: TKISH 202.

TKISH 399 Study Abroad (1-15, max. 15) Credit for elementary or intermediate Turkish in an approved Study Abroad program. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

TKISH 401 Readings in Modern Turkish Literary History I: Short Stories and Critical Writings (5) VLPA Selected short stories and critical writing in Turkish. Provides a basic knowledge of modern Turkish literary history focusing on developing speaking, reading, and writing skills in the Turkish language. Prerequisite: TKISH 203.

TKISH 402 Readings in Modern Turkish II: The Modern Turkish Republic through Popular Songs (5) VLPA History of the Turkish republic through popular music and songs with reference to Turkish poetry through selected songs and poems. Develops speaking, reading, and writing skills in the Turkish language. Prerequisite: TKISH 203.

TKISH 403 Istanbul: The City and Literature (5) VLPA Reading selections from social-scientific and literary writing on Istanbul with films about the city. Further develops reading, writing, and presentation skills in the Turkish language. Prerequisite: TKISH 203.

TKISH 404 Islam in the Modern Turkish Republic (5)

VLPA Introduces major discussions and debates in the modern Turkish republic through readings on Islam in Turkey that draw from a selection of journalistic, literary, and scientific writings. Further develops reading, writing, and presentation skills in the Turkish language. Prerequisite: TKISH 203.

TKISH 405 Human Landscapes: Nazim Hikmet and the Modern Turkish Republic (5) VLPA

Nazim Hikmet's work presents a unique view of the Turkish republic. This internationally known author's work is introduced in the original language with a focus on reading, writing, and presentation skills in Turkish. Prerequisite: TKISH 203.

TKISH 406 Early Decades of the Republic's Turkish Language Reforms (5) VLPA

Turkish language and alphabet reforms studied with selections from journalistic, scientific, and literary writings from 1920-1950. Introduces older forms of the language and provides a basic knowledge of the early decades of the Turkish republic. Involves practices on speaking, reading, writing, and presentation skills in the modern Turkish language. Prerequisite: TKISH 203.

TKISH 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: TKISH 423.

TKISH 496 Special Studies in Turkish (3-5, max. 15) VLPA Topics vary.

TKISH 499 Undergraduate Research (1-6, max. 18)

TKISH 511 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded readings. Latin characters used throughout. First in a sequence of three.

TKISH 512 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded readings. Latin characters used throughout. Second in a sequence of three. Prerequisite: TKISH 511.

TKISH 513 Elementary Turkish (5) Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded readings. Latin

characters used throughout. Third in a sequence of three. Prerequisite: TKISH 512.

TKISH 515 Intensive Elementary Turkish (15)

Introduction to modern Turkish. Pronunciation and conversation, grammar and composition, graded readings. Latin characters used throughout. Cannot be taken for credit if credit earned in TKISH 511, TKISH 512, and TKISH 513. Offered: S.

TKISH 521 Intermediate Turkish (5) Introduction to modern Turkish literature. First in a sequence of three. Prerequisite: either TKISH 513 or TKISH 515.

TKISH 522 Intermediate Turkish (5) Introduction to modern Turkish literature. First in a sequence of three. Prerequisite: TKISH 521.

TKISH 523 Intermediate Turkish (5) Introduction to modern Turkish literature. First in a sequence of three. Prerequisite: TKISH 522.

TKISH 541 Readings in Modern Turkish I: Short Stories and Critical Writing (5) Selected Turkish short stories and critical writing in Turkish. Provides basic knowledge of modern Turkish literary history with a focus on developing speaking, reading, and writing skills in the Turkish language. Prerequisite: TKISH 523.

TKISH 542 Readings in Modern Turkish II: The Modern Turkish Republic through Popular Songs (5) History of the Turkish republic through popular music and songs with reference to Turkish poetry through selected songs and poems. Develops speaking, reading, and writing skills in the Turkish language. Prerequisite: TKISH 523.

TKISH 543 Istanbul: The City and Literature (5) Reading selections from social-scientific and literary writing on Istanbul with three films about the city. Further develops reading, writing, and presentations skills in the Turkish language. Prerequisite: TKISH 523.

TKISH 544 Islam in the Modern Turkish Republic (5) Introduces major discussions and debates in the modern Turkish republic through readings on Islam in Turkey that draw from a selection of journalistic, literary, and scientific writings. Further develops

reading, writing, and presentation skills in the Turkish language. Prerequisite: TKISH 523.

TKISH 545 Human Landscapes: Nazim Hikmet and the Modern Turkish Republic (5) Nazim Hikmet's work presents a unique view of the Turkish republic. Introduces the well-known author's work in the original language with a focus on reading, writing, and presentation skills in Turkish. Prerequisite: TKISH 523.

TKISH 546 Early Decades of the Republic's Turkish Language Reforms (5) Turkish language and alphabet reforms studies with selections from journalistic, scientific, and literary writings from 1920-1950. Introduces older forms of the language and a basic knowledge of the early decades of the Turkish republic. Involves practices on speaking, reading, writing, and presentations skills in the modern Turkish language. Prerequisite: TKISH 523.

TKISH 596 Special Studies in Turkish (3-5, max. 15) Topics vary.

TKISH 600 Independent Study or Research (*-)

UGARITIC

UGARIT 201 Ugaritic I (5) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) . Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. First in a three course sequence. Prerequisite: either ARAB 103, ARAB 105, MODHEB 103, or MODHEB 105.

UGARIT 202 Ugaritic II (5) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) . Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Second in a three course sequence. Prerequisite: UGARIT 201.

UGARIT 203 Ugaritic III (5) VLPA Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) .

Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Third in a three course sequence. Prerequisite: UGARIT 202.

UGARIT 521 Ugaritic I (5) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) . Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. First in a three course sequence. Prerequisite: either ARAB 513, ARAB 515, MODHEB 513, or MODHEB 515.

UGARIT 522 Ugaritic II (5) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) . Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Second in a three course sequence. Prerequisite: UGARIT 521.

UGARIT 523 Ugaritic III (5) Introduction to the Ugaritic (Canaanite) language of ancient Ugarit (modern Ras Shamra, circa fourteenth century BCE) . Introduces the cuneiform alphabet and distinctive grammatical features; proceeds to an inductive reading of the Ugaritic tablets. Texts include the Epic of Aqhat, the Baal Epic, and the Epic of Kret. Third in a three course sequence. Prerequisite: UGARIT 522.

UYGUR

UYGUR 101 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur language through the cultural contexts. Cannot be taken for credit if UYGUR 105 taken. First in a sequence of three.

UYGUR 102 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur

language through the cultural contexts. Cannot be taken for credit if UYGUR 105 taken. Second in a sequence of three. Prerequisite: UYGUR 101.

UYGUR 103 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur language through the cultural contexts. Cannot be taken for credit if UYGUR 105 taken. Third in a sequence of three. Prerequisite: UYGUR 102.

UYGUR 105 Intensive Elementary Uygur (15) Covers all four linguistic skills: reading, writing, speaking, and listening. Cannot be taken for credit if UYGUR 101, UYGUR 102, UYGUR 103 taken.

UYGUR 201 Intermediate Uygur (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. First in a sequence of three. Prerequisite: either UYGUR 103 or UYGUR 105.

UYGUR 202 Intermediate Uygur (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. Second in a sequence of three. Prerequisite: UYGUR 201.

UYGUR 203 Intermediate Uygur (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. Third in a sequence of three. Prerequisite: UYGUR 202.

UYGUR 401 Uygur through Culture I (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills

learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 203.

UYGUR 402 Uygur through Culture II (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 401.

UYGUR 403 Uygur through Culture III (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 402.

UYGUR 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either UYGUR 203 or TKIC 429.

UYGUR 496 Special Studies in Uygur (3-5, max. 15) VLPA Topics vary.

UYGUR 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

UYGUR 511 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur language through the cultural contexts. First in a sequence of three.

UYGUR 512 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur language through the cultural contexts. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in UYGUR 511.

UYGUR 513 Elementary Uygur (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uygur. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uygur language through the cultural contexts. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in UYGUR 512.

UYGUR 521 Intermediate Uygur (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 513.

UYGUR 522 Intermediate Uygur (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 521.

UYGUR 523 Intermediate Uygur (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uygur. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 522.

UYGUR 541 Uygur through Culture I (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 523.

UYGUR 542 Uygur through Culture II (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and

refinement of linguistic and communicative skills learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 541.

UYGUR 543 Uygur through Culture III (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uygur language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uygur. Prerequisite: minimum grade of 2.0 in UYGUR 542.

UYGUR 596 Special Studies in Uygur (3-5, max. 15)
Topics vary.

UYGUR 600 Independent Study or Research (*-)

UZBEK

UZBEK 101 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. First in a sequence of three. Cannot be taken for credit if UZBEK 105 taken.

UZBEK 102 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. Second in a sequence of three. Cannot be taken for credit if UZBEK 105 taken. Prerequisite: UZBEK 101.

UZBEK 103 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. Third in a sequence of three. Cannot be taken for credit if UZBEK 105 taken. Prerequisite: UZBEK 102.

UZBEK 105 Intensive Elementary Uzbek (15)
Intensive study of grammar, with oral and written drill and reading of simple texts in Uzbek. Covers

first-year Uzbek. Cannot be taken for credit if UZBEK 101, UZBEK 102, UZBEK 103 taken.

UZBEK 201 Intermediate Uzbek (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. First in a sequence of three. Prerequisite: either UZBEK 103 or UZBEK 105.

UZBEK 202 Intermediate Uzbek (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. Second in a sequence of three. Prerequisite: UZBEK 201.

UZBEK 203 Intermediate Uzbek (5) VLPA Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. Third in a sequence of three. Prerequisite: UZBEK 202.

UZBEK 401 Uzbek through Culture I (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 203.

UZBEK 402 Uzbek through Culture II (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 401.

UZBEK 403 Uzbek through Culture III (5) Designed to increase functional proficiency in speaking, reading,

writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 402.

UZBEK 490 Supervised Study (1-6, max. 18) Special work in literary texts for graduates and undergraduates. Prerequisite: either UZBEK 203 or TKIC 423.

UZBEK 496 Special Studies in Uzbek (3-5, max. 15) VLPA Topics vary.

UZBEK 499 Undergraduate Research (3-5, max. 15) For Turkic language and literature majors.

UZBEK 511 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. First in a sequence of three.

UZBEK 512 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. Second in a sequence of three. Prerequisite: UZBEK 511.

UZBEK 513 Elementary Uzbek (5) Emphasizes the four basic language skills: listening, speaking, reading, and writing in Uzbek. Focuses on exchanging real-life information in the context of the native-speaking environment and understanding Uzbek language through the cultural contexts. Third in a sequence of three. Prerequisite: UZBEK 512.

UZBEK 521 Intermediate Uzbek (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 513.

UZBEK 522 Intermediate Uzbek (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 521.

UZBEK 523 Intermediate Uzbek (5) Designed to strengthen and develop further skills in listening, speaking, reading and writing and to deepen an understanding of the cultural context of Uzbek. Emphasis on the expansion and refinement of linguistic and communicative skills learned in elementary Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 523.

UZBEK 541 Uzbek through Culture I (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 523.

UZBEK 542 Uzbek through Culture II (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 541.

UZBEK 543 Uzbek through Culture III (5) Designed to increase functional proficiency in speaking, reading, writing and comprehending the Uzbek language through reading and discussion of contemporary sociocultural and sociopolitical topics in a culturally authentic context. Emphasis on the expansion and refinement of linguistic and communicative skills learned in intermediate Uzbek. Prerequisite: minimum grade of 2.0 in UZBEK 542.

UZBEK 596 Special Studies in Uzbek (3-5, max. 15)
Topics vary.

UZBEK 600 Independent Study or Research (*-)

NEUROSCIENCE

NEUSCI 198 The Biology of Human Consciousness (5) NW *William J Moody* An overview of the basic physiology and anatomy of the human nervous system, then explore a series of topics where direct experiments have given us a view of the biological mechanisms that explain high-level brain functions - language, memory, object recognition, the attachment of emotion to people we know and the sensation of time. Recommended: Those with an interest in psychology, neurology, general science or the brain Offered: A.

NEUSCI 301 Introduction to Cellular and Molecular Neuroscience (3/5) NW *William J Moody* Introduces students to the physiological and molecular properties of individual nerve cells and the synaptic connections between them, and to principles of nervous system development. Includes weekly laboratory sessions. Prerequisite: BIOL 220. Offered: W.

NEUSCI 302 Introduction to Systems and Behavioral Neuroscience (3/5) NW *Joseph A. Sisneros, Martha Bosma* Introduces neuroethology, i.e., the mechanisms by which neurons and the synaptic connections among them produce sensory perceptions and complex behavioral outputs. Available with or without weekly laboratory sessions. Prerequisite: NEUSCI 301. Offered: A.

NEUSCI 401 Systems Neuroscience (3) NW Introduces students to the anatomical and physiological organization of the major sensory, motor, and associative systems of the mammalian brain. Behavioral data used to stress functional integration of systems. Includes gross brain anatomy demonstration and computer tutorials. Prerequisite: NEUSCI 301. Offered: Sp.

NEUSCI 402 Diseases of the Nervous System (3) NW Introduces the basic mechanisms of mammalian nervous system function through the study of human neurological diseases that result from specific disruption of neuronal signaling. Prerequisite: NEUSCI 401. Offered: W.

NEUSCI 403 Computational Models for Cognitive Neuroscience (3) NW *Andrea Stocco* Introduces some of the most fundamental concepts of

computational models as applied to Cognitive Neuroscience. These models aim at providing explanations of how complex behavior can arise from simple algorithms that are implemented at the neuronal level. Prerequisite: NEUSCI 401. Offered: W.

NEUSCI 404 Neuropharmacology (3) NW Actions of drugs on the brain at clinical, cellular, and molecular levels. Therapeutic use of drugs in treatment of neurological and psychiatric diseases. Abuse of drugs and the mechanisms of addiction, tolerance, and withdrawal. Prerequisite: NEUSCI 401. Offered: Sp.

NEUSCI 440 Topics in Current Neuroscience Research (2, max. 6) NW Prerequisite: NEUSCI 302. Credit/no-credit only.

NEUSCI 445 Quantitative Methods in Neuroscience (3) NW *Fred Rieke, Adrienne L. Fairhall* Quantitative methods applicable to study of the nervous system. Emphasizes computer exercises/discussion of journal papers. May include linear systems theory, Fourier analysis, ordinary differential equations, stochastic processes, signal detection, and information theory. Prerequisite: AMATH 342. Offered: W.

NEUSCI 450 Current Research Literature in Neuroscience (2, max. 6) NW Weekly journal club in neurobiology. Students read and discuss original research articles in neurobiology, centered around a specific topic each quarter. Prerequisite: BIOL 220. Credit/no-credit only.

NEUSCI 490 Seminar in Computational Neuroscience (1-3, max. 6) NW Supervised readings and group discussions in computational neuroscience. Credit/no-credit only.

NEUSCI 496 Peer Teaching Facilitator in Neuroscience (5, max. 10) *Michael L Kennedy* For undergraduates assisting in Neurobiology courses as facilitators. Peer Facilitators assist with laboratories, attend lectures, and attend weekly course meetings, gaining direct course experience. Does not include independent teaching or grading. Prerequisite: NEUSCI 302. Credit/no-credit only. Offered: AW.

NEUSCI 499 Individual Research in Neuroscience (3-6, max. 18) Students carry out projects in laboratories of program faculty. Prerequisite: NEUSCI 301.

PHILOSOPHY

ETHICS

ETHICS 207 Issues of Global Justice (5) I&S, DIV *Jamie Mayerfeld, Michael I Blake, William J Talbott* Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with PHIL 207/POL S 217.

ETHICS 291 Ethics in Science (5) VLPA/I&S Provides an introduction to ethics and research ethics issues in the non-medical sciences. Possible topics include: publication and peer review, intellectual property, and the social responsibilities of scientists. Offered: jointly with PHIL 291.

ETHICS 495 Ethics in Practice (2) *Stephen M. Gardiner, Michael I Blake, Sara L. Goering, Carina Fourie* Culmination of the values-in-society minor. Synthesizes training in ethics with primary discipline. Includes a project of positive social engagement (service learning or research project with fieldwork). Limited to undergraduates completing the minor in values and society. Credit/no-credit only.

ETHICS 501 Advanced Topics in Applied Ethics (2-5, max. 10) *Stephen M. Gardiner* Philosophical study of topics in applied ethics at the advanced level. Topics vary.

ETHICS 511 Ethics Matters: An Exploration of Some Moral Qualities (5) *Carina Fourie, Sara L. Goering* Asks what we fundamentally require of ourselves and others if we are to live together in morally acceptable ways by discussing moral qualities as they appear in various arenas. Topics include: autonomy, respect, integrity, and trust.

ETHICS 512 Justice Matters: An Exploration of Justice as a Social Ideal (5) *Stephen M. Gardiner, Michael I Blake* Asks what makes social policies and institutions morally acceptable, primarily through a discussion about justice and injustice. Topics include: relativism, the sources of competing conceptions of justice and equality, cost-benefit analysis, distributive justice, and beneficence.

ETHICS 513 Capstone Workshop (2) *Sara L. Goering, Carina Fourie, Michael I Blake, Stephen M. Gardiner*

Collaborative research workshop. Capstone course for the values-in-society graduate certificate program. Prerequisite: either ETHICS 511, VALUES 511, ETHICS 512, or VALUES 512 Offered: Sp.

ETHICS 591 Ethics Matters in Science: Research Questions as Moral Questions (3) Aims to introduce graduate and professional students from a wide range of primarily non-medical scientific backgrounds to some common moral questions that arise in the course of doing scientific research, and to provide a basic philosophical framework for thinking about related issues that arise within their own disciplines or fields.

PHILOSOPHY

PHIL 100 Introduction to Philosophy (5) I&S C. MARSHALL, M. ROSENTHAL, A. WOODY Major philosophical questions relating to such matters as the existence of God, the foundations of knowledge, the nature of reality, and the nature of morality. Approach may be either historical or topical. Offered: AWSpS.

PHIL 102 Contemporary Moral Problems (5) I&S/VLPA Blake, A. Moore Philosophical consideration of some of the main moral problems of modern society and civilization, such as abortion, euthanasia, war, and capital punishment. Topics vary.

PHIL 110 Introduction to Social and Political Philosophy (5) I&S An introduction to political theories such as conservatism, liberalism, and socialism and their treatment of select social issues.

PHIL 114 Philosophical Issues in the Law (5) I&S R. MOORE Analysis and critical assessment of various philosophical issues in law and legal reasoning. Material drawn from actual law cases, as well as writings by contemporary philosophers of law and lawyers. Topics include criminal responsibility, civil disobedience, abortion, enforcement of morals. Special legal or philosophical training not required.

PHIL 115 Practical Reasoning (5) I&S, QSR C. LEE Introduction to logic emphasizing concepts and methods useful for practical analysis of arguments in everyday contexts; meaning, syllogisms, logical diagrams, inductive and statistical inference,

informal fallacies, argument structure, perhaps some beginning symbolic logic. Offered: AWSpS.

PHIL 118 Persuasion or Manipulation? The Ethics and Psychology of Influence (5) I&S Ian Schnee, Colin Marshall Influence is everywhere, from job interviews to social media. When is influence effective? When is it respectful persuasion vs. immoral deception? Is using psychological insight manipulative or just good people skills? How do biases shape persuasion, and how should we navigate them? Examines the psychology of persuasion through an ethical lens. Assessments focus on real-world applications, helping people improve as persuaders.

PHIL 120 Introduction to Logic (5) I&S/NW, QSR C. MAYO-WILSON, C. WELLER Elementary symbolic logic. The development, application, and theoretical properties of an artificial symbolic language designed to provide a clear representation of the logical structure of deductive arguments. Offered: AWSpS.

PHIL 149 Existentialism and Film (5) VLPA/I&S I. Schnee What makes life worth living? Is morality just a convenient fiction? What is the nature of the human condition? Is God dead, or just playing hard to get? Investigates the works of several existentialist philosophers, including Kierkegaard, Nietzsche, and Beauvoir, and uses their works to interpret and analyze the philosophical content of angst-ridden cinema of the French New Wave and Hollywood film noir. Recommended: None.

PHIL 160 Why Do We Believe in Quarks, Evolution, and Other Crazy Things? Perspectives on Science, Reason, and Reality (5) I&S/NW L. HANKINSON NELSON Study of how scientific theories are justified and why they are accepted, using selected examples from the history of science.

PHIL 200 Topics in Philosophy (3-5, max. 10) I&S A study of philosophical topics at the introductory level. The content of the course is entirely at the discretion of the instructor.

PHIL 205 Philosophy for Children (5) I&S J. LONE Introduction to the methods of "doing" philosophy with young people. Stresses the development of a community of inquiry in which budding philosophers are encouraged to ask their own relevant questions,

develop views and articulate reasons for them, and to listen and learn from one another. Credit/no-credit only.

PHIL 206 Philosophy of Feminism (5) I&S, DIV
Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with GWSS 206/POL S 212.

PHIL 207 Issues of Global Justice (5) I&S, DIV *Jamie Mayerfeld, Michael I Blake, William J Talbott*
Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with ETHICS 207/POL S 217.

PHIL 240 Introduction to Ethics (5) I&S/VLPA *Stephen M. Gardiner, Jean Roberts, William J Talbott*
Critical introduction to various philosophical views of the basis and presuppositions of morality and moral knowledge. Critical introduction to various types of normative ethical theory, including utilitarian, deontological, and virtue theories.

PHIL 241 Topics in Ethics (5, max. 10) VLPA/I&S
Introduction to ethics through in-depth study of one or more selected topics (e.g., limits of moral community, animal rights, moral education, and freedom) . Topics vary.

PHIL 242 Introduction to Medical Ethics (5) I&S/VLPA *S. Goering*
Introduction to ethics, primarily for first- and second-year students. Emphasizes philosophical thinking and writing through an in-depth study of philosophical issues arising in the practice of medicine. Examines the issues of medical ethics from a patient's point of view.

PHIL 243 Environmental Ethics (5) VLPA/I&S *L. NICHOLS*
Focuses on some of the philosophical questions that arise in connection with environmental studies. Topics to be considered include: the ideological roots of current issues, values and the natural world, public policy and risk assessment, intergenerational justice, and social change. Offered: jointly with ENVIR 243.

PHIL 267 Introduction to Philosophy of Religion (5) I&S
Consideration of the sources of religious ideas and practices, the main kinds of religious views and the problems they raise, and the different forms that spirituality can take. Issues concerning the relations of religion to science and morality also treated.

PHIL 291 Ethics in Science (5) VLPA/I&S
Provides an introduction to ethics and research ethics issues in the non-medical sciences. Possible topics include: publication and peer review, intellectual property, and the social responsibilities of scientists. Offered: jointly with ETHICS 291.

PHIL 301 Intermediate Topics in Philosophy (3-5, max. 10) I&S
Philosophical topics at the intermediate level. Content varies each quarter, depending on instructor.

PHIL 307 Justice Across Disciplinary Boundaries (5) I&S *W. TALBOTT*
What is justice? One of the oldest questions in philosophy and also one of the most current. A multi-disciplinary approach to understanding justice.

PHIL 314 Philosophy of Crime and Punishment (5) I&S *R. MOORE*
Examination of philosophical theories regarding criminal habits and punishment and the philosophical problems connected with specific topics in criminal law. Examines proper subject matter of criminal law (drug use, pornography, euthanasia) ; limits of criminal sanctions; crime and privilege (corporate crime, white-collar crime, blackmail) ; justifications for punishment; mercy; and execution.

PHIL 320 Ancient Philosophy (5) I&S *Jean Roberts, Cass Weller*
Survey of ancient Greek philosophy, beginning with the pre-Socratics and proceeding on through Plato to Aristotle.

PHIL 322 Modern Philosophy (5) I&S *C. MARSHALL, M. ROSENTHAL, C. WELLER*
Examination of metaphysical and epistemological problems from the works of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant.

PHIL 325 Nineteenth-Century Philosophy (5) I&S *C. MARSHALL*

PHIL 330 History of Ancient Political Philosophy (5)

I&S *J. ROBERTS* Political philosophy of fourth- and fifth-century Greece, especially the Sophists, Plato, and Aristotle, stressing the connection between the political philosophy and the underlying philosophical system of each philosopher.

PHIL 332 History of Modern Political Philosophy (5)

I&S *M. BLAKE, W. TALBOTT* Examination of major political philosophies from the sixteenth century to the nineteenth century, with attention to the underlying philosophical methods and foundations.

PHIL 335 Plato's Republic (5) VLPA/I&S

Designed especially for philosophy majors, but open to non-majors. Intensive study of Plato's masterpiece. Prerequisite: one PHIL course.

PHIL 338 Philosophy of Human Rights (5) I&S

W. TALBOTT Theories of human rights and the bearing of these theories on issues of public policy such as legitimacy of war and terrorism, economic justice, and whether future generations have rights.

PHIL 340 History of Ancient Ethics (5) VLPA/I&S

J. ROBERTS, C. WELLER Development of moral thought from Socrates through the Stoics. Particular emphasis on the ethical writings of Plato and Aristotle.

PHIL 342 History of Modern Ethics (5) VLPA/I&S

M. ROSENTHAL, C. WELLER Development of moral thought from Hobbes through Nietzsche, with particular emphasis on the ethical writings of Hume, Kant, and John Stuart Mill.

PHIL 343 Ethics and the Environment (5) I&S

Lauren Hartzell Nichols Advanced introduction to environmental ethics, with an emphasis on nonanthropocentric value theory.

PHIL 344 History of Recent Ethics (5) VLPA/I&S

Study of major ethical writings in the twentieth century, with principal emphasis on the Anglo-American tradition.

PHIL 345 Moral Issues of Life and Death (5)

VLPA/I&S *S. GOERING* Examination of such topics as war and murder, famine relief, capital punishment, high-risk technologies, abortion, suicide, and the rights of future generations.

PHIL 346 Personal Values and Human Good (5)

I&S *S. GOERING* Examination of the idea of a good human life. Emphases differ from year to year. Typical topics include happiness and prudence, rationality and life plans, personal values and the meaning of life, autonomy and false consciousness, self-respect and self-esteem, honesty and self-deception, faith and "vital lies."

PHIL 347 Philosophy in Literature (5) VLPA/I&S

Study of philosophical ideas expressed in works of literature.

PHIL 350 Introduction to Epistemology (5) I&S

C. MAYO-WILSON, W. TALBOTT Nature, definition, and possibility of knowledge.

PHIL 356 Introduction to Metaphysics (5) I&S

Introductory examination of some of the main problems in metaphysics, such as the nature of truth and reality, the metaphysical status of properties, the existence of free will.

PHIL 360 Introductory Topics in Philosophy of Science (5, max. 10) I&S/NW

L. HANKINSON NELSON, A. WOODY Study of one or more current topics in philosophy of science such as scientific realism, explanation, confirmation, causation. Prerequisite: one PHIL course.

PHIL 362 Topics in the Philosophy of Science (5)

I&S/NW *Lynn Hankinson Nelson* Critical study of nature of scientific knowledge, emphasizing the role of evidence in several different sciences. Topics include accounts of scientific methods; the relation of theory to observation; how theories change; and the nature of the confirmation and falsification of hypotheses and theories. Offered: Sp.

PHIL 363 Introduction to the Philosophy of Mind (5)

I&S *C. LEE* Various theories of the nature of mind, the relationship between mind and body, the self, introspection, and knowledge of other minds.

PHIL 373 Introduction to Philosophy of Mathematics (5) I&S

Introduction to some of the main issues in philosophy of mathematics: to what degree are mathematical theorems justified by rational insight, sensory experience, purely symbolic computations; what is the infinite, and how can one reason about infinite sets, spaces, and numbers without becoming entangled in contradictions.

PHIL 398 Philosophy for Children Practicum (2-5, max. 10) *S. Goering, J. Lone* Exploration of various methods for introducing philosophy to K-12 students with a focus on ways in which to establish "communities of philosophical inquiry" in classrooms. Students will develop an understanding of how to inspire philosophical discussions with pre-college students. Emphasis is on learning by doing, with students facilitating philosophy sessions in local public schools. Credit/no-credit only. Offered: WSp.

PHIL 399 Foreign Study (2-5, max. 10) Upper-division philosophy studies with no direct UW equivalents, taken through UW foreign study programs.

PHIL 401 Advanced Topics in Philosophy (3-5, max. 15) I&S A study of philosophical topics at the advanced level. Topics vary.

PHIL 406 Philosophical Topics in Feminism (5) I&S, DIV *S. GOERING, L. HANKINSON NELSON, A. WOODY* Detailed examination of questions raised by recent feminist scholarship in particular areas of philosophy, such as political theory, ethics, epistemology, or philosophy of science. Emphasis varies.

PHIL 407 International Justice (5) M. BLAKE, S. GARDINER Examines issues through investigation of the moral foundations of international politics. Issues include: What moral duties constrain the relationships between states? Is international poverty a matter of moral concern? Are we justified in preferring the interest of our fellow nations? Prerequisite: one course in philosophy.

PHIL 408 Philosophy of Diversity (5) I&S, DIV *M. BLAKE* Must a liberal political community respect all claims made on behalf of minority cultural groups? Are there moral limits to the forms of diversity compatible with just governance? Examines modern philosophical writings on these topics. Prerequisite: One philosophy course.

PHIL 409 Philosophy of Disability (5) I&S, DIV *S. GOERING* Rethinks the non-disabled assumption at the heart of much of western moral and political philosophy. Explores concepts of autonomy, opportunity, personhood, and dependence in regard to disability. Issues may include prenatal testing and reproduction, special education, requirements of

accommodation, and social and legal interpretations of disability. Prerequisite: one philosophy course or LSJ 332/CHID 332, LSJ 433/CHID 433, or LSJ 434/CHID 434.

PHIL 410 Social Philosophy (5) I&S *W. TALBOTT* An examination of topics pertaining to social structures and institutions such as liberty, distributive justice, equality and race, and human rights.

PHIL 411 Justice in Health Care (5) VLPA/I&S *N. JECKER* Examination of the ethical problem of allocating scarce medical resources. Emphasizes the fundamental principles of justice that support alternative health policies. Offered: jointly with B H 474.

PHIL 412 Ethical Theory (5) I&S *N. JECKER* Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Offered: jointly with B H 402.

PHIL 413 Metaethical Theory (5) I&S *N. JECKER* Studies the major metaethical theories, including both cognitivist and noncognitivist approaches. Emphasizes moral philosophy during the twentieth century, as well as contemporary commentary. Offered: jointly with B H 404.

PHIL 414 Philosophy of Law (5) I&S *R. MOORE* Nature and function of law. Relation of law to morality. Legal rights, judicial reasoning.

PHIL 415 Advanced Topics in Animal Welfare (5) I&S *L. NICHOLS* Critical examination of issues in the philosophy of animal welfare and animal rights. Prerequisite: one philosophy course.

PHIL 416 Ethics and Climate Change (5) I&S *S. GARDINER, L. NICHOLS* Critical examination of the ethical issues surrounding climate change. Prerequisite: either one philosophy or one environmental studies course. Offered: jointly with ENVIR 416.

PHIL 417 Advanced Topics in Environmental Philosophy (5) I&S *S. GARDINER* Critical examination of issues in environmental philosophy. Topics vary.

Prerequisite: one philosophy course. Offered: jointly with ENVIR 417.

PHIL 418 Jewish Philosophy (5) I&S M. ROSENTHAL
Introduces the central concepts and themes of Jewish philosophy. Focuses either on debates within a particular historical period - e.g., medieval or modern; or on a topic - e.g., reactions to the Enlightenment or to the Holocaust. Offered: jointly with JEW ST 418.

PHIL 422 Studies in Continental Rationalism (5, max. 15) I&S C. MARSHALL, M. ROSENTHAL Study of one or more of the major continental rationalists: Descartes, Spinoza, Leibniz.

PHIL 426 Twentieth-Century Philosophy (5) I&S C. WELLER A study of development of contemporary analytic philosophy, the revolt against idealism, and the linguistic turn in philosophy.

PHIL 430 Hellenistic Philosophy (3) I&S J. ROBERTS
Survey of the Epicurean, Stoic, and Skeptic philosophy of the Hellenistic period. Emphasis may vary.

PHIL 431 Philosophy of Plato (3, max. 6) I&S J. ROBERTS, C. WELLER Study of selected middle and late dialogues.

PHIL 433 Philosophy of Aristotle (3, max. 6) I&S J. ROBERTS, C. WELLER Study of several major Aristotelian treatises.

PHIL 436 British Empiricism (3) I&S C. WELLER
Examination of the metaphysical and epistemological views of Locke and Berkeley, with perhaps some attention also to Hume. Prerequisite: either PHIL 322 or PHIL 350.

PHIL 437 Philosophy of Hume (3) I&S W. Talbott, C. Weller Hume's analyses of knowledge, the passions, and morals.

PHIL 438 Philosophy of Kant (5) I&S C. MARSHALL, C. WELLER Systematic study of *The Critique of Pure Reason*.

PHIL 440 Ethics (5) I&S J. ROBERTS, W. TALBOTT
Critical examination of the concepts and judgments of value, including an analytical treatment of the

notions of good and bad, right and wrong, and obligation. Emphasis varies from quarter to quarter.

PHIL 441 Public Health Ethics (5) I&S C. FOURIE An in-depth study of the philosophical issues arising in the practice and policy of public health. Material consists mainly of texts from philosophy and ethics, but, due to the course's interdisciplinary nature, also includes papers from epidemiology, newspaper articles, and current public health regulations and campaigns.

PHIL 442 Neuroethics (5) I&S S. GOERING
Neurotechnological advances offer novel ways to address problems of movement, mood, and communication, but also call into question fundamental philosophical assumptions about the kinds of creatures we are. Explores questions of personal identity, moral and legal responsibility, privacy, security, normality, and justice in the context of neurotechnologies.

PHIL 445 Philosophy of Art (5) VLPA/I&S R. MOORE
Critical examination of various accounts of the nature of art, artistic activity, the aesthetic experience. Problems in interpretation and evaluation of works of art.

PHIL 446 Development of Aesthetic Theory (5) VLPA/I&S R. MOORE Historical development of aesthetics, emphasizing such major figures as Plato, Aristotle, Hume, Kant, Hegel, and Goodman.

PHIL 449 Philosophy of Film (5) VLPA/I&S Examines films and film theory from a philosophical perspective. Topics may include the nature of film, whether films have "authors", how films engage our emotions, whether films are vehicles of ideology, whether video games are "interactive" cinema, and whether films and video games themselves can do philosophy.

PHIL 450 Epistemology (5) I&S C. MAYO-WILSON, W. TALBOTT Systematic study of some of the main problems of the theory of knowledge, such as: the definition of "knowledge"; a priori knowledge; perception and knowledge of the external world; and whether knowledge has or requires a foundation. Emphasis varies from quarter to quarter.

PHIL 453 Philosophy of Language (5) VLPA/I&S

Current theories of meaning, reference, predication, and related concepts. Offered: jointly with LING 476.

PHIL 456 Metaphysics (5) I&S

Examination of such topics as freedom of the will, the nature of persons and personal identity, the existence of God, time, necessary truth, and universals. The emphases vary from year to year.

PHIL 459 Philosophy of Medicine (5) I&S N. JECKER

Familiarizes students with central issues in the philosophy of medicine. Focuses on the nature of medical knowledge, the connection between theory and observation, the meaning of medical concepts, and the relationship between theories and the world. Offered: jointly with B H 440.

PHIL 460 Philosophy of Science (5) I&S/NW L.

HANKINSON NELSON, A. WOODY Critical study of the nature of scientific knowledge. Topics include the relation of theory to observation, the use of mathematics, how theories change, the requirements for the meaningfulness of a theory, and nature of confirmation.. Prerequisite: one PHIL course.

PHIL 462 Social Structure of Science (5) I&S Carole J

Lee Critical study of how social structure and power in science contribute to its content and practices.

PHIL 463 Philosophy of Mind (5) I&S C. LEE

Examination of current theories of the nature of the mind and mental processes.

PHIL 464 Philosophical Issues in the Cognitive Sciences (5) I&S/NW C. LEE

Philosophical problems connected with research in psychology, artificial intelligence, and other cognitive sciences. Topics vary. Readings from both philosophical and scientific literature. Accessible to nonphilosophers with suitable interests and backgrounds.

PHIL 465 Philosophy of History (3) I&S M. WYLIE

Analyses of basic concepts employed in historical interpretation, and study of some of the principal philosophers of history, such as Plato, Saint Augustine, Hegel, Marx, Spengler, Toynbee.

PHIL 466 Philosophy of the Social Sciences (5) I&S L.

HANKINSON NELSON, W. TALBOTT, M. WYLIE

Examination of fundamental issues in the foundations, methodology, and interpretation of the social sciences. Topics include value orientation and objectivity, methodological individualism, functionalism, reductionism, and the status of idealized models, including models involving idealized conceptions of individual rationality. Emphasis varies from quarter to quarter.

PHIL 467 Philosophy of Religion (5) I&S M.

Rosenthal Study of selected topics and problems in the philosophy of religion, such as: arguments for the existence of God; the problem of evil; atheism; faith; religious experience and revelation; the attributes of God; miracles; immortality; and the relation between religion and morality. Readings from historical and contemporary authors.

PHIL 470 Intermediate Logic (5) I&S/NW, QSR

An introduction to the concepts and methods of metatheory and their application to the sentential calculus.

PHIL 471 Advanced Logic (5) I&S/NW

Study of the first-order predicate calculus with identity and function symbols. Consistency, soundness, completeness, compactness. Skolem-Lowenheim theorem. Formalized theories. Prerequisite: PHIL 470.

PHIL 472 Axiomatic Set Theory (5) I&S/NW

Development of axiomatic set theory up to and including the consistency of the Axiom of Choice and Continuum Hypothesis with the Zermelo-Fraenkel Axioms.

PHIL 473 Philosophy of Mathematics (5) I&S/NW

Study of the traditional accounts of the nature of mathematical entities and mathematical truth given by logicism, intuitionism, and formalism, and the impact of Godel's incompleteness theorems on these accounts.

PHIL 474 Modal Logic (5) I&S/NW

Notions of necessity and possibility, using the classical systems T, S4, and S5, and the syntax and the semantics (Kripke models) of these systems.

PHIL 479 Semantics II (3) VLPA/I&S/NW T. Ogihara

Formal characterization of linguistic meaning. Emphasis on nature and purpose of formal semantics and on its relation to formal syntax.

Prerequisite: LING 478 Offered: jointly with LING 479.

PHIL 481 Philosophy of Biology (5) I&S/NW L.
HANKINSON NELSON Study of several current topics in philosophy of biology, which may include the logical structure of evolutionary theory, fitness, taxonomy, the concept of a living thing, reductionism, the concept of a biological species, evolutionary explanations, and philosophical consequences of sociology. Prerequisite: one PHIL course.

PHIL 482 Philosophy of Physical Science (5, max. 10) I&S/NW A. *WOODY* Study of philosophical issues raised by theories in physics or chemistry, such as whether space (time) is a substance, how causation and locality are treated in quantum mechanics, temporal anisotropy and time travel, the nature of a field of force, the reduction of chemistry to physics. Prerequisite: one PHIL course.

PHIL 483 Induction and Probability (5) NW/I&S
Introduction to current accounts of evidence and observation, the confirmation of scientific theories, the logic of inductive reasoning, and the metaphysics and epistemology of chance. High school-level math used. Specific topics vary from year to year. Prerequisite: PHIL 120.

PHIL 484 Reading in Philosophy (1-5, max. 15)
Individual study of selected philosophical works.

PHIL 490 Advanced Topics in Epistemology (5, max. 15) I&S W. *TALBOTT* Intensive study of a particular topic or area in epistemology. Prerequisite: either PHIL 350 or PHIL 450.

PHIL 495 Philosophical Inquiry in Schools (5) I&S *Goering, Lone, Shapiro* Explores methods for introducing philosophy to K-12 students, focusing on ways to establish "communities of philosophical inquiry." Students learn how to inspire philosophical discussions with pre-college students, and work in pairs with the instructor to lead philosophy sessions in the seminar and in local schools. Prerequisite: one PHIL course. Offered: A.

PHIL 498 Undergraduate Internship (1-5, max. 10)
Independent fieldwork under the supervision of a faculty member. Individual experiences vary but could include an off-campus practicum or being

trained as study group leader or tutor. Credit/no-credit only. Offered: AWSp.

PHIL 500 Proseminar in Philosophy (5) Introduces incoming graduate students to topics representative of the field and the faculty's interest. Each class session is devoted to a separate topic taught by a different member of the faculty. In addition to reading and short written assignments, students prepare a term paper on a topic presented. Offered: A.

PHIL 502 Pre-Dissertation Workshop I (5) Introduces cognitive, emotional, and physical labor of writing a dissertation. Topics may include cultivation of productive work habits, identifying a dissertation project, and forming the dissertation committee. Students complete the literature review requirement. Prerequisite: philosophy graduate student standing. Credit/no-credit only.

PHIL 503 Pre-Dissertation Workshop II (5, max. 10)
Doctoral students develop a piece of academic writing (prospectus draft, dissertation chapter, or conference paper), polish their CV, and continue developing the skill of giving and receiving critical feedback. Prerequisite: philosophy graduate student standing; recommended: PHIL 502. Credit/no-credit only.

PHIL 504 Topics in Teaching Philosophy I (1, max. 5)
Ian Schnee Provides first-year graduate students materials and support needed to begin teaching at the college level, with focus on role of teaching assistant. Investigates empirical work and best practices in pedagogy. Topics may include beginning and leading classroom discussions; grading philosophical assignments and time management; fostering and maintaining an inclusive classroom environment. Prerequisite: philosophy graduate student standing. Credit/no-credit only.

PHIL 505 Topics in Teaching Philosophy II (1, max. 5)
Ian Schnee Investigates how to develop and design effective courses in philosophy, and how to lead and teach these courses at the university level. Topics include assignment scaffolding, just-in-time teaching, equity in the classroom, backward course design, active learning, Bloom's taxonomy, time management, and teaching statements. Prerequisite: graduate standing in philosophy; PHIL 504. Credit/no-credit only.

PHIL 510 Seminar in Social Philosophy (5, max. 20)
W. TALBOTT

PHIL 514 Seminar in Legal Philosophy (5, max. 20) R.
MOORE

PHIL 520 Seminar in Ancient Philosophy (5, max. 20)
J. ROBERTS, C. WELLER

PHIL 522 Seminar in Modern Philosophy (5, max. 20)
C. MARSHALL, M. ROSENTHAL, C. WELLER

PHIL 526 Seminar in Recent Philosophy (5, max. 20)
C. WELLER

PHIL 538 Philosophy of Human Rights (5, max. 20)
W. TALBOTT

PHIL 540 Seminar in Ethics (5, max. 20) S. GOERING,
J. ROBERTS, W. TALBOTT

PHIL 545 Seminar in the Philosophy of Art (5, max. 20)
R. MOORE

PHIL 550 Seminar in Epistemology (5, max. 20) C.
MAYO-WILSON, W. TALBOTT

PHIL 556 Seminar in Metaphysics (5, max. 20)

PHIL 560 Seminar in the Philosophy of Science (5, max. 20)
L. HANKINSON NELSON, A. WOODY

PHIL 562 Seminar in the Social Structure of Science (5, max. 20)
Carole J Lee Critical study of how social structure and power in science contribute to its content and practices.

PHIL 563 Seminar in the Philosophy of Mind (5, max. 20)
C. LEE

PHIL 564 Seminar in Philosophy of the Cognitive Sciences (5) Examines philosophical questions raised in and by cognitive sciences, including the nature of explanation, the role of models in explanation, and debates about reductionism versus pluralism in the face of diverse research paradigms.

PHIL 565 Seminar in the Philosophy of History (5, max. 20)

PHIL 566 Seminar in Philosophy of the Social Sciences (5, max. 20)
C. LEE, M. WYLIE

PHIL 570 Seminar in Logic (5, max. 20) Prerequisite: PHIL 470.

PHIL 574 Meta-archaeology: Philosophy and Archaeology (1-5, max. 5) Examines philosophical issues raised in and by archaeology, including theories of explanation and model building, analyses of evidential reasoning and hermeneutic interpretation, debates about ideals of objectivity and about science and values. Offered: jointly with ARCHY 574.

PHIL 584 Reading in Philosophy (1-5, max. 12) Intensive reading in philosophical literature. Prerequisite: permission of Graduate Program Coordinator.

PHIL 587 Contemporary Analytic Philosophy (5, max. 20)

PHIL 595 Philosophical Inquiry in Schools (5) S. Goering, J. Lone Explores methods for introducing philosophy to K-12 students, focusing on ways to establish "communities of philosophical inquiry." Students learn how to inspire philosophical discussions with pre-college students, and work in pairs with the instructor to lead philosophy sessions in the seminar and in local schools. Offered: A.

PHIL 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Coordinator.

PHIL 800 Doctoral Dissertation (*-)

PHYSICS

PHYS 101 Physical Science By Inquiry I (5-) NW, QSR

PHYS 104 Facilitated Group Inquiry I (2) NW Laboratory-based development of concepts and reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 114. Offered: A.

PHYS 105 Facilitated Group Inquiry II (2) NW Laboratory-based development of concepts and

reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 115. Offered: W.

PHYS 106 Facilitated Group Inquiry III (2) NW

Laboratory-based development of concepts and reasoning skills. Develops problem-solving techniques and scientific method in a large group setting. Co-requisite: PHYS 116. Offered: Sp.

PHYS 107 Physics Concepts for Non-Scientists (5) NW

Wilkes Overview of physical science, from subatomic particles to cosmology. Intended to help students understand the importance of scientific research in society with emphasis on basic ideas about how the universe operates. Readings from popular books by leading scientists for non-science majors. For students without high school physics or with limited mathematics background. Offered: W.

PHYS 110 Liberal Arts Physics (5) NW, QSR

Physics for students in the arts, humanities and social sciences. Students get a flavor of what physics is about, including scientific procedures. We will focus on the theory of Relativity. This revolutionized physics in 1905 and led to amazing predictions, like the existence of black holes and the production of gravitational waves, confirmed in 2016. Only math at high school level is required. Offered: WSp.

PHYS 114 Mechanics (4) NW, QSR Principles of mechanics using algebra-based modeling with an emphasis on applications in life sciences. Maximum 5 credits allowed for any combination of PHYS 114, PHYS 117, PHYS 121, and PHYS 141. Offered: AWSpS.

PHYS 115 Heat, Fluids and Electricity and Magnetism (4) NW

Principles of heat, fluids, and electromagnetism using algebra-based modeling with an emphasis on applications in life sciences. Maximum 5 credits allowed for any combination of PHYS 115, PHYS 118, PHYS 122, and PHYS 142. Prerequisite: either a minimum grade of 1.7 in PHYS 114, PHYS 121, or PHYS 141, a score of 4 or 5 on Physics B advanced placement test, a score of 4 or 5 on AP Physics 1 advanced placement test, or a score of 4 or 5 on Physics C (Mechanics) advanced placement test. Offered: AWSpS.

PHYS 116 Waves, Optics, Atoms and Nuclei (4) NW

Principles of waves, optics, atoms, and nuclei using algebra-based modeling with an emphasis on

applications in life sciences. Maximum 5 credits allowed for any combination of PHYS 116, PHYS 119, PHYS 123, and PHYS 143. Prerequisite: either a minimum grade of 1.7 in PHYS 115, PHYS 122, or PHYS 142, a score of 4 or 5 on Physics 2 advanced placement test, or a score of 4 or 5 on Physics C (Electricity and Magnetism) advanced placement test. Offered: AWSpS.

PHYS 117 General Physics Laboratory (1) NW

Mechanics laboratory. Credit is not given for both PHYS 117 and the PHYS 121 laboratory. Prerequisite: PHYS 114 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 118 General Physics Laboratory (1) NW

Heat and electromagnetism laboratory. Credit is not given for both PHYS 118 and the PHYS 122 laboratory. Prerequisite: PHYS 115 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 119 General Physics Laboratory (1) NW

Sound, light, and modern physics laboratory. Credit is not given for both PHYS 119 and the PHYS 123 laboratory. Prerequisite: PHYS 116 which may be taken concurrently. Credit/no-credit only. Offered: AWSpS.

PHYS 121 Mechanics (5) NW, QSR

Basic principles of mechanics and experiments in mechanics for physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Maximum 5 credits allowed for any combination of PHYS 114, PHYS 117, PHYS 121, and PHYS 141. Prerequisite: either MATH 124 or MATH 134, which may be taken concurrently. Offered: AWSpS.

PHYS 122 Electromagnetism (5) NW

Covers the basic principles of electromagnetism and experiments in these topics for physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Maximum 5 credits allowed for any combination of PHYS 115, PHYS 118, PHYS 122, and PHYS 142. Prerequisite: either PHYS 121 or PHYS 141; and either MATH 125 or MATH 134, which may be taken concurrently. Offered: AWSpS.

PHYS 123 Waves (5) NW Explores electromagnetic waves, the mechanics of oscillatory motion, optics, waves in matter, and experiments in these topics for

physical science and engineering majors. Lecture tutorial and lab components must all be taken to receive credit. Maximum 5 credits allowed for any combination of PHYS 116, PHYS 119, PHYS 123 and PHYS 143. Prerequisite: either PHYS 122 or PHYS 142; and either MATH 126 or MATH 134, which may be taken concurrently. Offered: AWSpS.

PHYS 141 Honors Mechanics (5) NW Addresses same material as PHYS 121 in more depth and with additional topics such as current research and cross-disciplinary applications. For students with strong calculus preparation. Maximum 5 credits allowed for any combination of PHYS 114, PHYS 117, PHYS 121, and PHYS 141. Prerequisite: either a minimum grade of 2.5 in MATH 124, or MATH 134, which may be taken concurrently. ; recommended: high school-level physics course. Offered: A.

PHYS 142 Honors Electromagnetism (5) NW Addresses same material as PHYS 122 in more depth and with additional topics such as current research and cross-disciplinary applications. For students with strong calculus preparation. Maximum 5 credits allowed for any combination of PHYS 115, PHYS 118, PHYS 122, and PHYS 142. Prerequisite: a minimum grade of 2.5 in PHYS 141; and MATH 125 or MATH 134, either of which may be taken concurrently. ; recommended: high-school-level physics course. Offered: W.

PHYS 143 Honors Waves, Light and Heat (5) NW Addresses same material as PHYS 123 in more depth and with additional topics such as current research and cross-disciplinary applications. For students with strong calculus preparation. Maximum 5 credits allowed for any combination of PHYS 116, PHYS 119, PHYS 123, and PHYS 143. Prerequisite: a minimum grade of 2.5 in PHYS 142; and MATH 126 or MATH 135, either of which may be taken concurrently. ; recommended: high school-level physics course. Offered: Sp.

PHYS 207 The Physics of Music (3) NW The nature of sound; vibrations; traveling and standing waves; response of the ear to sound; production of musical sounds.

PHYS 210 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a

process of inquiry. Prerequisite: minimum 2.0 in either PHYS 116 or PHYS 123. Offered: A.

PHYS 211 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a process of inquiry. Prerequisite: minimum 2.0 in either PHYS 116 or PHYS 123; recommended: PHYS 210. Offered: W.

PHYS 212 Physics by Inquiry I (5) NW Selected topics in physics with emphasis on depth of understanding and development of skills essential to the scientific process. Develops perspective of science as a process of inquiry. Prerequisite: minimum 2.0 in either PHYS 116 or PHYS 123; recommended: PHYS 211. Offered: Sp.

PHYS 214 Light and Color (5) NW, QSR Compares past explanation of certain familiar natural phenomena with present understandings. Lamps and lighting, outdoor light, optical devices, color vision, perspective, paints, and pigments. Quantitative comparison critical to the course, but college-level mathematics background not required. Intended for non-science students.

PHYS 216 Science and Society (5) I&S/NW *Chaloupka* Investigation of the relationship between science, technology, and society. Nuclear physics and molecular biology serve as concrete examples of fields with significant impact on society. Offered: jointly with JSIS B 216; Sp.

PHYS 217 Energy Future: The Technical and Social Barriers to Large-Scale Sustainable Energy (5) I&S/NW *Seidler* Surveys the scientific, technological, and social barriers to large-scale renewable energy implementation. Includes discussion of solar, wind, nuclear, and other sustainable modalities; energy efficiency; large-scale energy storage; the greenhouse effect; and numerous domestic and international case studies of sustainable energy efforts. Offered: A.

PHYS 224 Thermal Physics (3) NW Introduces heat, thermodynamics, elementary kinetic theory, and statistical physics. Prerequisite: Either MATH 126 or MATH 136; PHYS 123 Offered: ASpS.

PHYS 225 Introduction to Quantum Mechanics (3)

NW Emphasizes two-state systems. Introduces spin and applications in nuclear magnetic resonance. Prerequisite: either a minimum grade of 2.0 in PHYS 227; or a minimum grade of 2.0 in PHYS 123 and MATH 136; or a minimum grade of 2.0 in PHYS 123, and minimum grade of 2.0 in either MATH 307 or AMATH 351, and minimum grade of 2.0 in either MATH 308 or AMATH 352. Offered: WS.

PHYS 226 Particles and Symmetries (3) NW

Introduction to the fundamental constituents of matter and the symmetries which characterize their interactions. Topics include special relativity; strong, weak, and electromagnetic interactions; quarks and leptons; baryons and mesons; and neutrinos and nuclei. Prerequisite: minimum grade of 2.0 in PHYS 225 and PHYS 227 Offered: Sp.

PHYS 227 Elementary Mathematical Physics (4) NW

Applications of mathematics in physics with emphasis on the mechanics of particles and continuous systems. Develops and applies computational methods, both analytic and numerical. Prerequisite: a minimum grade of 2.0 in PHYS 121; a minimum grade of 2.0 in PHYS 122; a minimum grade of 2.0 in PHYS 123; and a minimum grade of 2.0 in MATH 126. Offered: ASp.

PHYS 228 Elementary Mathematical Physics (4) NW

Applications of mathematics in physics with emphasis on the mechanics of particles and continuous systems. Develops and applies computational methods, both analytic and numerical. Prerequisite: minimum 2.0 grade in PHYS 227. Offered: WS.

PHYS 231 Introductory Experimental Physics (3) NW

Introduction to data acquisition and analysis using experiments which measure fundamental constants or properties of nature (Planck's constant, Boltzmann's constant, speed of light, charge of electron) . Prerequisite: minimum 2.0 grade in PHYS 123. Offered: A.

PHYS 232 Introduction to Computational Physics (3)

NW Computational techniques applied to physics and data analysis in laboratory setting. Emphasis on numerical solutions of differential equations, least square data fitting, Monte Carlo methods, and Fourier Analysis. A high-level language taught and

used; no previous computing experience required. Prerequisite: PHYS 227.

PHYS 248 Introductory Selected Topics (1-5, max. 15) NW**PHYS 294 Introduction to Research: Frontiers of**

Physics (1) NW Provides a survey of contemporary research in experimental and theoretical physics, with an emphasis on subfields seeing revolutionary changes in understanding. Credit/no-credit only. Offered: W.

PHYS 321 Electromagnetism (4) NW

First of a three-quarter sequence. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: minimum grade of 2.0 in PHYS 227; two of PHYS 228, MATH 307 or AMATH 351, MATH 308 or AMATH 352, MATH 309 or AMATH 353, MATH 324, MATH 326, or AMATH 401. Offered: ASp.

PHYS 322 Electromagnetism (4) NW

Continuation of PHYS 321. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: minimum 2.0 in PHYS 321. Offered: WS.

PHYS 323 Electromagnetism (4) NW

Continuation of PHYS 322. Charges at rest and in motion; dielectric and magnetic media; electromagnetic waves; relativity and electromagnetism; physical optics. Prerequisite: minimum 2.0 in PHYS 322. Offered: Sp.

PHYS 324 Quantum Mechanics (4) NW

First part of a two-quarter sequence. Introduction to nonrelativistic quantum mechanics: need for quantum theory, Schrodinger equation, operators, angular momentum, the hydrogen atom, identical particles, and the periodic table. Prerequisite: 2.0 in PHYS 225, PHYS 228. Offered: AS.

PHYS 325 Quantum Mechanics (4) NW

Continuation of PHYS 324. Introduction to nonrelativistic quantum mechanics: perturbation theory, the variational principle, radiation; application of quantum mechanics to atomic physics, magnetic resonance, scattering, and various special topics. Prerequisite: either PHYS 324 or B PHYS 324. Offered: W.

PHYS 328 Statistical Physics (3) NW Elements of statistical mechanics and their applications. Prerequisite: a minimum grade of 2.0 in PHYS 224; and a minimum grade of 2.0 in PHYS 225. Offered: A.

PHYS 329 Mathematical Methods and Classical Mechanics (3) NW Mathematical methods applied to classical mechanics, including Lagrangian mechanics. Prerequisite: minimum grade of 2.0 in PHYS 228. Offered: Sp.

PHYS 331 Optics Laboratory (3) NW Measurements of interference and diffraction, optical properties of matter, image processing, interferometry, holography. Prerequisite: a minimum grade of 2.0 in PHYS 227; and PHYS 321, which may be taken concurrently. Offered: A.

PHYS 334 Electric Circuits Laboratory (3) NW Basic elements of DC, AC, and transient circuits; electronic devices; electrical measurements. Prerequisite: minimum 2.0 grade in PHYS 123. Offered: WS.

PHYS 335 Electric Circuits Laboratory (3) NW Electrical measurements, data management, digital electronics of microprocessor systems. Building a microprocessor application. Prerequisite: minimum 2.0 in PHYS 334. Offered: Sp.

PHYS 401 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 402 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 403 Special Problems (*, max. 30) Supervised individual study. Offered: AWSpS.

PHYS 405 Physical Science by Inquiry II (5-) NW Emphasis on depth of understanding and development of reasoning and representational skills essential to the scientific process. Provides background for teaching physical science as a process of inquiry and develops scientific literacy. Prerequisite: 2.0 in either PHYS 116 or PHYS 123. Offered: A.

PHYS 406 Physical Science by Inquiry II (-5) NW Emphasis on depth of understanding and development of reasoning and representational skills essential to the scientific process. Provides

background for teaching physical science as a process of inquiry and develops scientific literacy. Prerequisite: 2.0 in either PHYS 116 or PHYS 123. Offered: W.

PHYS 407 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: minimum grade of 2.0 in PHYS 121, PHYS 122, PHYS 123. Offered: A.

PHYS 408 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: PHYS 407. Offered: W.

PHYS 409 Physics by Inquiry II (5) NW Selected topics in physics, with emphasis on depth of understanding and development of skills essential to the scientific process. Background for teaching physics at secondary school and introductory college levels. Some mathematical proficiency required. Prerequisite: PHYS 408. Offered: Sp.

PHYS 410 Physics by Inquiry for In-Service Teachers (1-2, max. 30) NW A "hands-on" inquiry-oriented approach designed to train in-service teachers in the use of the physical science content for any of several science programs selected by a school or school district. Credit/no-credit only.

PHYS 411 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 412 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS

407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 413 Physics by Inquiry for Lead Teachers (1-4, max. 4) NW Extends the content covered in previous courses and helps prepare lead teachers to train colleagues to use any of several science programs selected by schools or districts. Prerequisite: two courses selected from PHYS 405, PHYS 406, PHYS 407, PHYS 408, or PHYS 409. Credit/no-credit only. Offered: A.

PHYS 421 Contemporary Atomic Physics (3) NW Survey of the principal phenomena of atomic and molecular physics. Prerequisite: PHYS 322; PHYS 325. Offered: Sp.

PHYS 422 Contemporary Nuclear and Particle Physics (3) NW Survey of the principal phenomena of nuclear and elementary-particle physics. Prerequisite: PHYS 226; PHYS 322; PHYS 325. Offered: A.

PHYS 423 Contemporary Condensed Matter Physics (3) NW Survey of the principal phenomena of solid-state physics. Prerequisite: a minimum 2.0 grade in either PHYS 324 or B PHYS 324. Offered: W.

PHYS 427 Applications of Physics (1-3, max. 12) NW Current applications of physics to problems in the sciences and technology.

PHYS 428 Selected Topics in Physics (1-5, max. 12) NW

PHYS 429 Biophysics (3) Application of the concepts and methods of physics to biological systems. Prerequisite: PHYS 224; PHYS 225. Offered: W.

PHYS 431 Modern Physics Laboratory (3) NW Measurement in modern atomic, molecular, and solid-state physics. Prerequisite: PHYS 225; PHYS 334. Offered: WS.

PHYS 432 Modern Physics Laboratory (3) NW Measurement in modern atomic, molecular, and solid-state physics. Prerequisite: PHYS 225; PHYS 334. Offered: Sp.

PHYS 433 Modern Physics Laboratory (3) NW Techniques in nuclear and elementary-particle

research. Prerequisite: PHYS 225; PHYS 334. Offered: A.

PHYS 434 Application of Computers to Physical Measurement (3) NW Laboratory giving specific instruction and experience in interfacing laboratory equipment to computers. Prerequisite: PHYS 334; and a minimum grade of 2.0 in either AMATH 301 or ASTR 300. Offered: A.

PHYS 436 Nonlinear Dynamics and Chaos (4) NW Variational Principle, Lagrangian and Hamiltonian Mechanics, phase space, nonlinear dynamics, approach to chaos, Lyapunov exponents, applications to physical systems. Numerical exercises to illustrate phenomena. Prerequisite: MATH 309.

PHYS 441 Quantum Physics (4) NW Introduction to concepts and methods of quantum physics: wave mechanics (de Broglie wavelength, uncertainty principle, Schrodinger equation), one-dimensional examples (tunneling, harmonic oscillator), formalism of quantum physics, angular momentum and the hydrogen atom. Offered: A.

PHYS 451 Issues for Ethnic Minorities and Women In Science and Engineering (3/5) I&S Addresses issues faced by women and ethnic minorities in physical sciences and engineering. Focuses on participation, barriers to participation, and solutions to those issues for women and ethnic minorities in physical sciences and engineering. Offered: jointly with GWSS 485.

PHYS 485 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: A.

PHYS 486 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: W.

PHYS 487 Senior Honors Seminar (1, max. 3) NW Prerequisite: Honors standing; 12 credits of physics. Offered: Sp.

PHYS 494 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations

summarizing work accomplished are required.
Offered: A.

PHYS 495 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations summarizing work accomplished are required.
Offered: W.

PHYS 496 Seminar on Current Problems in Physics (1, max. 3) NW Supervised, independent study of topics (chosen by faculty in charge) of current interest in physics. Written and oral presentations summarizing work accomplished are required.
Offered: Sp.

PHYS 498 Directed Reading in Physics (2, max. 6) NW Pairs advanced undergraduate students with graduate students to explore a topic in physics through critical engagement with current academic literature and development of skills to communicate scientific material. Prerequisite: PHYS 123; recommended: PHYS 224; PHYS 225; and PHYS 227. Credit/no-credit only. Offered: AWSp.

PHYS 499 Undergraduate Research (1-6, max. 18) Research in physics and study of physics literature. Credit/no-credit only. Offered: AWSpS.

PHYS 501 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials are used with undergraduates. Credit/no-credit only. Offered: A.

PHYS 502 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials are used with undergraduates. Credit/no-credit only. Offered: W.

PHYS 503 Tutorials in Teaching Physics (1, max. 2) Preparation for teaching introductory physics; use and critical analysis of instructional materials in a collaborative learning environment; supervised teaching practicum in which instructional materials

are used with undergraduates. Credit/no-credit only. Offered: Sp.

PHYS 505 Mechanics (3) Lagrangian and Hamiltonian dynamics, with applications to various topics such as coupled oscillators, parametric resonance, anharmonic oscillations, chaos. Offered: W.

PHYS 506 Numerical Methods (3) Integration, solution of differential equations, Monte Carlo methods, function minimization, data analysis, modern computing techniques, computation in experimental physics. Offered: WSp.

PHYS 507 Physical Applications of Group Theory (3) Applications of finite and continuous groups, representation theory, symmetry, and conservation laws to physical systems. Offered: Sp.

PHYS 511 Topics in Contemporary Physics (3, max. 9) Topics of current experimental, theoretical, or technological interest in modern physics. Offered: Sp.

PHYS 513 Electromagnetism and Relativity (3) First of a three-part sequence. Principles of electrostatics, complex variable techniques, boundary value problems and their associated mathematical techniques, Green's functions. Offered: A.

PHYS 514 Electromagnetism and Relativity (4) Continuation of PHYS 513. Electric and magnetic fields in free space and material media, wave guides and cavity resonators. Offered: W.

PHYS 515 Electromagnetism and Relativity (4) Continuation of PHYS 514. Special relativity, electromagnetic radiation from accelerated charges, synchrotron radiation, Cerenkov radiation, radiation reaction. Offered: Sp.

PHYS 517 Quantum Mechanics (4) First of a three-part sequence. Modern non-relativistic quantum mechanics developed, beginning with its basic principles. Dirac and abstract operator notation introduced, starting with simple examples. Offered: A.

PHYS 518 Quantum Mechanics (4) Continuation of PHYS 517. Modern non-relativistic quantum mechanics. The character of the theory illustrated

both with physical examples and with conceptual problems. Topics include: atomic structure, scattering processes, density operator description of mixed states, and measurement theory. Abstract operator methods emphasized in the exposition of angular momentum, scattering, and perturbation theory. Offered: W.

PHYS 519 Quantum Mechanics (4) Continuation of PHYS 518. Modern non-relativistic quantum mechanics. Physical examples and conceptual problems. Topics include: atomic structure, scattering processes, density operator description of mixed states, and measurement theory. Abstract operator methods emphasized in the exposition of angular momentum, scattering, and perturbation theory. Offered: Sp.

PHYS 520 Advanced Quantum Mechanics - Introduction to Quantum Field Theory (4) Multi-particle systems, second quantization, diagrammatic perturbation theory, radiation, correlation functions and multi-particle scattering, relativistic theories, renormalizability, basic quantum electrodynamics, and other applications. Offered: A.

PHYS 521 Advanced Quantum Mechanics - Introduction to Quantum Field Theory (3) Multi-particle systems, second quantization, diagrammatic perturbation theory, radiation, correlation functions and multi-particle scattering, relativistic theories, renormalizability, basic quantum electrodynamics, and other applications. Offered: W.

PHYS 522 Advanced Quantum Mechanics: Introduction to Modern Quantum Field Theory (3) Functional integrals, symmetry breaking, critical phenomena and continuum limits, and non-perturbative methods. Credit/no-credit only. Offered: Sp.

PHYS 524 Thermodynamics and Statistical Mechanics (4) Statistical mechanical basis of the fundamental thermodynamical laws and concepts; classical and quantum statistical distribution functions; applications to selected thermodynamic processes and examples of Bose and Fermi statistics. Offered: A.

PHYS 525 Statistical Mechanics (3) Introduction to equilibrium and non-equilibrium aspects of many-body systems; scale invariance and universality at

phase transitions and critical phenomena; exactly soluble models; Markov processes, master equations and Langevin equation in non-equilibrium stochastic processes. Prerequisite: PHYS 524. Offered: Sp.

PHYS 527 Current Problems in Physics (1) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: A.

PHYS 528 Current Problems in Physics (1) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: A.

PHYS 530 Laser Physics (4) Physics underlying laser design and operation in the context of common laboratory systems. Topics may include continuous and pulsed lasers; solid, liquid, and gas gain media; Q-switching, mode-locking, resonator theory, nonlinear optics, and others. Prerequisite: basic quantum mechanics, electromagnetism, and optics.

PHYS 531 Contemporary Atomic Physics (4) Survey of the principal phenomena of atomic and molecular physics. Prerequisite: PHYS 441, PHYS 543, or permission of instructor. ; recommended: courses in calculus; modern physics; electromagnetism; and quantum mechanics. Offered: Sp.

PHYS 532 Liquid Crystal Devices (4) Physics of liquid crystals and applications to practical display devices. Phases, phase transitions, optical and dielectric properties, molecular and device "engineering," future prospects.

PHYS 536 Introduction to Acoustics and Digital Signal Processing (4) Introduces mathematical and physics principles of acoustics in digital signal processing applications. Complex analysis and Fourier methods, physics of vibrations and waves, solutions of the wave equation, digital convolution and correlation methods, and Maximum Length Sequence method in signal analysis and spread-spectrum applications. Prerequisite: PHYS 123; MATH 120. Instructors: Chaloupka

PHYS 541 Applications of Quantum Physics (4) Techniques of quantum mechanics applied to lasers, quantum electronics, solids, and surfaces. Emphasis on approximation methods and interaction of electromagnetic radiation with matter. Prerequisite: PHYS 421 or PHYS 441 or equivalent. Offered: Sp.

PHYS 542 Numerical Methods in Physics (4)

Numerical methods for analysis and computation in physics. Topics may include integration, differential equations, partial differential equations, optimization, data handling, and Monte Carlo techniques. Emphasis is applications in physics. Prerequisite: 30 credits in physical sciences, computer science, or engineering.

PHYS 543 Electromagnetic Theory (4) Principal concepts of electromagnetism. Static electric and magnetic fields. Boundary-value problems. Electric and magnetic properties of materials. Electromagnetic waves and radiation. Prerequisite: 30 credits in physical sciences, computer science, or engineering. Offered: W.

PHYS 544 Applications of Electromagnetic Theory (4) Emphasis may vary from year to year. Topics may include electromagnetic waves, radiation, scattering, wave guides, plasma physics, quantum electronics, and accelerator physics. Prerequisite: PHYS 543 or equivalent.

PHYS 545 Contemporary Optics (4) Coordinated lecture and laboratory treatment of topics in contemporary optics. Subjects include Fourier optics, lens systems, interferometry, laser optics, holography, polarization, crystal optics, birefringence, laser and conventional light sources, optical detectors. Prerequisite: PHYS 543 or equivalent.

PHYS 546 Condensed-Matter Physics (4) Introduction to the theory of solids: crystal structure in real space and reciprocal space, phonons, free electrons, band theory, semiconductor devices. Prerequisite: PHYS 441 or equivalent.

PHYS 547 Electronics for Physics Research (4) Electronic techniques as applied in physics research. Topics include noise, control-system analysis, operational amplifiers, lock-in amplifiers, precision power supplies and metering, data transmission, microprocessors. Several integrated measurement systems are examined in the context of specific research problems. Prerequisite: elementary electronics.

PHYS 549 Low-Temperature Physics and Cryogenics (4) Condensed-matter physics at low and ultralow temperatures. Production of low temperatures;

liquefaction of gases, dilution refrigeration, magnetic and compressional cooling. Macroscopic quantum effects: superconductivity, superfluidity. Applications of superconductors. The ultralow temperature frontier.

PHYS 550 Atomic Physics (3) Theory of atomic structure and spectra; atomic and molecular beams; resonance techniques; atomic collisions; topics of current interest. Prerequisite: PHYS 519.

PHYS 551 Atomic Physics (3) Theory of atomic structure and spectra; atomic and molecular beams; resonance techniques; atomic collisions; topics of current interest. Prerequisite: PHYS 519.

PHYS 552 Introduction to Cosmic Ray Physics (3) The nature and cosmological significance of cosmic ray photons and particles. The motion and confinement of particles in the geophysical, interplanetary, and interstellar medium. Theories of the processes involved in the high-energy interaction of cosmic rays, including shower theory. Methods of measurement and current problems. Prerequisite: introductory quantum mechanics. Credit/no-credit only.

PHYS 554 Nuclear Astrophysics (3) Big bang nucleosynthesis; nuclear reactions in stars; solar neutrinos and neutrino oscillations; core-collapse supernovae; nucleosynthesis in stars, novae, and supernovae; neutron stars; composition and sources of cosmic rays; gamma ray bursts; atmospheric neutrinos. Offered: jointly with ASTR 510; A.

PHYS 555 Cosmology and Particle Astrophysics (3) Big bang cosmology; relativistic world models and classical tests; background radiation; cosmological implications of nucleosynthesis; baryogenesis; inflation; galaxy and large-scale structure formation; quasars; intergalactic medium; dark matter.

PHYS 557 High Energy Physics (3) First quarter of a three-quarter series. Emphasis on the experimental foundations of particle physics. Prerequisite: PHYS 519. Offered: A.

PHYS 558 High Energy Physics (3) Second quarter of a three-quarter series. Phenomenology of the standard model of strong and electro-weak

interactions, including an introduction to Feynman diagrams. Prerequisite: PHYS 519. Offered: W.

PHYS 559 High Energy Physics (3) Third quarter of a three-quarter series. Topics of current interest in high-energy particle physics. Prerequisite: PHYS 519. Offered: Sp.

PHYS 560 Theoretical Nuclear Physics (3) First of a two-part sequence. Nuclear structure, scattering, reactions, and decays in terms of elementary properties of nucleons and current theoretical models. Prerequisite: PHYS 519. Offered: A.

PHYS 561 Theoretical Nuclear Physics (3) Continuation of PHYS 560. Nuclear structure, scattering, reactions, and decays in terms of elementary properties of nucleons and current theoretical models. Prerequisite: PHYS 519. Offered: W.

PHYS 564 General Relativity (3) First of a two-part sequence. General covariance and tensor analysis, the relativistic theory of gravitation as given by Einstein's field equations, experimental tests and their significance, and applications of general relativity, particularly in the areas of astrophysics and cosmology. Prerequisite: PHYS 515.

PHYS 565 General Relativity (3) Continuation of PHYS 564. General covariance and tensor analysis, the relativistic theory of gravitation as given by Einstein's field equations, experimental tests and their significance, and applications of general relativity, particularly in the areas of astrophysics and cosmology. Prerequisite: PHYS 515.

PHYS 567 Theory of Solids (3) First quarter of a course on modern solid state and condensed matter physics, aimed at bringing student's knowledge up to the level of current literature. Topics include structural, electronic, and vibrational properties; optical response functions and dynamics; transport theory; and cooperative phenomena. Prerequisite: PHYS 519, PHYS 524. Offered: AW.

PHYS 568 Theory of Solids (3) Second quarter of a course on modern solid state and condensed matter physics, aimed at bringing the student's knowledge up to the level of current literature. Additional topics (see PHYS 567) include magnetism, quantum Hall effect, superconductivity. Offered: WSp.

PHYS 570 Quantum Field Theory (3) Emphasizes either relativistic quantum field theory or the many-body problem. Normally offered credit/no-credit only. Prerequisite: PHYS 522.

PHYS 571 Quantum Field Theory (3) Emphasizes either relativistic quantum field theory or the many-body problem. Normally offered credit/no-credit only. Prerequisite: PHYS 522.

PHYS 572 Modern Quantum Field Theory (3) Advanced topics in quantum field theory. Prerequisite: PHYS 570, PHYS 571. Credit/no-credit only.

PHYS 575 Selected Topics in Applications of Physics (*, max. 30)

PHYS 576 Selected Topics in Experimental Physics (*, max. 30)

PHYS 578 Selected Topics in Theoretical Physics (*, max. 30) Credit/no-credit only.

PHYS 580 Physics Colloquium (*, max. 30) Credit/no-credit only. Offered: AWSp.

PHYS 581 Seminar in High-Energy Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 582 Seminar in Particle Theory (1-2, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 583 Seminar in Relativistic Astrophysics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 584 Seminar in Recent Developments in Atomic Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 585 Seminar in Experimental Nuclear Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 586 Seminar in Condensed Matter Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 587 Seminar in Nuclear Theory (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 588 Particle Astrophysics Seminar (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 589 Seminar in Problems of Physics Education (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 590 Seminar in Statistical Physics (1-3, max. 20) Credit/no-credit only. Offered: AWSp.

PHYS 600 Independent Study or Research (*-) Study or research under the supervision of individual faculty members. Prerequisite: permission of supervisor. Credit/no-credit only. Offered: AWSpS.

PHYS 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee chairperson. Credit/no-credit only. Offered: AWSpS.

POLITICAL SCIENCE

POL S 101 Introduction to Politics (5) I&S Political problems that affect our lives and shape the world around us.

POL S 110 Political Argumentation (3) VLPA/I&S Skills- and practice-based approach to political argumentation. Suitable for non-majors.

POL S 120 Perspectives on Contemporary Public Policy Issues (3) I&S Lecture series on contemporary domestic and international public policy issues. Credit/no-credit only. Offered: jointly with JSIS B 120.

POL S 195 Study Abroad: Political Science (1-10, max. 15) I&S Lower-division political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated. Credit does not apply to major requirements.

POL S 201 Introduction to Political Theory (5) I&S Philosophical bases of politics and political activity. Provides an introduction to the study of politics by the reading of books in political philosophy. Organized around several key political concepts, such as liberty, equality, justice, authority, rights, and citizenship. Offered: AWSpS.

POL S 202 Introduction to American Politics (5) I&S Institutions and politics in the American political system. Ways of thinking about how significant problems, crises, and conflicts of American society are resolved politically. Offered: AWSpS.

POL S 203 Introduction to International Relations (5) I&S The world community, its politics, and government. Offered: AWSpS.

POL S 204 Introduction to Comparative Politics (5) I&S Political systems in a comparative framework. Traditional and contemporary approaches to the study of governments and societies in different countries. Offered: AWSpS.

POL S 212 Philosophy of Feminism (5) I&S, DIV Philosophical analysis of the concepts and assumptions central to feminism. Theoretical positions within the feminist movement; view of the ideal society, goals and strategies of the movement, intersections of the sex-gender system with other systems of oppression. Offered: jointly with GWSS 206/PHIL 206.

POL S 213 The Korean Peninsula and World Politics (5) I&S *Ha* Introduces Korean politics, economics, society, and international relations. Overviews the development in politics, economy, and society since the late nineteenth century. Addresses the evolution of Korea in the international society by comparing Korea experience with that of China and Japan. Offered: jointly with JSIS A 213.

POL S 217 Issues of Global Justice (5) I&S, DIV *Jamie Mayerfeld, Michael I Blake, William J Talbott* Introduces issues of global justice. Topics include: global poverty and aid, immigration, transnational governance, gender in global relations, climate change, and cultural relativism. Offered: jointly with ETHICS 207/PHIL 207.

POL S 246 African American Politics (5) I&S, DIV *C. PARKER* Survey of African Americans within the U.S. socio-political processes. Situates African Americans within a post-civil rights context where there is debate about race's centrality to an African American politics. Offered: jointly with AFRAM 246.

POL S 249 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role of labor in the modern world. Offered: jointly with HSTCMP 249/SOC 266.

POL S 270 Introduction to Political Economy (5)

I&S A. Gill Political economy as a tool for understanding and evaluating the political world. Combines theory, methods, and insights derived from economics and political science and applies them to a range of substantive issues.

POL S 273 The Concept of Political Power (5) I&S

How to understand and explain relationships of power. Readings from Marxism, Weberian sociology, anarchism, classical political philosophy, and contemporary political science. May also include works of fiction.

POL S 281 Literature and American Political Culture

(5) VLPA/I&S Introduction to the methods and theories used in the analysis of American culture. Emphasizes an interdisciplinary approach to American literature, including history, politics, anthropology, and mass media. Offered: jointly with ENGL 251.

POL S 285 Political Science as a Social Science (5)

I&S, QSR Methodological perspectives of social science disciplines: commonalities and differences in assumptions, values, and paradigms. Current issues from the multiple perspective of social sciences; limits of the social sciences in resolving key social issues.

POL S 295 Study Abroad: Political Science (1-10, max. 15) I&S Political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated.

POL S 299 Special Topics in Political Science (2-5, max. 10) I&S

Examines a different subject or problem of current interest within the discipline.

POL S 301 Topics in Political Theory (5, max. 10) I&S

Study of topics in political theory.

POL S 302 Free Will, Nature, and Nurture in Politics and Society (5) I&S M. SMITH

Examines beliefs and actions in politics and other domains from the standpoint of free will, nature, and nurture. Compares political science to other disciplines in explaining why people think and act as they do.

POL S 303 Public Policy Formation in the United States (5) I&S

Policy decision making with emphasis

on: how issues arise, the way they become part of the policy agenda of the executive and the legislature, how these institutions organize to handle policy issues, and the roles of the legislature, the executive, and the bureaucracy. Public policy literature and familiarization with key aspects of policy decision making at the national, state, and local levels.

POL S 304 The Press and Politics in the United States (5) I&S

Journalists' role in elections and public policy. Relationship between news coverage and political campaigns. Study and analysis of local political newswriting, reporting, and response by local and state political figures. Extensive off-campus experience included. Offered: jointly with COM 304.

POL S 305 The Politics of Mass Communication in America (5) I&S

Role of mass audiences in politics from the standpoint of the communication strategies used to shape their political involvement. Topics include: social structure and political participation, political propaganda and persuasion, the political uses of public opinion, and the mass media and politics. Offered: jointly with COM 305.

POL S 306 Media, Society, and Political Identity (5) I&S

Explores how society and culture are both represented in and shaped by communication technologies and media content. Media include film, advertising, news, entertainment television, talk shows, and the Internet. Explores how media represent and affect individual identity, values, and political engagement. Offered: jointly with COM 306.

POL S 307 Religion and World Politics (5) I&S A. GILL

Explores the intersection of religion and politics in various regions of the world, including the United States, Europe, Middle East, Latin America, and other regions. Presents an historical perspective on religion alongside contemporary issues in religion, politics, and church-state relations. Offered: jointly with RELIG 307.

POL S 308 The Western Tradition of Political Thought, Ancient and Medieval (5) I&S

Origin and evolution of major political concepts from ancient Greece to the medieval period.

POL S 309 The Western Tradition of Political Thought, Pre-Modern (5) I&S

Continuation of POL S

308, treating materials from the fifteenth through eighteenth centuries.

POL S 310 The Western Tradition of Political Thought, Modern (5) I&S Continuation of POL S 308 and POL S 309, focusing on material from the eighteenth through twentieth centuries.

POL S 311 Individual and the State (5) I&S Individualism and communitarian critics. Political and ethical implications of both. Nature of the state, liberty, responsibility, cooperation. Important individualist and collectivist literature, dealing with market institutions and citizen politics, critically assessed.

POL S 312 Survey of American Political Thought (5) I&S Survey of American political thought from colonial times to the 1980s. Topics include the idea of the self-made man; the intellectual contexts of the Declaration of Independence and the Constitution; slavery, abolition, and the Civil War; progressivism; Cold War liberalism; the Civil Rights Movement and its critics; and modern conservatism. Prerequisite: cannot be taken for credit if POL S 318 or POL S 319 already taken.

POL S 313 Women in Politics (5) I&S, DIV Theoretical, historical, and empirical studies of women's participation in political and social movements. Women's diverse efforts to improve their political, social, and economic status. Policy issues of particular concern to women. Women's political experiences in household, local, regional, national, and international arenas. Offered: jointly with GWSS 313.

POL S 315 Black Identities and Political Power (5) I&S Relates the deployment of political power within institutions to shifting racial identities. Shows how racial identities both reflect and inflect relations of domination and resistance within and between cultures in the black diaspora. Prerequisite: either AES 150, AFRAM 150, AFRAM 201, or POL S 201. Instructors: Rivers Offered: jointly with AFRAM 315.

POL S 316 African-American Political and Social Thought (5) I&S, DIV C. PARKER Race relations in U.S. politics as defined by the struggle of African Americans for economic, political, and social equality. Studies of African-American political and social thought; expands and clarifies our

understanding of the strengths and weaknesses of American democratic ideals.

POL S 317 The Politics of Race and Ethnicity in the United States (5) I&S, DIV M. FRANCIS Introduction to the history and development of racial hierarchy, focusing on how race and ethnicity shape political institutions (e.g., the Constitution, political parties, voting systems). Examination of political relationships between Whites, African Americans, Latinos, and Asian Americans. Case studies of minority representation and the politics of welfare, crime, immigration, and terrorism. Offered: jointly with LSJ 331.

POL S 318 American Political Thought from the Colonial Era to the Civil War (5) I&S, DIV J. Turner *lil* Major thinkers in American political thought from Franklin to Madison to Douglass to Jacobs to Lincoln. Emphasis on tensions between freedom, slavery, equality, violence, and "the power of the people." Prerequisite: cannot be taken for credit if POL S 312 already taken.

POL S 319 American Political Thought from Reconstruction to the Present (5) I&S, DIV J. Turner *lii* Major thinkers in American political thought from Lincoln to Whitman to Du Bois to Martin Luther King, Jr. to Malcolm X to Audre Lorde to Ronald Reagan. Emphasis on the legacies of slavery in American life and the tension between citizen and corporate power. Prerequisite: cannot be taken for credit if POL S 312 already taken.

POL S 320 State-Society Relations in Third World Countries (5) I&S, DIV Bachman, Callahan Relationships among political, social, and economic changes in Asia, Africa, and Latin America. Problems of economic and political development, revolution and reform, state-society relations, imperialism and dependency. Offered: jointly with JSIS B 310.

POL S 321 American Foreign Policy (5) I&S Constitutional framework; major factors in formulation and execution of policy; policies as modified by recent developments; the principal policymakers - president, Congress, political parties, pressure groups, and public opinion.

POL S 322 International Political Economy of Latin America (5) I&S V. MENALDO Exploration of politics underlying Latin America's economic development.

Topics covered include import-substituting industrialization, mercantilism, the debt crisis, neoliberalism, market integration, and poverty. Review of major theoretical perspectives such as modernization theory, dependency, and the new political economy. Offered: jointly with JSIS A 322.

POL S 324 Europe in World Politics (5) I&S

Independent and coordinated efforts of Britain, France, and West Germany to adapt to the post-World War II global system. Creation and development of the Atlantic Alliance. Relations with postcommunist states. Decolonization and the evolution of relations with the Third World. The movement for European integration.

POL S 325 The Arab-Israeli Conflict (5) I&S The politics of conflicting ideologies: Zionism and Arab nationalism; formation of the state of Israel; development of Palestinian nationalism; Arab-Israeli wars. Re-emergence of Palestinian activism; domestic sources of foreign policy.

POL S 326 Scandinavia in World Affairs (5) I&S C.

INGEBRITSEN Introduction to the foreign relations of Scandinavia with a focus on Nordic security, international economic pressures, and global conflict resolution. Includes a survey of the national settings for international involvements and highlights the dilemmas for industrial societies exposed to the pressures of interdependence. Offered: jointly with SCAND 326.

POL S 327 Women's Rights as Human Rights (5) I&S,

DIV Rachel A Cichowski Women's rights in comparative perspective, focusing on varying settings that alter the meaning and practical application. Domestic level: areas including abortion politics to trafficking in women. International level: areas including equality claims before European supranational judicial bodies, rape as war crime in international law. Offered: jointly with LSJ 327.

POL S 328 International Organizations (5) I&S

Explores historical, theoretical, and empirical aspects of the United Nations, its specialized agencies, and other international organizations, both governmental and nongovernmental.

POL S 329 Global Communication (5) I&S

Introduction to the history, purpose, channels, content, technologies, policy, and regulation of

international communications systems. Issues covered include disparities in media development between post-industrial and developing nations, imbalances in international news and information flow, and the emergence of global communications. Offered: jointly with COM 322.

POL S 330 Communications in International

Relations (5) I&S Looks at communications in relations between international groups and states. Examines the range of functions and roles communication media play in international affairs, global issues, and intergroup relations. Also examines the strategic use of communications by various groups. Offered: jointly with COM 321.

POL S 331 Government and Politics in the Middle

East and North Africa (5) I&S Breakdown of traditional society and the problems of building modern political systems.

POL S 332 Topics in Comparative Politics (5, max. 10)

POL S 333 Topics in International Relations (5, max. 10)

POL S 334 Topics in American Politics (5, max. 10)

POL S 335 Topics in Political Economy (5, max. 10)

POL S 336 Political Violence (5) I&S Examines the causes and consequences of the use of violence in the context of armed conflict and contentious politics, with a focus on the targeting of civilians. Investigates the dynamics influencing both state and non-state armed actors in their resort to various forms of violence across a range of conflicts. Offered: jointly with JSIS B 336.

POL S 337 Collective Violence and the State (5) I&S,

DIV Comparative study of how and why genocides have occurred in modern times. Examines how ethnic, religious, and nationalist conflicts have sometimes led to violent conflict, and how political leaders and governments have mitigated or exacerbated them, sometimes engaging in state sponsored mass killing. Offered: jointly with JSIS B 337.

POL S 338 Topics in Public Policy (5, max. 10)

POL S 340 Politics of India, Pakistan, and South Asia

(5) I&S Course promotes a deeper understanding of politics in South Asia. Topics include political regimes, civil conflict, religion and politics, and economic development. Students also sharpen skills in reading social science articles, including picking out arguments, evidence, and logics of presentation. Offered: jointly with JSIS A 340.

POL S 341 Government and Politics of Canada (5)

I&S Critical analysis of parliamentary institutions, political parties, and the federal system in Canada. Offered: jointly with JSIS A 321.

POL S 342 Government and Politics of Latin America

(5) I&S Analysis of the political dynamics of change in Latin America comparing various national approaches to the political problems of modernization, economic development, and social change. Offered: jointly with JSIS A 342.

POL S 343 Politics and Change in Southeast Asia (5)

I&S Government and politics in the countries of Southeast Asia, with attention given to the nature of the social and economic environments that condition them. Offered: jointly with JSIS A 343.

POL S 346 Governments of Western Europe (5) I&S

Modern government and politics of Great Britain, France, Germany, and Italy.

POL S 347 Politics of International Law (5) I&S

G. Wallace Examines the development, design, and consequences of international law. Focuses on how international legal agreements constrain and enable both state and non-state actors across a range of issues, including economic affairs, the environment, human rights, and war. Offered: jointly with LSJ 347.

POL S 348 European Union as Global Actor (5) I&S

Surveys the European Union's evolution as a global actor and emergence as a potential superpower with increasingly unified foreign and defense policies. Covers institutions and interests that have driven this process; specific examples of European Union global engagement; and the potential implications for U.S. foreign policy. Offered: jointly with JSIS A 348.

POL S 349 Strategy and War (5) I&S

Jonathan L Mercer Deterrence theory; decision-making and rationality; strategy and psychology; material and

ideational structures; insurgencies and counter-insurgencies; ethics; nuclear strategy; terrorism; economic sanctions; chemical, biological, and cyber weapons; non-lethal weapons. Recommended: POL S 203.

POL S 350 Government and Interest Groups in the

United States (5) I&S Agrarian, labor, professional, business, and ethnic interest in politics; impact on representative institutions and governmental processes.

POL S 351 The American Democracy (5) I&S

Democratic theory; constitutional theory; the presidency; Congress; the Supreme Court; civil rights and civil liberties.

POL S 352 American Political Parties (5) I&S

Theories of American parties, campaigns, and voting behavior; party leadership; political socialization and participation.

POL S 353 United States Congress (5) I&S

J. Wilkerson Organization and procedure of Congress, state legislative politics, lobbying, legislative roles, theory and practice of representative government.

POL S 354 Elections and Voting in the United States

(5) I&S Electoral institutions and processes of the United States: the idea and practice of elections, the electoral system, individual voting behavior, collective voting behavior, and the impact of elections on policy.

POL S 355 The American Presidency (5) I&S

R. Thorpe The American presidency; its evolution, its occupants, and its place within the American system. Topics include presidential character, war, elections, impeachment, the economy, and the Constitution.

POL S 356 Society and Politics (5) I&S

Causes of political change in democratic countries, including public opinion, social movements, interest group activity, and party organization. Offered: jointly with SOC 356.

POL S 357 Minority Representation and the Voting

Rights Act (5) I&S, DIV Explores whether and how African-Americans and Latinos are able to organize effectively and press their demands on the political

system. Focuses on minority political behavior, the effect of these groups at the polls, the responsiveness of elected officials, and legal or constitutional obstacles affecting these phenomena.

POL S 358 American Political Culture (5) Examines the origins and content of Americans' political values and beliefs. Topics include American exceptionalism, the culture war, freedom, civic engagement, the American dream, individualism, and political ideology.

POL S 359 U.S. Latino Politics (5) I&S, DIV *Sophia J Wallace* Examines historical and current political incorporation of Latinos in the United States. Topics include Latino voting and voter mobilization, office seeking and representation, Latino public opinion, and public policy formation on "Latino issues." Offered: jointly with CHSTU 359.

POL S 360 Introduction to United States Constitutional Law (5) I&S *George I Lovell* Growth and development of the United States Constitution as reflected in decisions of the Supreme Court; political, social, and economic effects. Offered: jointly with LSJ 360.

POL S 361 United States Courts and Civil Liberty (5) I&S *G. Lovell* Cases and literature bearing on protection of constitutionally guaranteed private rights, with particular reference to the period since 1937. Offered: jointly with LSJ 361.

POL S 363 Law in Society (5) I&S Inquiry into how law matters in social practice. Examines general theories of law, the workings of legal institutions, and the character of legally constituted practices and relationships in diverse terrains of social life. Offered: jointly with LSJ 363.

POL S 365 Lawyers in American Politics (5) I&S Influence of lawyers on American politics. Official and unofficial political roles, lawyers as lobbyists, as legislators, in the bureaucracy, politics of the American Bar Association. Includes study of legal education, professional values, and avenues of political access.

POL S 367 Comparative Law and Courts (5) I&S *R. Cichowski* Introduction to comparative judicial politics, focusing on the relationship between law and politics in cross-national perspective, as well as

on the functioning of supranational and international legal entities in the international system. May not be taken for credit if student has taken LSJ/JSIS B 366. Offered: jointly with LSJ 367.

POL S 368 The Politics and Law of International Human Rights (5) I&S, DIV J. *Mayerfeld* Studies the international human rights movement in its legal and political context. Focuses on institutions which influence, enable, and constrain the international promotion of human rights. Offered: jointly with LSJ 320.

POL S 370 Privacy (5) I&S *S. Pekkanen* Explores how individuals, corporations, and governments respond to privacy challenges in the digital age. Examines evolution of the idea of privacy using case studies of actual privacy policies, legal cases, and real-world situations. Covers legal, political, and social facets of this fundamental human issue. Offered: jointly with JSIS B 370/LSJ 370; Sp.

POL S 371 Global Crime and Corruption (5) I&S *J. Long Iv* We examine sources & outcomes of illicit behavior within firms, governments, and organizations at local, national, & international levels; investigating the psychological, cultural, political, and economic sources of crime/corruption; and explore these dynamics within businesses, bureaucracies, gangs, mafias, cults, and pirates. Case studies include India, US-Mexico drug trade, piracy, doomsday cults, Sicilian mafias, Nazi drug abuse, & Dark Web. Recommended: POL S 203, POL S 204, or POL S 270; or JSIS 123, JSIS 200, JSIS 201, or JSIS 222; or equivalent. Offered: jointly with JSIS B 371.

POL S 381 Urban Politics and Policy in the United States (5) I&S *Fraga* Introduces actors, institutions, processes, and policies of substate governments in the United States. Provides and intensive comparative examination of historical and contemporary politics and policy-making. Promotes understanding of city government and its role within the larger context of state and national governments.

POL S 382 State Government (5) I&S *J. Wilkerson* Focus on the structures, processes, and policy outputs of state governments in the United States.

POL S 383 Environmental Politics and Policy in the United States (5) I&S Interrelation between

technological and environmental change and policy formation. Consideration of political behavior related to these phenomena and the capacity of urban public organizations to predict change and to formulate policies that can take future states into account.

POL S 384 Global Environmental Politics (5) I&S K. LITFIN Examines the globalization of environmental problems, including climate change, ozone depletion, and loss of biodiversity, as well as the globalization of political responses to these problems within the framework of globalization as set of interlinked economic, technological, cultural, and political processes. Offered: jointly with ENVIR 384.

POL S 385 Political Ecology of the World Food System (5) I&S/NW Karen T Litfin Investigates the intersection of globalization and food politics, the pivotal role of petroleum in the world food system, and the commodity chains for some foods. Includes an optional service learning component. Offered: jointly with ENVIR 385.

POL S 395 Study Abroad: Political Science (1-10, max. 15) I&S Political science courses taken through a UW approved study abroad program. Specific content varies and must be individually evaluated.

POL S 401 Advanced Seminar in Political Theory (5, max. 10) I&S Topics can include, but are not limited to, analytical theory pertaining to justice, exploitation, and freedom; revolution and social changes; collective choice and action; sexuality and politics; critical theory; Marxist theory; post-structuralism. Content varies.

POL S 402 Advanced Seminar in Human Rights (5, max. 10) I&S J. MAYERFELD Examines selected human rights topics including questions relating to the meaning, justification, promotion, implementation, suppression, or denial of human rights.

POL S 403 Advanced Seminar in International Relations (5, max. 10) I&S Examination of contemporary developments in the field of international relations. Content varies according to the nature of developments and research interests of the instructor.

POL S 404 Topics in Public Policy (3-5, max. 6) I&S Examines selected issues of importance in all areas of public policy. Focus on in-depth analysis of vital public policy issues and the integration of economic, political, and administrative perspectives on them. Offered: jointly with PUBPOL 499.

POL S 405 Advanced Seminar in American Politics (5, max. 10) I&S Intensive reading and research in selected problems or fields of political analysis.

POL S 406 Marxian Political Economy (5) I&S Explores the relationship between social classes, the state, and political power in advanced capitalist societies. Investigates this relationship primarily by means of the tools of Marxian political economy and, in the process, evaluates these tools. Emphasis on theoretical perspectives, although the reading list has a few empirical applications as well.

POL S 407 International Conflict (5) I&S E. KIER, J. MERCER Examines different theoretical explanations for the causes of war, including the role of international, state, organizational, and individual factors; additional topics vary with instructor. May include the development of warfare, deterring weapons of mass destruction, terrorism, intelligence, and the ethics of warfare.

POL S 409 Undergraduate Seminar in Political Economy (5, max. 10) I&S Seminar in political economy with focus on Marxian and public choice approaches to political economy. Explores the questions raised by each approach, the assumption(s) and testability of hypotheses, and applies these approaches to a number of problems in political economy. Offered: jointly with ECON 409.

POL S 410 Technology, Politics, and the State (5) I&S Relationships between politics and technological change. Considers whether the relations between political and economic systems of industrial societies have been fundamentally altered by the increased importance and interdependence of government, experts, and new technological possibilities for intervention in social life.

POL S 411 Theories of the State (5) I&S Topics may include origins and development of the state; arguments about the necessity, desirability, and proper role of the state; the nature and operation of

modern states and the international state system; the legitimacy of modern state power.

POL S 412 Democratic Theory (5) I&S Explores the concept of democracy and theoretical models purporting to describe its central features: majority rule, participation, and deliberation. Themes also include: representative vs. direct democracy; the rights of minorities; the relationship between democracy and other political theories such as liberalism, socialism, and conservatism.

POL S 413 Contemporary Political Theory (5, max. 10) I&S Analysis of political theorists, exploring contemporary theories of humanity and society that form the basis for differing political ideas.

POL S 414 Politics and Culture (5) I&S How people interpret and shape the political world around them through the use of such cultural resources as language, symbolism, myth, and ritual. The various uses of these cultural elements establish the place of the individual in society, influence the perception of political events, and create opportunities for individual and mass political responses.

POL S 415 Women's Rights in an Integrated Europe (5) I&S Examines the transformation in women's rights policy within the European community from the late 1950s through the present. Focuses on the legal rules and bodies that govern not only these policy domains, but also their evolution and impacts. Offered: jointly with LSJ 428.

POL S 416 Economic Theory as Applied to the Political System (5) I&S Explanation and evaluation of the political system, using elementary economics theory. Topics include alternative voting rules, the political effectiveness of various types of groups, causes and consequences of logrolling, and bureaucratic organizations. Prerequisite: ECON 300. Offered: jointly with ECON 452.

POL S 417 Political Economy of India (5) I&S Analysis of relationships among processes of economic change, political institutions, and structures of political power in contemporary India. Includes contrasting approaches to Indian economic development, land reform, radical and agrarian political movements, and role of foreign aid. Offered: jointly with JSIS A 417.

POL S 418 Japanese Trade Politics (5) I&S R. *Pekkanen* Survey of Japan's foreign trade diplomacy. Examines evolution of Japan's trade patterns in exports and foreign direct investment with key partners. Covers institutional and legal frameworks of Japan's trade relations, such as bilateral fora, regional options including free trade agreements, and multilateral venues such as the WTO. Offered: jointly with JSIS A 487.

POL S 419 United States-China Relations (5) I&S *Bachman* Surveys the history of United States-China relations and examines the evolution of bilateral relations, particularly since 1949. Focus on the period since 1972 and the major issues as they have evolved since that time, including trade, human rights, security, and Taiwan. Offered: jointly with JSIS A 459.

POL S 420 Soviet and Russian Foreign Policy (5) I&S Ideological, historical, and strategic components of Soviet foreign policy; Gorbachev's "new thinking" and the collapse of the USSR; redefining post-Soviet "Russia"; Russian military and security policy; Russia and the West; Russian relations with the newly independent states.

POL S 421 Relations Among Communist and Post-Communist States (5) I&S Major disputes and types of relationships among different communist states; international effects of the communist collapse; comparative dynamics of state-building, market reform, and democratic transition; international integration and domestic politics in the former Soviet bloc; ethnic conflict and the problem of state boundaries; redefining security in the post-communist milieu.

POL S 422 International Environmental Politics Seminar (5) I&S Study of the practical and theoretical challenges associated with global ecological interdependence. Examination of international treaties and institutions, state, and nonstate actors with an emphasis on the emerging concept of sustainability.

POL S 423 National Security of Japan (5) I&S Changing landscape of Japan's national security concerns: actors, institutions, and circumstances that have brought issues of defense and rivalry to the center stage of Japanese politics. Topics include nationalism, militarization, pacifism, United States-

Japan security alliance, Sino-Japanese competition, constitutional revision, collective defense, and spy satellites. Offered: jointly with JSIS A 415.

POL S 424 International Relations of Japan (5) I&S. *Pekkanen* Comprehensive examination of Japan's international relations. Covers issues such as trade, security, environment, aid, and human rights. Investigates Japan's participation in international organizations, including the UN, World Bank, IMF, and WTO. Examines Japan's relations with the United States, the European Union, Asia, Latin America, Africa, and other regions. Offered: jointly with JSIS A 437.

POL S 425 Political Psychology and War (5) I&S. *J. MERCER* Explores how political scientists use psychology to address questions of war and peace.

POL S 426 World Politics (5) I&S The nation-state system and its alternatives, world distributions of preferences and power, structure of international authority, historical world societies and their politics. Offered: jointly with JSIS B 426.

POL S 427 International Political Economy (5) I&S Examines major theoretical problems, substantive issues, and schools of thought in international political economy (IPE), including issues of trade, production, and finance. Preparation for critical analysis of dilemmas entailed in establishing and maintaining an instrumentally effective and ethically acceptable IPE system.

POL S 428 Military Intervention (5) I&S Historical and theoretical analysis of military intervention in the post-World War II era. Considers how and why interventions occur and evaluates intervention as a foreign-policy response.

POL S 429 Political Parties in Japan and East Asia (5) I&S. *R. Pekkanen* Focus on political parties in Japan. Combines theoretical readings on political parties with intensive study of Japanese political parties. Offered: jointly with JSIS A 436.

POL S 430 Civil-Military Relations in Democracies (5) I&S. *E. Kier* Explores issues of civil-military relations in the United States including debates about the garrison state hypothesis; military advice on the use of force; the civil-military "gap"; and

issues of race, gender, and sexual orientation in the military. Offered: jointly with LSJ 431.

POL S 431 International Relations in the Middle East (5) I&S Study of domestic sources of foreign policy in the Middle East; politics of oil; the East-West rivalry in the arena; and conflict and collaboration among the local powers.

POL S 432 Political Islam and Islamic Fundamentalism (5) I&S. *Robinson* Study of resurgence, since mid-1970s, of political Islam and what has come to be called Islamic fundamentalism, especially in the Middle East. Topics include the nature and variety of political Islam today, causes and implications of the current resurgence, and comparison with previous resurgences. Offered: jointly with JSIS B 406.

POL S 433 International Relations in Southeast Asia (5) I&S Analysis of the problems affecting relations among the countries of Southeast Asia.

POL S 434 International Relations of South Asia (5) I&S Interrelationships of domestic, interstate, and extraregional forces and their effects upon the resolution or expansion of interstate conflicts in South Asia. Offered: jointly with JSIS A 434.

POL S 435 Japanese Government and Politics (5) I&S Government and politics of Japan with emphasis on the period since 1945. Offered: jointly with JSIS A 435.

POL S 436 Ethnic Politics and Nationalism in Multi-Ethnic Societies (5) I&S Provides a broad theoretical base, both descriptive and analytical, for the comparative study of ethnicity and nationalism. Examples drawn from ethnic movements in different societies. Some previous exposure either to introductory courses in political science or to courses in ethnicity in other departments is desirable. Offered: jointly with JSIS B 436.

POL S 437 Politics in Scandinavia (5) I&S. *C. INGEBRITSEN* Twentieth-century politics in Scandinavia. How Scandinavian countries have been governed. Costs and consequences of their governmental style and its uncertain future. Optimal size of polities, problems of mature welfare states, process of leadership and representation in

multipart systems, decline of political parties.
Offered: jointly with SCAND 437.

POL S 438 Politics in France (5) I&S Study of contemporary France. Structures of government in the Fifth Republic; nature of French voting behavior and evolution of the bipolarized political party system; behavior of political interest groups; training of France's administrative elite and functioning of the state bureaucracy; dynamics of policy-making.

POL S 439 Politics of Divided Korea (5) I&S Governments, politics, and economy of South and North Korea, the inter-Korea relations, and the two Koreas' relationship with the major powers - especially the United States - with emphasis on the post-cold war period. Offered: jointly with JSIS A 439.

POL S 440 European Fascism (5) I&S Analysis of fascism as revolutionary movement and type of political system in post-World War I Europe: Hitler's Third Reich, Mussolini's Italy, and Vichy France. Consideration of dynamics of resistance, policies that produced Holocaust, and questions raised at trials of fascist leaders in Nuremberg and elsewhere.

POL S 441 Government and Politics of Russia (5) I&S Ideological and historical bases of Soviet politics; Leninism; Stalinism; Gorbachev's perestroika and the collapse of the USSR; the role of Yeltsin; problems of Russian state-building, market reform, and democratic transition; political parties and civil society; the relationship between the center and the regions; the problem of Russian national identity.

POL S 442 Government and Politics of China (5) I&S *S. WHITING* Post-1949 government and politics, with emphasis on problems of political change in modern China. Offered: jointly with JSIS A 408.

POL S 443 Comparative Political Societies (5) I&S Analyses of modern and premodern types of stable political society; special attention to contemporary representative democracy.

POL S 444 Revolutionary Regimes (5) I&S Analysis of the several types of political regimes concerned with effecting fundamental social change; emphasis on the twentieth century.

POL S 445 Politics and Society in Eastern Europe (5) I&S Political and social issues in lands east of the Elbe, treating some historical problems but focusing particularly on developments since 1945. Includes all communist states of Eastern Europe and their successors. Offered: jointly with JSIS A 490.

POL S 447 Advanced Seminar in Comparative Politics (5, max. 10) I&S Selected comparative political problems, political institutions, processes, and issues in comparative perspective. Strongly

POL S 448 Politics of the European Union (5) I&S Examines the origins, structures, and political dynamics of the European Union. Attention given to theories of integration, to relations between the European Union and member states, and to the role of the European Union in world politics.

POL S 449 Politics of Developing Areas (5) I&S Comparative study of problems of national integration and political development in the new states of Asia and Africa.

POL S 450 Political Parties in Democratic Systems (5) I&S Examines political parties in three different and interrelated aspects: party organizations; party in the electorate; and the party in government. How parties aggregate and represent interests. Parties at different points in time and in different states around the world. Offered: jointly with JSIS B 451; W.

POL S 451 Communication Technology and Politics (5) I&S Employs some core concepts of political communication and theories of democracy to examine the emerging role of information and communication technologies in candidate and issue campaigning; online voting; protest and advocacy movements; law-making and electronic governance in the United States and internationally. Offered: jointly with COM 407.

POL S 452 Mass Media and Public Opinion (5) I&S Examines the foundations of the idea of public opinion in a democratic environment and the role of mass communication in the organization, implementation, and control of that opinion. Considers these relationships from the perspectives of societal elites, media, and citizens. Offered: jointly with COM 414.

POL S 453 The State Legislature (5) I&S Study of American state legislatures, with special reference to Washington State legislature. Student must spend several Fridays in Olympia when the legislature is in session. Those desiring a more extensive involvement with the legislature should enroll in the political internship.

POL S 454 Political Communication Seminar (5, max. 10) I&S Contemporary topics studying how communication affects citizen engagement with public life. Offered: jointly with COM 411.

POL S 456 Institutional Failure (5) I&S R. THORPE Examines why political institutions fail to achieve their goals or operate in a manner they were originally intended to, and the consequences of these failures. Topics include the national security establishment, the drug war, concentrated poverty, mass incarceration, and inner-city schools. Offered: jointly with LSJ 456.

POL S 457 Topics in Labor Research (5, max. 10) I&S Analysis of the post-World War II decline of national labor movements and strategies employed to reverse this trend. Requires a major research project on organizing, bargaining, or another question in labor studies. Prerequisite: either POL S 249, HIST 249, or SOC 266. Offered: jointly with HSTCMP 457.

POL S 460 Political Economy of the European Union (5) I&S J. CAPORASO Historical foundation of the European Economic Community; major phases of its development; theoretical explanations for European integration.

POL S 461 Mass Media Law (5) I&S Survey of laws and regulations that affect the print and broadcast media. Includes material on First Amendment, libel, invasion of privacy, freedom of information, copyright, obscenity, advertising and broadcast regulation, and matters relating to press coverage of the judicial system. Offered: jointly with COM 440.

POL S 462 The Supreme Court in American Politics (5) I&S Explores the US Supreme Court as a political institution. Topics include processes that bring issues before the court, influences on judicial decision making, the impact of the court on democratic processes, the role of the court in constitutional development, and the court's interactions with other branches.

POL S 464 The Politics of American Criminal Justice (5) I&S Political forces and value choices associated with the enforcement of criminal law. Distribution of resources among participants in the criminal justice system (e.g., police, attorneys, defendants, and judges). Understanding and evaluation of the interaction of criminal justice processes with the political system.

POL S 465 Law and Public Policy in the United States (5) I&S Relationship between law and public policy, with particular attention to problems of social, economic, and political change. Considers legal and constitutional processes as they relate to such problems of public policy as race relations, the environment, and the economy.

POL S 467 Comparative Law in Society (5) I&S Legal systems around the world as they actually work in their respective political, social, and economic contexts. Emergence and development of European legal systems, legal customs at variance with those of Europe, problems of legal processes in the modern state.

POL S 468 Comparative Media Systems (5) I&S Provides students an understanding of policies that shape national communication processes and systems. Uses comparative analysis to identify both similarities and differences among media structures of nations at different levels of development. Primary emphasis on broadcast media. Offered: jointly with COM 420/JSIS B 419.

POL S 469 Law and Rights in Authoritarian Regimes (5) I&S S. WHITING Explores role of law and courts and nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law" promotion. Offered: jointly with JSIS B 469/LSJ 469.

POL S 470 Public Bureaucracies in the American Political Order (5) I&S Growth, power, and roles of governmental bureaucracies in America: conflict and conformity with American political thought, other political institutions, and the public.

POL S 471 Politics of Risk (5) I&S May Examines risks that occur infrequently but have catastrophic impacts, including health and environmental harms,

terrorism, and natural disasters. Considers social science theorizing about risks, how risks enter the policy agenda, and political and policy responses to different risks within the United States.

POL S 472 Electoral Systems (5) I&S *R. Pekkanen*

Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with JSIS B 472.

POL S 473 Decision-Making in Politics (5) I&S

Process of decision-making in politics at elite and mass levels, comparison of approaches based on the comprehensive rationality of decision makers with approaches based on limitations on the cognitive capacities of decision makers. Applications to real decision-making situations.

POL S 474 Government and the Economy (5) I&S

Interaction between politics and the economy. Impact of policy makers on economic performance. Models of partisan and political business cycles. Concepts of economic voting. Marxist theories of modern capitalist economics.

POL S 475 Public Choice (5) I&S *A. GILL* Problems and prospects for collective action in a political democracy. Designing rules and institutions for effective central authority and effective constraints on governmental power. Social choice theory and game theory.

POL S 476 Strategy in Politics (5) I&S Explores the problem of finding fair methods for making social decisions, and examines alternative methods of social choice. Emphasis on the importance of agenda control for outcomes, and the implications of theories of social choice for common interpretations of concepts such as democracy and the general will.

POL S 477 African Political Development (5) I&S

Topics in contemporary African politics related to development of the African state in comparative perspective, including state formation; nationalism and the struggle for independence; civil wars, genocide, and under-development; democratic transition, elections, and voting; economic growth; film and literature; gender and ethnicity; and corruption and terrorism. Prerequisite: POL S 204.

POL S 479 Contemporary Central Asian Politics (5) I&S *Radnitz*

Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with JSIS A 479.

POL S 480 Comparative Politics and Korea Studies (5) I&S *Ha*

Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with JSIS A 466.

POL S 481 Big City Politics (5) I&S

Contemporary big city politics, focusing on Seattle and the largest 25 cities. Social, economic, and political trends that have shaped characteristics of large American cities. Distribution and use of economic and political power among parties and groups. Future of large cities and politics of change.

POL S 487 Political Science Honors Seminar (5) I&S

Intensive and advanced studies in various aspects of political science. Open only to participants in the Political Science Honors program. Offered: Sp.

POL S 488 Honors Thesis Design (5-) I&S

Instruction in Honors Thesis research design and methods. Required for Political Science Honors. Offered: A.

POL S 489 Honors Thesis Writing (-5)

Research and writing of thesis under supervision of a faculty member. Required for Political Science Honors. Prerequisite: minimum grade of 3.3 in POL S 488. Offered: W.

POL S 495 Study Abroad: Political Science (1-10, max. 20) I&S

Political science courses taken through a UW approved study abroad program for which there are no direct UW equivalents. Specific content varies and must be individually evaluated.

POL S 496 Undergraduate Internship (2-5, max. 15)

Students serving in approved internships. Credit/no-credit only.

POL S 497 Political Internship in State Government (5, max. 20) Students serving in approved internship program with state government agencies.

POL S 498 The Washington Center Internship (15) Full-time academic internship with the Washington Center in Washington, DC. Includes internship activities, academic seminar, assemblies, and related activities. Credit/no-credit only.

POL S 499 Undergraduate Readings and Research (1-5, max. 20) Intensive study with faculty supervision.

POL S 500 Political Research Design and Analysis (5) Major quantitative methods of empirical research in political science. Primary emphasis on research design, data collection, data analysis, and use of computers.

POL S 501 Advanced Political Research Design and Analysis (5) Testing theories with empirical evidence. Examines current topics in research methods and statistical analysis in political science. Content varies according to recent developments in the field and with interests of instructor. Offered: jointly with CS&SS 501.

POL S 502 Qualitative Research Methods (5) Introduction to qualitative methods in political science, emphasizing practical experience with techniques. Readings and exercises cover research design, multiple methods, varieties of qualitative data, measurement and validation, participant observation, interviewing, and content analysis. Research decision-making issues include analytical strategies, presentation of data, ethics, epistemology, and theory-building.

POL S 503 Advanced Quantitative Political Methodology (5) Theory and practice of likelihood inference. Includes probability modeling, maximum likelihood estimation, models for binary responses, count models, sample selection, and basis time series analysis. Offered: jointly with CS&SS 503.

POL S 504 Multi-Method Field Research (5) *J. Long Iv* Provides training in how to design and implement multi-method field research in American, comparative, and international politics, covering qualitative/ethnographic approaches; survey design, implementation, and analysis; and the design and

implementation of field experiments and randomized impact evaluation. Prerequisite: POL S 510/CS&SS 510

POL S 505 Comparative Politics Core (5) Modern theories, approaches, and methods in the study of comparative politics.

POL S 509 Political Theory Core (5, max. 10) Central themes in political theory and the works of major political theorists, past and present.

POL S 510 Maximum Likelihood Methods for the Social Sciences (5) *C. ADOLPH* Introduces maximum likelihood, a more general method for modeling social phenomena than linear regression. Topics include discrete, time series, and spatial data, model interpretation, and fitting. Prerequisite: POL S 501/CS&SS 501; POL S 503/CS&SS 503. Offered: jointly with CS&SS 510.

POL S 511 Seminar in Ethical and Political Theory (5) Ethical writings of major political philosophers. Coherent themes arising from these works and assessment of their impact on concepts of politics.

POL S 512 Time Series and Panel Data for the Social Sciences (5) *C. Adolph* Extends the linear model to account for temporal dynamics and cross-sectional variation. Focuses on model selection and real-world interpretation of model results. Topics include autoregressive processes, trends, seasonality, stationarity, lagged dependent variables, ARIMA models, fixed effects, random effects, cointegration and error correction models, panel heteroskedasticity, missing data in panel models, causal inference with panel data. Recommended: Graduate level coursework in linear regression and social science research design. Basic familiarity with or willingness to learn the R statistical language. Offered: jointly with CS&SS 512.

POL S 513 Issues in Feminist Theory (5, max. 10) Contemporary issues in feminist theory as they affect studies of women, politics, and society. Content varies according to recent developments in the field and the research interests of the instructor.

POL S 514 Selected Topics in Political Theory (5, max. 15) Selected topics, historical and conceptual, national, regional, and universal. Prerequisite: permission of instructor.

POL S 515 Political Theory Research Seminar (5)

Survey of paradigmatic research approaches in political theory through the exploration of a theme (canonical text, theoretical concept, and specific topic). Methods covered may include rational choice, psychoanalytic, Straussian, Marxian, and feminist approaches. Students carry out substantive theoretical research.

POL S 516 Special Topics in American Political Thought (5, max. 15) Special topics or themes in the development of American political culture.

POL S 517 Marxism and Critical Theory (5) Works of Marx and Engels as well as selected works of twentieth-century Marxist and critical theorists. Themes such as Marx's method, twentieth-century interpretations of Marx, and relationship of twentieth-century theorists to their eighteenth- and nineteenth-century forebears.

POL S 519 Modern Scandinavian Politics (5) Analyzes the political, economic, and historical development of Sweden, Norway, Denmark, Iceland, and Finland from World War II to the present. Readings focus on domestic and foreign policies that distinguish these countries from other advanced industrial societies. Offered: jointly with SCAND 519.

POL S 520 Seminar on Russian Foreign Policy (3) Selected topics in the development and objectives of the foreign policy of the Russian Federation.

POL S 521 International Relations Core (5) Key theories, concepts, and debates in the study of world politics and international relations. Provides an overview of the field and prepares students for the IR comprehensive exam.

POL S 522 International Political Economy (5) Theories of international political economy. Focuses on the emergence and development of the modern world system, the transition from feudalism to capitalism, and the institution of the nation-state system. Examines the political economy of trade, investment, and the international division of labor from a variety of theoretical perspectives. Prerequisite: POL S 521.

POL S 524 International Security (5) E. KIER Introduces some of the major debates concerning the use of force in international politics. Covers

traditional issues in international security such as alliances and the causes of war, as well as some of the new and important questions, such as explaining war outcomes and war termination.

POL S 525 International Law and Institutions (5) K. LITFIN Inputs of international law into the decisional process in foreign policy. Effect of policy on law. Relevant roles of individuals and institutions in routine and crisis situations.

POL S 526 The Security of China (5) Bachman Examines how the Chinese state conceptualizes its national security interests and how it pursues strategies designed to achieve those interests. Topics include use of force, military modernization, civil-military relations, and defense industrialization. Offered: jointly with JSIS A 526.

POL S 527 Special Topics in International Relations Research (5, max. 25) Examination of current topics in the theory and practice of world politics. Content varies according to recent developments in the field and research interests of the instructor.

POL S 530 Transatlantic Relations: The United States and Europe in World Politics (3) Fulfills required component of "American Module" of Transatlantic Studies program. Addresses political dynamics of relations between United States and Europe from American republic's founding to post-Cold War era. Limited to students in Transatlantic Studies program.

POL S 532 The Chinese Political System (5) S. WHITING Examination of key approaches, interpretations, and secondary literature in the study of contemporary Chinese politics. Offered: jointly with JSIS A 532.

POL S 533 Seminar on Contemporary Chinese Politics (5) Research on selected problems in contemporary Chinese politics. Prerequisite: POL S 532, or permission of instructor. Offered: jointly with JSIS D 533.

POL S 535 International Relations of Modern China (5) Foreign policy of the People's Republic of China: historical antecedents; domestic and international systemic determinants; and Chinese policies toward major states, regions, and issues. Prerequisite: a course on contemporary Chinese politics or history,

or permission of instructor. Offered: jointly with JSIS A 535.

POL S 537 Approaches to East European Politics (3-5) Selected concepts and methodologies useful for the analysis of politics and social structure in the socialist countries of east-central and southeastern Europe. Prerequisite: permission of instructor. Offered: jointly with JSIS A 563.

POL S 538 Government and Politics in the Middle East and North Africa (5) Political change in the area within the context of comparative politics; breakdown of traditional political systems; new range of choice expressed in competing ideologies; governmental and nongovernmental instrumentation of change; and problems of international relations and regional conflict and integration.

POL S 539 International Relations of Northeast Asia (5) Comprehensive survey of contemporary international relations of Northeast Asia with emphasis on Russia, Japan, China, and the United States. Multidisciplinary approach placing contemporary problems in historical context, drawing on modern social science theories. Connections between defense and economics are examined. Prerequisite: permission of instructor. Instructors: Hellmann Offered: jointly with JSIS A 551.

POL S 540 Problems in South Asian Politics (3) Research problems in contemporary Indian politics.

POL S 541 Institutions and Institutional Change in the Soviet Union, Russia, and the Newly Independent States (5) Critical appraisal of the principal theories and research methods dealing with the development of the Soviet state from 1917-1991 and the formation of the newly independent states after the Soviet collapse.

POL S 542 Seminar: State and Society (5) Migdal Examines the mutually conditioning relationship between states and the societies they seek to govern. Studies states as large, complex organizations and their interactions with society on different levels. Shows that interactions on any level affect the nature of the state on other levels as well. Offered: jointly with JSIS B 542.

POL S 543 Latin American Politics (5) Theories of authoritarianism, corporatism, democratization, and revolution in Latin America. Explores role of international and domestic economic factors shaping politics and the effect of politics on economic development. Examines elite behavior and grassroots social movements.

POL S 544 Problems in Comparative Government (5, max. 15) Selected problems in the comparative analysis of political institutions, organizations, and systems.

POL S 547 Politics of Reform (5) Examines cases of reform in democratic political systems, e.g., Roosevelt's New Deal, Allende's Chilean "revolution," Mitterand's socialist experiment in France, and the Thatcher government in Britain.

POL S 548 Comparative Political Parties (5) Role of political parties in the modern state. Similarities and differences in origins and development of political parties and functions they perform, both in established democracies and in developing countries.

POL S 549 Problems of Political Development (5) Concepts of development and modernization, with particular attention to their political dimensions and their application to various historical and contemporary cases.

POL S 550 American Politics Core (5) Systematic survey of the American government and politics literature; focuses on national politics.

POL S 551 Political Communication (5) Surveys classic works and new directions in political communication, including functionalist, structuralist, constructivist, network, and comparative approaches, reflecting a range of methods. Examines political organizing, electoral and legislative processes, civic (dis) engagement, media and politics, public deliberation and opinion formation, political identity and discourse. Offered: jointly with COM 551.

POL S 552 Special Topics in Political Communication (5, max. 10) Examination of current topics in the theory and practice of political communication.

POL S 553 Public Opinion (5) *C. PARKER* Selected problems in opinion formation, characteristics, and role of public opinion in policy-making process.

POL S 554 Legislative Politics (5) Selected problems in legislative processes and leadership, state and national.

POL S 555 American Politics Topics (5, max. 10) Examination of current topics in the theory and practice of American politics. Content varies according to recent developments in the field and research interests of the instructor.

POL S 556 American Political Development (5) Examination of leading works in, and theories of, American political development. Topics include the development approach itself; critical junctures in U.S. political history; key changes in institutions, the American state, the representation of interests and party politics; and the relevance of development studies to current politics.

POL S 557 United States Party System (5) Examines the institutional and behavioral foundations of party politics in the United States, emphasizing key historical patterns of party system development and the major scholarly approaches to the study of the American parties and party politics.

POL S 559 Special Topics in Political Methodology (5, max. 10) Examination of current topics on the theory and practice of political methodology. Course content varies according to recent developments in the field and the research interests of the instructor.

POL S 560 Industrialization and International Relations (5) *Ha* Examines internal-external linkage with a focus on industrialization and international relations. Comparative perspective on the question of how industrialization shapes distinctive international perspectives in terms of perception, strategies, and foreign policy behaviors. Countries covered: South Korea, Japan, Prussia, the Soviet Union, and China. Offered: jointly with JSIS A 552.

POL S 561 Law and Politics (5) *McCann, Lovell.* Points and levels at which law and politics intersect. What is distinctive about legal forms; how these legal forms influence, and are influenced by, politics. Conceptions of law, courts and public policy, law and

bureaucracy, civil and criminal justice, and the legal profession.

POL S 562 Law, Politics, and Social Control (5) Explores works of social scientists and lawyers regarding these competing conceptions of social control: as the seamy side of law - reinforcing equitable patterns of domination and disciplining deviants; as law embodying society's basic values, articulating minimum rules for harmonious social interaction.

POL S 563 Supreme Court in American Politics (5) Explores the tendency in the United States to turn to the Supreme Court to provide constitutional solutions for some of our biggest social, economic, and political problems. Focuses on the controversies concerning the legitimacy and capacity of the Supreme Court to intervene in American politics and public policy.

POL S 564 Law and the Politics of Social Change (5) Explores the many ways that law figures into the politics of social struggle and reform activity. Analyzes law in terms of particular state institutions (courts, agencies), professional elites (lawyers, judges), and especially cultural norms ("rights" discourses) that are routinely mobilized by reform-movement activists.

POL S 565 Special Topics in Public Law (5, max. 10) Examination of current topics on the theory and practice of public law. Content varies according to recent developments in the field and the research interests of the instructor.

POL S 566 Comparative Law and Politics (5) *R. CICHOWSKI* Study of the interaction between law and politics, at both the macro and micro levels of politics, and discussion of research drawing from a wide array of geographical settings. Examination in comparative context of whether macro-structures are autonomous from underlying social structures of power and interest in the micro-level.

POL S 569 Law and Rights in Authoritative Regimes (5) Explores role of law and courts and the nature of rights in authoritarian regimes. Questions addressed include why authoritarian regimes promote "rule-of-law", who is empowered by law, and the political consequences of "rule-of-law promotion. Offered: jointly with JSIS B 569.

POL S 570 The American Racial State (5) Explores the mutually constitutive relationship between race and American political institutions, beginning with theories of race and racial constructions, race-making and nation-making, racial triangulation, and intersectionality. Examines various institutions and public policies as manifestations of the American racial state, focusing on the epistemological challenges of identifying race, racism, and racialization.

POL S 571 American National Institutions (5) Answers the question, "Do institutions matter?" Surveys American national institutions from theoretical perspectives, focusing on how they affect the manner in which decisions are made. Employs cross-institutional perspective of American institutions.

POL S 572 Electoral Systems (5) *R. Pekkanen* Explores a fundamental link between citizens and political representation: how electoral systems shape party systems, what kinds of people become candidates, how parties work, representation, and policy. Covers effects and mechanics of the various voting systems. Offered: jointly with JSIS B 572.

POL S 573 Topics in Public Policy (5, max. 10) Specialized research topics with a policy process or related theoretical content.

POL S 574 Environmental Regulation Policy (5) Scholarly and practical aspects of environmental regulation. Examines literature concerning regulatory policy design, policy instruments, federalism, compliance, and enforcement. Studies selected federal, state, and other nations' environmental policies. Participants are expected to have a good understanding of American policy processes.

POL S 575 Public Policy Processes (5) Covers political science research about policy processes. Research seminar addressing frameworks and perspectives on policy processes as they concern issue emergence, agenda dynamics, policy subsystems, policy learning, and implementation.

POL S 577 The Politics of Social Movements (5) Theoretical inquiry directed to questions of collective action and political tactics by social movement groups. Case studies include labor, civil

rights, women's, environmental, and other movements in twentieth-century United States.

POL S 578 Health Politics and Policy (5) Introduces central themes of health-policy research: health is not healthcare and politics has much to do with why our healthcare system works as it does. Investigates how social science helps us understand health issues.

POL S 579 Contemporary Central Asian Politics (5) *Radnitz* Examines the politics of contemporary post-Soviet Central Asia. Analyzes issues relevant to the region in comparative perspective, including democratization, religion, terrorism, civil society, economic reform, ethnic identity, and international influences. Uses theory to shed light on current policy debates. Offered: jointly with JSIS A 579.

POL S 580 Comparative Politics and Korea Studies (5) *Ha* Approaches Korean politics, political economy, and society from a comparative perspective. Examples of major comparative questions based on Korean case include democratization, strong state dynamics, civil society, and impact of globalization. Offered: jointly with JSIS A 566.

POL S 582 Institutional Analysis (3/5) Social change and property rights theory. Exploration of long-term secular change through works whose approaches derive from neoclassical economics and analytical Marxism. Evolution and transformation of property rights over land, labor, and capital and the consequences of the property rights structure for political and economic institutions.

POL S 583 Economic Theories of Politics (5) Problems of public goods provision and collective action. Collective action theories and applications as well as critical review of the concept of rationality.

POL S 584 Comparative Political Economy (5) Overview of current developments in comparative political economy. Topics may include globalization, the welfare state, partisan models of economic policymaking, economic development, and trade.

POL S 586 Topics in International Political Economy (5, max. 10) Examination of current topics in the theory and practice of international political economy. Content varies according to recent

developments in the field and research interests of the instructor.

POL S 587 Politics of Urban Reform (5)

Interpretations of urban reformers at turn of this century and during 1960s and 1970s. Historical and political science literature on the subject.
Prerequisite: permission of instructor.

POL S 588 Special Topics in Comparative Political Economy (5, max. 10) Examination of current topics in the theory and practice of comparative political economy. Content varies according to recent developments in the field and research interests of the instructor.

POL S 589 Special Topics in Political Economy (3-5, max. 10) Evaluating research in political economy as well as developing research problems. Topics vary with instructor and with current problems in the literature.

POL S 590 Seminar in Political Behavior (5, max. 10) Analysis of behavioral research in selected fields of political science.

POL S 593 Theories of Decision Making (5) Explanation of political decisions using models of such theoretical processes as preference formation, learning, heuristics, noncooperative games, collective action, agenda manipulation, and coalition formation. Examination of competing notions of political rationality and irrationality and criteria for their evaluation. Strategies for design of decision research.

POL S 595 College Teaching of Political Science (1)

POL S 597 Directed Readings (1-10, max. 10) Intensive reading in the literatures of political science, directed by the chair of the doctoral Supervisory Committee. Credit/no-credit only.

POL S 598 Independent Writing I (1-5, max. 5) Supervised research and writing for graduate students completing the MA essay of distinction.

POL S 600 Independent Study or Research (*-)

POL S 800 Doctoral Dissertation (*-)

PSYCHOLOGY

APPLIED CHILD AND ADOLESCENT PSYCHOLOGY

PSYCAP 510 Conceptual Foundations of Developmental Psychopathology: Risk and Protective Factors (3) *L. Katz* Introduces developmental psychopathology focusing on risk factors and vulnerabilities. Uses a developmental psychopathology perspective and bioecological model to consider the child within the context of its environment. At the individual level, examines temperament/personality, emotion, and stress response. At the contextual level, examines various risk and protective factors. Offered: AWPpS.

PSYCAP 512 Social and Emotional Development (3) *L. Katz* Provides a comprehensive understanding of key aspects of social and emotional development during childhood and adolescence. Topics include temperament, attachment, emotional processes, the self, gender, identity and prosocial behavior. Reviews the influence of social contexts such as family and peers. Offered: AWPpS.

PSYCAP 514 Child and Adolescent Psychopathology: Assessment and Diagnosis (3) *L. Katz* Introduces various forms of child and adolescent psychopathology and addresses methods of assessment and diagnosis of psychopathology in children and adolescents. Focuses on major DSM-V diagnostic categories, including disorders of behavior and emotion, disorders of cognition, developmental disorders, and problems related to physical and mental health. Offered: AWPpS.

PSYCAP 516 Approaches to Child and Adolescent Treatment (3) *L. KATZ* Introduces various forms of treatment for child and adolescent psychopathology. Provides students comprehensive information and practical tools related to empirically supported treatment practices for children and adolescents experiencing a range of emotional and/or behavioral problems. Offered: AWPpS.

PSYCAP 518 Ethics and Law in Clinical Settings: Children, Adolescents and Families (1-3) *G. Sedlar* Ethical and legal dilemmas for mental health professionals in their everyday work with children, adolescents, and their families. Ethical issues

considered with respect to clinical caseloads. Case consultation provided. Offered: AWSpS.

PSYCAP 520 Critical Thinking about Research and Ethics (3) *L. Katz* Focuses on key concepts in experimental design and ethical conduct of research with children and ethics. Students learn how to evaluate research and how to design experimental and quasi-experimental studies. Offered: AWSpS.

PSYCAP 522 Evidence Based Practices: Extreme and Complex Cases (3) *Lynn Fainsilber Katz* In-depth review of the range of evidenced-based treatments (EBTs) appropriate for complex cases - e.g., older children and adolescents with behavioral and psychiatric disorders who are involved with multiple service systems (e.g., juvenile justice, chemical dependency, etc.) . Offered: AWSpS.

PSYCAP 524 Evidence Based Practices: CBT for Anxiety and Mood Disorders (3) *Lynn Fainsilber Katz* In-depth, hands-on introduction to evidence based, cognitive behavioral treatments for children and adolescents with anxiety-related disorders. Specific training provided in Trauma-Focused Cognitive Behavior Therapy. Includes didactics, skills demonstration and practice, and assessment. Offered: AWSpS.

PSYCAP 526 Evidence Based Practice: Parenting Interventions (3) *Lynn Fainsilber Katz* Provides a solid foundation for implementing a specific evidence-based parent training approach, "Helping the Noncompliant Child." Includes didactics (readings, lecture and in-class discussion) , skills demonstration and practice (modeling, role-playing, and out-of-class rehearsal) , and assessment (skills check-out, presentation, written assignments) . Offered: AWSpS.

PSYCAP 528 Multicultural Issues in Counseling Settings: Children, Adolescents and Families (1) This course will cover key principles, theories and applications of multiculturalism and will examine several aspects of various cultural experiences as they impact the client, therapist/counselor and the therapist/counselor-client relationship. Offered: AWSpS.

PSYCAP 530 Evidence-Based Practices in Counseling Settings: Trauma-Focused CBT (3) *Lynn Fainsilber Katz* In-depth, hands-on introduction to evidence-

based treatment for children and adolescents who have experienced trauma. Evidence-based approaches for treating trauma. Offered: AWSpS.

PSYCAP 532 Principles of Assessment and Behavior Change (3) Key conceptual principles of behavior change. Covers the "nuts and bolts" that underlie most evidence-based therapeutic interventions for children and adolescents, such as positive and negative reinforcement, response cost, and exposure. Offered: AWSpS.

PSYCAP 534 Counseling Skills with Individuals and Families (3) *G. Sedlar* Basic counseling skills. Conducting an intake and learning the verbal and nonverbal skills that develop rapport and contribute to the formation of a therapeutic alliance, including sensitivity to individual differences, attending skills, reflective listening skills, and basic motivational interviewing skills. Offered: AWSpS.

PSYCAP 536 Evidence-Based Practices in Counseling Settings: Cultural Humility and Treatments for Trauma Disorders (3) Assessing and treating trauma in a group-based setting. Training on Cognitive Behavioral Interventions for Trauma in Schools (CBITS) . Enhancing Cultural Humility of providers delivering Evidence-Based Programs (EBP) . Students adapt treatment to match client presentation, ethnicity, culture, socioeconomic status, and treatment setting. Offered: AWSpS.

PSYCAP 560 Practicum Course in Applied Child and Adolescent Psychology: Prevention and Treatment (1-7, max. 28) *Lynn Fainsilber Katz* Students integrate didactic and theoretical training with applied clinical experience in a real-world clinical setting. Provides students opportunities to discuss ethical, practical, and professional topics related to their practicum placements and clinical work in general. Offered: AWSpS.

CLINICAL PSYCHOLOGY

PSYCLN 501 Issues in Clinical Psychology (1, max. 3) Personal and professional issues in clinical psychology. Required for all first-year graduate students majoring in clinical and child-clinical psychology. Prerequisite: graduate major standing in clinical psychology. Instructors: Smith Credit/no-credit only. Offered: AW.

PSYCLN 502 Child Clinical Psychology (4) Issues and content of child clinical psychology, promotion of student's beginning work in research. Prerequisite: graduate major or minor standing in child-clinical psychology.

PSYCLN 510 Research Methods in Clinical and Community Psychology (4) *Lengua* Addresses issues concerning the design and implementation of research in clinical and community psychology. Topics include validity; reliability; experimental, quasi-, and non-experimental designs; causal inference; interpretation of data; and research ethics. Provides students with tools to evaluate research, develop hypotheses, and design rigorous empirical studies. Offered: A.

PSYCLN 511 Single Subject Design and Research (3) Single subject designs (reversal, multiple baseline, changing criterion) and their application to clinical cases. Prerequisite: graduate major standing in clinical psychology, or permission of instructor. Instructors: Kohlenberg Offered: W.

PSYCLN 513 Research Strategies in Clinical Psychology (1-2, max. 50) Group discussions of problems and continuing strategies for ongoing and future research projects. Prerequisite: Graduate standing in Psychology, or by permission of instructor. Credit/no-credit only. Offered: AWSpS.

PSYCLN 520 Psychological Assessment (3) Provides a foundation in the theory underlying adult assessment as well as training in specific adult assessment techniques. Focuses on behavioral and cognitive assessment. Prerequisite: permission of instructor.

PSYCLN 521 Assessment of Intelligence (5) Current theory and research on intelligence and intelligence testing; training in administration, scoring, and interpretation of major intelligence tests; ethical issues in assessment. Prerequisite: graduate major standing in child-clinical or clinical psychology, or graduate minor standing in child-clinical psychology. Instructors: King, Lengua Offered: Sp.

PSYCLN 522 Psychological Assessment of Children (5) Assessment techniques appropriate to children, including those for infants, special problems of preschool and school-age children; projective tests, family interviews, and target observational

assessment; training in administration of selected techniques. Prerequisite: PSYCLN 521 and permission of instructor.

PSYCLN 523 Approaches to Psychological Assessment (4) Problem-solving approach to psychological assessment; review of psychological tests and procedures and presentation of approaches to their clinical interpretation and use. Prerequisite: graduate major standing in clinical psychology. Offered: Sp.

PSYCLN 524 Clinical Personality Assessment (3) Use of objective personality inventories in the description of normal and abnormal personality and use of such information in case conceptualization and treatment planning. Minnesota Multiphasic Personality Inventory, Millon Clinical Multiaxial Inventory. Prerequisite: clinical psychology graduate standing. Instructors: Smith Credit/no-credit only.

PSYCLN 525 Practicum in Psychological Assessment (2) Demonstration and practice of selected psychological test procedures and interviewing skills. Concurrent registration in PSYCH 576 or PSYCH 578 required. Required for all first-year graduate students majoring in clinical and child-clinical psychology. Prerequisite: graduate major standing in clinical or child-clinical psychology and permission of instructor.

PSYCLN 530 Behavior Disorders (5) Major types of behavior disorders, with emphasis on clinical manifestations, relevant research, and theoretical perspectives. Required for all graduate students majoring in clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: Zoellner Offered: W.

PSYCLN 531 Developmental Psychopathology (4) Broad survey of major categories of child and adolescent disorders. Emphasis on scientific, empirical approach to description, classification, and research literature on these disorders. Required for all graduate students majoring in child clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Offered: AWSpS.

PSYCLN 532 Anxiety Disorders (3) *Zoellner* General topics related to primary anxiety disorders (panic, OCD, GAD, posttraumatic stress disorder, and

specific phobias) , including diagnosis, theory, and treatment.

PSYCLN 540 Systems of Psychotherapy (3) Theory and research of major systems of psychotherapy, including the psychodynamic, behavioral, cognitive, and family systems approaches as an introduction to subsequent practica in clinical psychology. Required for all graduate students majoring in clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: George Offered: A.

PSYCLN 541 Approaches to Child Treatment (4) Major approaches to child psychotherapy, including specific applications, issues in treatment, and research. Prerequisite: graduate major standing in child-clinical psychology, or permission of instructor. Offered: Sp.

PSYCLN 542 Behavior Change (5) Behavioral theory and behavioral approaches to treatment. Prerequisite: PSYCH 518 and permission of instructor. Instructors: Kohlenberg Offered: Sp.

PSYCLN 543 Evidence-based Treatments for Depression (3) *C. Fagan* Provides an introductory overview of two or more evidence-based treatments for depression (e.g., cognitive-behavioral therapy, behavioral activation, and/or Mindfulness-based Cognitive Therapy) . Prerequisite: Graduate standing in Psychology, or by permission of instructor. Credit/no-credit only. Offered: AWSpS.

PSYCLN 544 Behavioral Methods: Clinical Interventions (3) *M. Linehan* Provides students with basic skills required for competent practice of cognitive and behavioral therapies. Topics include behavioral skills training, cognitive restructuring, contingency management, and exposure-based procedures. Prerequisite: minimum second year graduate clinical psychology student.

PSYCLN 545 Introduction to Dialectical Behavioral Therapy (3) *Linehan* Introduces dialectical behavioral therapy, an empirically supported treatment approach for high risk clinical populations. Topics include mindfulness, dialectics, validation, behavioral therapy, and case conceptualization. Credit/no-credit only. Offered: A.

PSYCLN 546 Dialectical Behavior Therapy Skills Group Training (3) *Linehan* In-depth learning of skills training component of dialectical behavior therapy, an empirically supported treatment approach for high risk clinical populations. Topics include skills in mindfulness, emotion regulation, interpersonal effectiveness and distress tolerance. Credit/no-credit only. Offered: A.

PSYCLN 547 Methods in Suicide and Crisis Intervention (3) *Linehan* Provides a foundation for risk assessment and crisis intervention with suicidal individuals. Addresses risk factors for suicide across the age range, and methods for both behavioral interventions and crisis management with suicidal individuals. Also covers ethical issues. Offered: Sp.

PSYCLN 560 Minority Mental Health (3) Surveys topics on mental health and treatment of racial and ethnic minorities. Theory emphases include: models addressing ethnic identity, cross-cultural differences, models of culturally sensitive intervention. Practice emphases include unique psychotherapy strategies for: African-, Asian-, and Latino-Americans, and American Indians. Prerequisite: graduate clinical major standing in psychology, or permission of instructor. Instructors: George, Simoni

PSYCLN 561 Community Psychology (4) Overview of key issues and concepts in the field of community psychology. History of field and overview of different models used to conceptualize system-level mental health issues and delivery systems. Emphasizes theory and research rather than intervention. Prerequisite: psychology graduate student, or permission of instructor.

PSYCLN 562 Cross-Cultural Competency I (2) Focuses on development of multicultural competence in the provision of psychological services to meet APA guidelines for ethnic, linguistic, and culturally diverse populations. Students address personal development, increase their knowledge of diverse groups, and study effective models of intervention in working with clients of diverse backgrounds. Prerequisite: PSYCH 580. Instructors: George

PSYCLN 563 Cross-Cultural Competency II (2) Third in the graduate multicultural-competence sequence. Focuses on American ethnic minorities, multiracial children and families, social action, and

organizational development. Prerequisite: PSYCH 581. Instructors: George

PSYCLN 570 Advances in Clinical Psychology (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in clinical psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: George, Kohlenberg, Linehan, Smith, Zoellner

PSYCLN 571 Advances in Child Clinical Psychology (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in child clinical psychology. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: King, Lengua

PSYCLN 572 Seminar in Clinical Psychology (1-2, max. 30) Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission instructor. Instructors: George, Kohlenberg, Linehan, Simoni, Smith, Zoellner

PSYCLN 573 Seminar in Child Clinical Psychology (1-2, max. 30) Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: King, Lengua

PSYCLN 574 Independent Study in Affective Science (5) Designed to provide a broad overview of the field of affective science. The goal is to increase knowledge base and to facilitate the integration of concepts, methods, and scientific findings in affective science into scientific and clinical activities. Offered: AWSpS.

PSYCLN 575 Independent Study in Behavioral Neurosciences (5) Provide students with a broad overview of the field of behavioral neurosciences. Satisfies the requirement of the APA for graduate level training in biological aspects of behavior. Increases knowledge base and facilitates the integration of concepts, methods and scientific findings in behavioral neurosciences into scientific and clinical activities. Offered: AWSpS.

PSYCLN 576 Independent Study in Cognitive Science (5) Provides students with a broad overview of the

field of cognitive science. Designed to increase student knowledge base and to facilitate the integration of concepts, methods, and scientific findings in cognitive science into their scientific and clinical activities. Offered: AWSpS.

PSYCLN 577 Independent Study in Lifespan Development (5) Designed to provide students with a broad overview of developmental aspects of behavior, with a focus on lifespan development. The goal is to increase student knowledge base and to facilitate the integration of concepts, methods, and scientific findings in lifespan development into their scientific and clinical activities. Offered: AWSpS.

PSYCLN 580 Clinical Practica and Colloquium (1-3) C. *Fagan* Required of all clinical psychology graduate students seeing clients in the clinic. Clinical colloquium required of all second-year students, optional for others. Credit/no-credit only. Offered: AWS.

PSYCLN 581 Clinical Methods: Interviewing (2) *Fagan* Provides the foundation for developing good clinical skills. Enables students to conduct an initial clinical interview and generate a diagnostic formulation, problem list, and treatment plan after taking a complete history. Limited to and required of all second-year clinical psychology graduate students. Credit/no-credit only. Offered: A.

PSYCLN 582 Clinical Methods: Ethics (3) *Fagan* Enables students to acquire a thorough working knowledge of the American Psychological Association's Ethical Standards for Psychologists; an awareness of Washington state law as it affects psychologists and a knowledge of how to identify and solve ethical dilemmas. Limited to and required of all second-year clinical psychology graduate students. Credit/no-credit only. Offered: W.

PSYCLN 583 Clinical Supervision (4, max. 100) Supervised psychotherapy involving several individual clients. Separate consultations with instructor for intensive supervision of each case. Occasional meetings in small groups of instructors and students to discuss case material. Assigned readings appropriate to each case with opportunities to discuss these with instructor. Prerequisite: clinical psychology graduate standing and permission of instructor. Instructors: George, King, Kohlenberg,

Lengua, Linehan, Simoni, Smith, Zoellner Credit/no-credit only. Offered: AWSpS.

PSYCLN 585 Fieldwork in Clinical Psychology (1-5, max. 36) Prerequisite: second-year graduate major standing and permission of departmental faculty. Instructors: George, King, Kohlenberg, Lengua, Linehan, Simoni, Smith, Zoellner

PSYCLN 586 Dialectical Behavior Therapy Practicum (1-5, max. 60) This practicum class is a weekly DBT therapist consultation team meeting. Students are required to deliver individual and group DBT to high risk clients and to discuss cases and receive and provide feedback during team meetings. This class is one component of a larger 2-year practicum in which students are required to complete DBT Intensive Training and take a series of six graduate seminars to learn about DBT and its behavioral foundations. Credit/no-credit only. Offered: AWSpS.

PSYCLN 588 Anxiety and Traumatic-stressor Related Disorders Practicum (1-3, max. 30) *M. Bedard-Gilligan, L. Zoellner* Practicum offers supervised experience for advanced clinical psychology graduate students in standardized assessment and empirically-supported treatment for anxiety and traumatic stressor-related disorders. Recommended: This is one of our advanced specialty practica that follows the 2nd year sequence. It is preferred that PSYCLN 532 is taken before this class but not mandatory. Credit/no-credit only. Offered: AWSpS.

PSYCLN 589 LEARN Clinic Practicum (1-3, max. 20) *J. Quamma* Provides students training and practical experience in the evaluation of learning disabilities and Attention Deficit Hyperactivity Disorder (ADHD) in children, adolescents, and adults. Prerequisite: 3rd year clinical psychology graduate students and above who have completed graduate-level courses in assessment (including assessment of intelligence) and/or have significant experience in administration of cognitive tests (e.g., tests of intelligence such as the WISC or WAIS) . Credit/no-credit only. Offered: AWSpS.

PSYCLN 590 Parent-Child Practicum (1-3, max. 30) Students deliver Behavioral Parent Training and other evidence based treatments. Includes didactics, live observation of instructor, group and individual supervision. Students use a sliding scale fee structure to increase socioeconomic diversity among

clients served, and receive supervision on how to individualize treatment for each client, given his/her clinical presentation. Prerequisite: 3rd year clinical psychology graduate students and above who have completed graduate-level courses Credit/no-credit only. Offered: AWSpS.

PSYCLN 591 Consultation and Supervision (2) C. *Fagan* Introduces students to the competencies essential to providing consultation and supervision. Prepares students to take on roles of both consultants and supervisors-in-training as a step toward developing the necessary competence to eventually consult or supervise effectively as licensed psychologists. Prerequisite: 3rd year clinical grad and above students who have completed the Clinical Methods sequence. Credit/no-credit only. Offered: AWSpS.

PSYCLN 596 Advanced Clinical Practicum (1-6, max. 55) Advanced supervised training in specific empirically supported treatment approaches. Each practicum provides intensive training in a specific treatment, such as dialectical behavior therapy, functional analytic psychotherapy, acceptance and commitment therapy, mindfulness-based relapse prevention, and exposure treatment for anxiety disorders. Prerequisite: graduate standing in clinical psychology; PSYCH 593; permission of instructor. Instructors: Kohlenberg, Linehan, Smith, Zoellner Credit/no-credit only. Offered: AWSpS.

PSYCHOLOGY

PSYCH 101 Introduction to Psychology (5) I&S *Ann Culligan, Lauren Graham, Tabitha Kirkland* Surveys major areas of psychological science. Core topics include human social behavior, personality, psychological disorders and treatment, learning, memory, human development, biological influences, and research methods. Related topics may include sensation, perception, states of consciousness, thinking, intelligence, language, motivation, emotion, stress and health, cross-cultural psychology, and applied psychology. Offered: AWSpS.

PSYCH 200 Comparative Animal Behavior (3-5) NW Research methods and findings of comparative animal behavior, their importance to an understanding of human behavior; rationale for study of behavioral differences/similarities between

animal species, behavior viewed as part of adaptation of each species to its natural habitat. Not open for credit to students who have taken PSYCH 300.

PSYCH 201 Psychology of Performance

Enhancement (4) I&S Applications of psychological theories, research, and intervention strategies to performance enhancement in variety of life settings. Self-regulation models and techniques; stress and emotional control; attention control and concentration; mental rehearsal; time management; goal-setting; memory enhancement; communication and interpersonal conflict resolution. Participation in various psychological training procedures. Prerequisite: PSYCH 101.

PSYCH 202 Biopsychology (5) NW *Ann Culligan, Lauren Graham, Jeansok J Kim* Examines the biological basis of behavior, the nervous system, how it works to control behavior and sense the world, and what happens when it malfunctions. Topics include learning and memory, development, sex, drugs, sleep, the senses, emotions, and mental disorders. Prerequisite: PSYCH 101. Offered: AWSpS.

PSYCH 203 Introduction to Personality and Individual Differences (4) I&S *Jonathon D Brown* Overview of the major theories, research findings, and applications in the scientific study of personality. Covers research methods and approaches to measuring personality variables. Not open for credit to students who have taken PSYCH 303. Prerequisite: PSYCH 101.

PSYCH 205 Behavior Disorders (5) I&S Examines the bio-psycho-social origins of behavioral disorders. Topics include theories of etiology, developmental perspectives of behavior disorders, and assessment and diagnosis of the most common behavioral disorders. Note: not open for credit for students who have taken PSYCH 305. Prerequisite: minimum 2.0 grade in PSYCH 101.

PSYCH 206 Human Development (5) I&S Theoretical perspectives and research methods in child development with an overview of historical and current works. Includes prenatal and biological development, the development of cognitive, linguistic, and social and emotional abilities. Not open for credit to students who have taken PSYCH 306. Prerequisite: PSYCH 101.

PSYCH 208 Happiness (5) I&S *T. Turowski* How can lives be fulfilling, joyful, and meaningful? Through reading, discussion, and hands-on activities, explores the theme that happiness stems from social connections and contribution to something larger than oneself. Also explores practical strategies for nurturing personal happiness by improving social and emotional health. Prerequisite: PSYCH 101; recommended: PSYCH 209 Offered: AWSpS.

PSYCH 209 Fundamentals of Psychological Research

(5) *Laura Little, Michael W Passer, Ann Culligan, Tabitha Kirkland, Lauren Graham* Psychological research methodology and techniques. Topics include the logic of hypothesis testing, experimental design, research strategies and techniques, fundamentals of scientific writing, search and evaluation of research literature in psychology, and ethical issues in psychological research. Required for all psychology majors. Prerequisite: minimum 2.0 grade in PSYCH 101. Offered: AWSpS.

PSYCH 210 The Diversity of Human Sexuality (5) I&S, DIV *Nicole K McNichols* Considers biological, psychological, and socio-cultural determinants of human sexuality and sexual behavior, and how their interaction leads to diverse expressions of sexuality, sexual bonding, gender orientation, reproductive strategies, and physical and psychological sexual development. Topics include cultural appraisal of sexuality, sexual health and reproduction (pregnancy, contraception, abortion), and sexual abuse and assault.

PSYCH 222 Current Topics in Psychology (3-5, max. 10) I&S Topics of current interest, such as the psychology of happiness, psychology of friendship, technology and relationships, and developments in brain and behavior science. Choice of topics depends on instructor and class interest. Prerequisite: PSYCH 101 Offered: AWSpS.

PSYCH 245 Introduction to Social Psychology (5)

I&S *Tabitha Kirkland, Jonathon D Brown* Overview of major findings of social psychology, emphasizing the relevance for understanding the social behaviors of individuals and groups of individuals and their relationship to social context. Not open for credit to students who have taken PSYCH 345. Prerequisite: PSYCH 101.

PSYCH 250 Racism and Minority Groups (5) I&S, DIV

Overview of the causes, contexts, and consequences of racism and its effects upon minority groups and society. Emphasis on cultural history, political and socioeconomic structures that contribute to racism. Examination of current issues in race relations and cultural pluralism in the United States and selected international topics.

PSYCH 257 Psychology of Gender (5) I&S,

DIV Kenney Major psychological theories of gender-role development; biological and environmental influences that determine and maintain gender differences in behavior; roles in children and adults; topics include aggression, cognitive abilities, achievement motivation, affiliation. Offered: jointly with GWSS 257.

PSYCH 291 Principles of Applied Animal Behavior

(3-5) NW Further explores the basic principles of animal behavior, and related disciplines, with particular emphasis on application to human-animal interaction and issues. Introduces the primary literature in applied animal behavior.

PSYCH 292 Applied Animal Behavior in Practice (3-5)

NW Integrates animal behavior theory with real-world practice to resolve practical problem in human-animal interactions, including companion animals, captive animals, and livestock. Introduces the primary clinical literature in applied animal behavior.

PSYCH 298 Graduate School Exploration for

Psychology Majors (2) Provides an overview of graduate school options available in psychology, counseling, and research. Topics include researching programs, writing statements of purpose and resumes, standardized testing, letters of recommendation, and interviewing techniques. Credit/no-credit only.

PSYCH 299 Psychology Transfer Academic

Community (2) Provides opportunity for transfer students new to or contemplating the psychology major to experience an in- depth orientation to the department, curriculum, and resources available to undergraduates. Students meet weekly to explore ways to effectively engage in the major and expand their understanding of the academic discipline. Credit/no-credit only.

PSYCH 300 Animal Behavior (5) NW

Joseph A. Sisneros Introduces important concepts and empirical findings in animal behavior. Emphasizes evolutionary and mechanistic approaches to understanding diversity and complexity of behavior. Topics include communication, mating, migration, and sociality. Prerequisite: either BIOL 118, BIOL 161, or BIOL 180.

PSYCH 302 Neuroscience of the Mind (5) NW

S. Mizumori Capacity for flexible neural processing changes across the lifespan, and may go awry in disorders of mental health and behavioral control. Provides a fundamental understanding of the dynamic, often reciprocal, relationship between brain neuroplasticity and a variety of complex behaviors (e.g. learning, memory, decision, language) , including their modulation by social factors, development, aging, disease, and brain injury. Prerequisite: PSYCH 101; PSYCH 202; PSYCH 209 Offered: AWSpS.

PSYCH 303 Personality (5) I&S

Overview of major perspectives, scientific issues, applications, and research findings in the area of personality. Direct exposure to scientific literature, writing assignments, and research-based class experiences prepare students for advanced work in personality, social, abnormal, and developmental psychology. Prerequisite: minimum 2.0 grade in each of PSYCH 101; PSYCH 202; and PSYCH 209. Instructors: Brown

PSYCH 305 Abnormal Psychology (5) I&S

An overview of major categories of psychopathology, including description and classification, theoretical models, and recent research on etiology and treatment. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 306 Developmental Psychology (5) I&S

Betty Repacholi Overview of past and present theoretical and research-based approaches to biological, cognitive, and social development from the prenatal period to early adolescence. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 315 Understanding Statistics in Psychology

(5) QSR *Geoffrey M Boynton, Laura Little, Brian P Flaherty, Dana C Nelson* Statistics for psychological research. Elementary probability theory, hypothesis testing, and estimation. Satisfies the statistics requirement for majors registered in the psychology

Bachelor of Arts degree program. Prerequisite: minimum 2.0 grade in PSYCH 209; 2.0 in either MATH 111, MATH 112, MATH 120, MATH 124, or MATH 144. Offered: AWSpS.

PSYCH 317 Introduction to Probability and Statistics for Psychology (5) QSR *Laura Little* Probability theory as a model for scientific inference.

Probabilistic variables and experimental outcomes, conditional probability, binomial and related distributions, experiments as samples, statistics and sampling distributions, the normal distribution, confidence intervals, problems of estimation from experiments. Prerequisite: minimum 2.5 grade in PSYCH 209; 2.0 in either MATH 124, MATH 134, or MATH 144. Offered: AW.

PSYCH 318 Statistical Inference in Psychological Research (5) QSR *Laura Little* Hypothesis testing:

probabilistic and statistical basis. Development and application of statistical inference techniques employed in psychological research: confidence intervals, t-test, ANOVA, and correlation and regression. Nature and control of experimental and inferential error in research. Required for majors for psychology BS degree. Prerequisite: minimum 2.0 grade in PSYCH 317. Offered: WSp.

PSYCH 322 Introduction to Drugs and Behavior (3)

NW Basic concepts of drug action emphasizing the behavioral consequences of the intake of a variety of drugs. Prerequisite: PSYCH 202.

PSYCH 330 Laboratory in Animal Behavior (5) NW

Experience with a variety of animal species and experimental procedures and instrumentation. Prerequisite: either minimum 2.0 grade in PSYCH 315, or 2.0 in PSYCH 317; 2.0 in PSYCH 209. Instructors: Brenowitz

PSYCH 331 Laboratory in Human Cognition (5) I&S

Selected aspects of human cognition, perception, and performance. Prerequisite: minimum 2.0 grade in PSYCH 209; either 2.0 in PSYCH 315, or 2.0 in PSYCH 317. Instructors: Joslyn

PSYCH 332 Neurobehavioral Lab (5) NW *David*

Henry Gire Explores the neural mechanisms of behavior via neuropharmacological and neuroanatomical approaches. Includes the ethics and regulation of animal experimentation.

Prerequisite: either minimum 2.0 grade in PSYCH 315, or 2.0 in PSYCH 317.

PSYCH 333 Sensory and Perceptual Processes (5)

NW *Geoffrey M Boynton, Ellen Covey, Ione Fine* An overview of each of the major senses with emphasis on the structure and function of sensory systems and the relation of the underlying biology to perceptual processes and behavior. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 334 Laboratory in Social Psychology (5) I&S

Methodology of laboratory and field research on social behavior; data analysis and report writing; research projects. Prerequisite: minimum 2.0 grade in PSYCH 209; minimum 2.0 grade in either PSYCH 315 or PSYCH 317; minimum 2.0 grade in either PSYCH 245 or PSYCH 345. Instructors: Cheryan

PSYCH 345 Social Psychology (5) I&S *Nicole K*

McNichols, Tabitha Kirkland, Jonathon D Brown, Cheryl Kaiser The scientific study of how people's thoughts, feelings, and actions influence, and are influenced by, other people. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209. Instructors: Brown, Kaiser

PSYCH 350 Honors Research Seminar in Psychology

(2-, max. 4) *Chantel Prat* Presentations by professors and advanced students concerning the rationale, methodology, and progress of their research projects; assistance with research projects; preparation of junior paper. Four credits of PSYCH 350 required for all junior Honors candidates in conjunction with PSYCH 498 and PSYCH 499. Offered: AWSp.

PSYCH 355 Cognitive Psychology (5) I&S *Susan L*

JOSLYN Current theory and research in perception, attention, memory and learning, attitudes, thinking and decision making, and language. For the student who wishes a survey or who intends additional work in any of the above content areas. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 357 Psychobiology of Women (5) NW,

DIV *Kenney* Physiological and psychological aspects of women's lives; determinants of biological sex; physiological and psychological events of puberty; menopause; sexuality; contraception, pregnancy, childbirth, and lactation; role of culture in

determining psychological response to physiological events. Offered: jointly with GWSS 357.

PSYCH 399 Foreign Study (3-5, max. 10) Upper division psychology courses for which there are no direct University of Washington equivalents taken through the UW Study Abroad program.

PSYCH 400 Learning (5) I&S/NW Experimental research and basic theories primarily in animal learning. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 402 Infant Behavior and Development (3/5) I&S Psychological development in the first two years of life. Basic and advanced techniques for assessing psychological development in infancy. Classic theories of human infancy and examination of a wide range of new experiments about infant behavior and development. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306 or PSYCH 414. Instructors: Meltzoff

PSYCH 403 Motivation (5) I&S/NW Theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors controlling animal behavior. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 407 History of Psychology (5) I&S Historical and theoretical background of the basic assumptions and research methodologies of modern psychology and the scientists who developed them. Prerequisite: minimum 2.0 grade in PSYCH 209.

PSYCH 408 Neuroethology (4) NW Comparative exploration of the neural, hormonal, and genetic mechanisms that control behaviors necessary for survival and reproduction in animals. Model systems discussed include animal communication, mate choice, escape behavior, spatial orientation, homing and migration, and biological rhythms. Students are expected to understand fundamental concepts of neuroscience from any of the following prerequisite courses. Prerequisite: either PSYCH 333 OR BIOL 220. Offered: jointly with BIOL 408.

PSYCH 410 Child and Adolescent Behavior Disorders (5) I&S Introduction to psychopathology in children and adolescents, and an overview of principal modes of intervention. Particularly for students interested in advanced work in clinical psychology, social work,

or special education. Prerequisite: minimum 2.0 grade in PSYCH 305; either 2.0 in PSYCH 306 or 2.0 in PSYCH 202, 2.0 in PSYCH 206, and 2.0 in PSYCH 209.

PSYCH 413 Adolescent Development (5) I&S Provides an overview of physical, cognitive, psychosocial, and emotional development of adolescents with an emphasis on understanding the context in which young people grow up. Explores cultural, environmental, and social influences on development. Prerequisite: minimum 2.0 grade in PSYCH 209; 2.0 in either PSYCH 206 or PSYCH 306.

PSYCH 414 Cognitive Development (5) I&S Key theoretical and research approaches to cognitive development from infancy through adolescence. Sensorimotor development, language development, imitation, number concepts, logical reasoning, memory, cognition in adolescents, intelligence, and the role of biology, environment, and experience. Prerequisite: either minimum 2.0 grade in PSYCH 306, or 2.0 in both PSYCH 206 and PSYCH 209.

PSYCH 415 Personality Development of the Child (5) I&S Socialization theory and research, infant attachment and social relationships, development of aggressive and altruistic behaviors, sex-role development, moral development, parent and adult influences. Applied issues in social development and policy. Prerequisite: minimum 2.0 grade in either PSYCH 206 or PSYCH 306. Instructors: Repacholi

PSYCH 416 Animal Communication (4) NW *Eliot A. Brenowitz, Joseph A. Sisneros* Evolution and mechanisms of animal communication and related processes of perception, thinking, and social behavior. Prerequisite: either minimum 2.0 grade in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300.

PSYCH 417 Stress, Aging, and the Brain (4) *Jeansok J Kim* How the brain and, consequently, behavior change in response to stress and with aging. Primary focus on animal models of stress and age-related phenomena, but humans also an integral part of discussions. Prerequisite: PSYCH 101 and PSYCH 202. Offered: AWPSP.

PSYCH 418 Primate Social Behavior (5) NW Social behavior, ecology, and group structure of monkeys and apes from an evolutionary, sociobiological, and anthropological perspective. Prerequisite: either

minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, 2.0 in BIO A 201, or 2.0 in BIOL 180.

PSYCH 419 Behavioral Studies of Zoo Animals (5, max. 10) NW Observational studies of behavior of zoo animals to expand basic knowledge of animal behavior, conservation of endangered species, and research methodology with discussions and tours focusing on zoo philosophy and operations. Offered in cooperation with Woodland Park Zoo. Prerequisite: either minimum 2.0 grade in BIOL 180, 3.5 in PSYCH 200, or 2.0 in PSYCH 300.

PSYCH 420 Drugs and Behavior (3) NW Animal and clinical research on the behavioral consequences of drug intake. Prerequisite: PSYCH 322.

PSYCH 421 Neural Basis of Behavior (5) NW Anatomical and physiological principles and resultant behavior involved in the integrative action of the nervous system. Prerequisite: minimum 2.0 grade in PSYCH 202.

PSYCH 423 Programming For Psychology and Neuroscience (4) NW *Ione Fine* Programming techniques relevant to researchers in behavioral sciences. Gives researchers with no or little experience in programming the tools needed to design and program their own experiment, do basic analyses, and plot results. Addresses experimental design, stimulus presentation, curve fitting, randomization techniques, basic statistics, data plotting, debugging, and code optimization. Offered: AWSpS, even years.

PSYCH 426 Neurobiology of Learning and Memory (4) NW *Sheri J. Y. Mizumori* Theory and research on how animals learn and remember, including basic concepts of brain plasticity, how brain areas and neurons adapt to changes in experiences throughout the lifespan, and cellular and structural substrates of a "memory." Prerequisite: a minimum grade of 2.0 in either PSYCH 202, PSYCH 302, PSYCH 322, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423.

PSYCH 430 Development of Brain Connections (4) NW Analysis of innate and environmental factors that play a role in the development of brain connections. Critical review of current literature on the various strategies used by neurons to find their appropriate targets. Prerequisite: minimum 2.0

grade in either PSYCH 202, PSYCH 333, PSYCH 421, PSYCH 422, or PSYCH 423.

PSYCH 431 Ecopsychology (5) I&S *P. KAHN* Explores psychology of the human relationship with nature. Critically examines how ecopsychology can impact urban sustainability, human health, environmental education, and the design of new technologies. Specific topics include evolutionary psychology; human-animal interaction; biophilia; children and nature; indigenous cultures; and ecotherapy. Offered: jointly with ENVIR 431/ESRM 431; W.

PSYCH 432 Visual Neuroscience (4) I&S/NW Surveys current facts/theories about how our brains interpret the images formed by our eyes to create a presentation of the visual environment. Topics include retinal processing, 3-D vision; color, form, motion, and object perception; and visual illusions. Prerequisite: minimum 2.0 grade in either PSYCH 333 or PSYCH 355.

PSYCH 435 Human Color Vision (5) NW/I&S Discusses how color does not exist in the physical environment but is instead a creation of our brains. Explores perceptual, physiological, developmental, evolutionary, genetic, and cultural aspects of human color vision, including its role in language, culture, and art. Prerequisite: PSYCH 202; PSYCH 209.

PSYCH 436 Developmental Aspects of Sport Competition (4) I&S Biophysical and psychosocial influences of sport participation on growth and development of children and youth. Competition readiness, injuries, stress, aggression, roles and responsibilities of parents and coaches. Prerequisite: minimum 2.0 grade in PSYCH 209. Instructors: Smoll

PSYCH 437 Motor Development (4) NW Analysis of motor development from prenatal origins through adolescence with emphasis on relations between biophysical and psychosocial development of children and youth. Prerequisite: minimum 2.0 grade in PSYCH 209. Instructors: Smoll

PSYCH 439 Psychology of Health Disparities (4) I&S, DIV In the United States, race and ethnicity, socioeconomic status, and other identities and experiences affect risk for a range of health outcomes. Reviews psychological research on the sources of these disparities and potential solutions to address them. Covers topics such as the role of

discrimination, interactions with healthcare providers, and how to change the social context to improve health. Prerequisite: PSYCH 209. Offered: AWSpS.

PSYCH 440 Psychology of Emotion (5) I&S T.

Turowski Overview of psychological research and theory on emotion, including biological, developmental, cognitive, social, and cultural perspectives. Topics include: why we have emotions; how emotions influence thoughts, actions, and interactions; facial expressions; controlling emotions; morality; gender differences; and the function of specific emotions such as joy, anger, and sadness. Prerequisite: PSYCH 209 Offered: A.

PSYCH 441 Perceptual Processes (5) I&S/NW Theory and findings in perception with a focus on visual perception in humans. Discrimination and constancy for simple judgments, segregation and identification of visual objects, and specific areas of investigation such as reading and computer vision. Prerequisite: minimum 2.0 grade in PSYCH 333.

PSYCH 443 Motivational Theories in Social Psychology (5) I&S Theories of motivation in social psychology. Emphasis on how motivation and cognition mutually influence each other to produce behavior. Explores such topics as persuasion, goal pursuit, self-regulation, achievement, and social comparison. Prerequisite: minimum 2.0 grade in PSYCH 345.

PSYCH 445 Theories of Social Psychology (5) I&S Evaluation of the major theories of human social behavior supported by the empirical literature; theories of social cognition and thought; major theories of social interaction, group processes, and social learning. Prerequisite: PSYCH 345. Instructors: Brown

PSYCH 447 Psychology of Language (4) VLPA/I&S Introduction to the study of language, including language structure, speech perception, language acquisition, psychological processes underlying comprehension and production of language, the relation between brain and language, and the question of the species-specificity of human language. Prerequisite: either minimum 2.0 grade in PSYCH 209, minimum 2.0 grade in LING 200, or LING 201.

PSYCH 448 Selected Topics in Psychological Science (1-15, max. 15) Selected research topics of contemporary interest. Quarterly listings of specific offerings are available at departmental advising office.

PSYCH 449 Organizational and Industrial Psychology (5) I&S Examines research on human behavior in industrial and organizational environments. Topics include research methods, job analysis, the prediction of workplace performance, personnel selection and training, performance appraisal, group influences, job satisfaction, job motivation, leadership, and human factors. Prerequisite: PSYCH 101; PSYCH 209.

PSYCH 450 Honors Research Seminar in Psychology (2-, max. 4) Senior thesis research; preparation of senior thesis; oral presentation of research. Four credits of PSYCH 450 required for all senior Honors candidates in conjunction with PSYCH 498 and PSYCH 499. Offered: AWSp.

PSYCH 451 Health Psychology (5) I&S/NW Overview of the psychological and behavioral factors in health and disease. Includes research on both psychological causes and treatments. Topics include stress, risky behaviors, patient-provider interactions, pain, behavioral/medical treatments, and lifestyle interventions. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209; 2.0 in either PSYCH 303, or PSYCH 345.

PSYCH 452 Psychology of the Self-Concept (4) I&S Examines psychological theory and research on the role of the self-concept in regulating behavior. Topics include the development of the self-concept; self-awareness; and self-esteem maintenance. Prerequisite: minimum 2.0 grade in either PSYCH 245 or PSYCH 345. Instructors: Brown

PSYCH 456 Social and Moral Development (5) I&S Theoretical approaches toward explaining children's social and moral development, including those that are nativistic, sociobiological, behavioristic, psychoanalytic, and constructivist. Use of theory to investigate applied problems related to parenting, education, peer relationships, authority, sexuality, culture, ecology, and technology. Prerequisite: either PSYCH 206 or PSYCH 306. Instructors: Kahn

PSYCH 457 Language Development (5) VLPA/I&S

First-language acquisition and use by children. Emphasis on theoretical issues and research techniques. Prerequisite: minimum 2.0 grade in either PSYCH 206, PSYCH 306, LING 200, or LING 400.

PSYCH 458 Behavioral Genetics (4) NW Role of genetics in determining variation in human and animal behavior and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects, and gene expression. Prerequisite: either minimum 3.5 grade in PSYCH 200, 2.0 in PSYCH 300, or 2.0 in BIOL 180. Offered: jointly with BIOL 458.

PSYCH 459 Evolutionary Psychology (4) I&S/NW Explores human behavior from the perspective of biological evolution. Covers core issues such as cooperation, communication, aggression, mating, reproduction, and parental and family interactions, as well as specialized applications within psychology such as psychopathology. Encourages a critical, skeptical examination of this new field. Prerequisite: either minimum 3.5 grade in PSYCH 200 or minimum 2.0 grade in PSYCH 300.

PSYCH 460 Cognitive Neuroscience (4) NW Discussion of neural systems underlying cognitive behavior with particular focus on breakdown of cognition following brain damage. Topics include object and space perception, language, voluntary movement, attention, and memory. Examination of contributions from related areas of neuroimaging, visual perception, linguistics, physiology, and neuroscience. Prerequisite: minimum 2.0 grade in either PSYCH 333, PSYCH 355, or PSYCH 421. Instructors: Murray, Osterhout

PSYCH 462 Human Memory (5) I&S Research and theory in key areas of memory. Issues covered include information processing theory, the link between memory processes and their biological underpinnings, autobiographical memory, implicit memory, and the effect of emotion on memory. Prerequisite: minimum 2.0 grade in PSYCH 209. Instructors: Joslyn

PSYCH 463 Implicit and Unconscious Cognition (3) I&S/NW Overview of method, theory, and findings concerning cognitive processes operating outside attentional focus or without introspective awareness. Considers relevance to basic phenomena

of social, cognitive, and clinical psychology. Prerequisite: minimum 2.0 grade in either PSYCH 315 or PSYCH 317; minimum 2.0 grade in either PSYCH 303, PSYCH 305, PSYCH 333, PSYCH 345, or PSYCH 355. Instructors: Greenwald

PSYCH 470 Psychology and Music (5) VLPA/I&S *Ellen Covey* Introduction to the scientific study of musical behavior. An overview of current topics in the psychology of music from the areas of musical perception and cognition, musical development, music therapy, musical performance, and composition. Includes psychoacoustical and neuropsychological foundations, research methods, and some basic material in music theory. Prerequisite: a minimum grade of 2.0 in either PSYCH 202 or NEUSCI 302.

PSYCH 471 Cognition In the Real World (4-5, max. 10) I&S Examines cognitive issues in applied settings, such as the workplace and education. Topics include such issues as attention, expertise, problem solving, decision-making, human error, automation, navigation, and individual differences. Prerequisite: minimum 2.0 grade in PSYCH 209. Instructors: Joslyn

PSYCH 478 Cultural Psychology (4) I&S Surveys cultural influences on cognitive, emotion, morality, self-concept, and mental health, from a multicultural perspective. Prerequisite: minimum 2.0 grade in PSYCH 202; minimum 2.0 grade in PSYCH 209. Offered: A.

PSYCH 479 Advanced Human Sexuality (5) I&S Intensive reading on current issues relevant to the physiological, psychological, cultural aspects of human sexuality. Prerequisite: minimum 2.0 grade in PSYCH 210.

PSYCH 481 Seminar in Advanced Quantitative Methods (3) Examines the role of statistical methods in psychological research. Issues and controversies surrounding null hypothesis significance testing. Review of selected alternative statistical methods in psychology. Prerequisite: minimum 2.0 grade in either PSYCH 315 or PSYCH 318. Instructors: Little

PSYCH 482 Advanced Research Methods for Behavioral Psychology (4) QSR *Yuichi Shoda* Develops skills of collecting and analyzing behavioral research data, communicating the results orally and in writing, and expressing perspectives on issues of

scientific method and practice. Prerequisite: either PSYCH 315 or PSYCH 317; either PSYCH 330, PSYCH 331, PSYCH 332, or PSYCH 350. Offered: Sp.

PSYCH 483 Writing in Psychology (5) Helps students refine scientific writing skills. Students practice conducting focused literature searches and writing literature reviews, preparing empirical data for presentations, organizing and writing research reports, and writing about psychology for a lay audience. Prerequisite: minimum 2.0 grade in PSYCH 202; minimum 2.0 grade in PSYCH 209; minimum 2.0 grade in either PSYCH 300, PSYCH 303, PSYCH 305, PSYCH 306, PSYCH 333, PSYCH 345, or PSYCH 355. Instructors: Covey, Joslyn

PSYCH 485 Primate Conservation Biology and Behavior (5) NW Examines the principles and concepts of conservation biology as they apply to the nonhuman primates with special attention to theoretical advances, conservation strategies, and management practices central to primate conservation. Prerequisite: either minimum 3.5 grade in PSYCH 200 or 2.0 in PSYCH 300 or 2.0 in BIO A 201. Instructors: Kyes

PSYCH 486 Animal Mind (4) NW Explores the cognitive capacities of animals. Focuses on the classical question, first clearly posed by Darwin, of how similar are the cognitive processes underlying behavior in humans and animals. Encourages a critical, skeptical examination of this new field. Prerequisite: minimum 3.5 grade in PSYCH 200 or 2.0 in PSYCH 300.

PSYCH 487 Advanced Psychobiology of Women (5) I&S/NW Intensive reading on current issues relevant to women's psychology and physiology. Prerequisite: minimum 2.0 grade in PSYCH 357/ GWSS 357. Instructors: Kenney Offered: jointly with GWSS 487; W.

PSYCH 488 Stress and Coping (4) I&S/NW Reviews theories and research concerning stress and its roles in behavior, personality, development, health, and interpersonal relationships. Coping analyzed as a factor in the way people respond to stressful circumstances. Prerequisite: minimum 2.0 grade in PSYCH 202; 2.0 in PSYCH 209.

PSYCH 489 Clinical Psychology (3) I&S Basic issues, methods, and research: professional issues,

psychological assessment, and approaches to psychotherapy and behavioral change. Prerequisite: minimum 2.0 grade in PSYCH 305.

PSYCH 490 Stress Management (3) I&S/NW Nature of stress. Physiological responses to stress and relaxation. Techniques of stress management with training in relaxation, biofeedback, meditation, cognitive restructuring, exercise, nutrition, interpersonal communication skills, and time management. Prerequisite: PSYCH 101.

PSYCH 491 Special Topics in Child Development, Learning, and Mental Health (1-5, max. 30) I&S Selected topics of contemporary interest in child development, learning, and mental health.

PSYCH 494 Field Study in Animal Behavior (2-3, max. 9) Kyes Field experience in areas relating to animal behavior through participation in seminar discussion and field exercises and training at foreign and domestic field study sites.

PSYCH 496 Undergraduate Teaching Experience in Psychology (2-3, max. 6) Students are trained as assistants in quiz sections or as supplemental tutors for undergraduate psychology courses. Designed especially for students planning graduate work or education certification. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree. Credit/no-credit only.

PSYCH 497 Undergraduate Fieldwork (1-5, max. 10) Dana C Nelson Individual consultation with faculty member and supervised practicum experience in a broad range of community settings and agencies dealing with psychological problems. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree. Credit/no-credit only. Offered: AWSpS.

PSYCH 498 Directed Reading in Psychology (1-3, max. 18) Readings in special interest areas under supervision of departmental faculty. Discussion of reading in conference with the instructor. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree.

PSYCH 499 Undergraduate Research (1-3, max. 18)

Design and completion of individual research projects. An overall maximum of 18 credits in PSYCH 496, PSYCH 497, PSYCH 498, and PSYCH 499 may apply toward a baccalaureate degree.

PSYCH 500 Proseminar in Psychology (1, max. 10)

Presentations on professionally and practically useful topics by guest faculty presenters designed for first-year and second-year graduate students.

Prerequisite: graduate standing in psychology, or permission of instructor. Credit/no-credit only.

PSYCH 502 Core Concepts in Animal Behavior (3)

Joseph A. Sisneros Reading, reports, and discussion on animal behavior, with a focus on topics that lie at the interface of animal behavior, evolutionary science, neurobiology, and psychology. Includes social organization, mating systems, foraging, learning, communication, and agonistic behavior. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 503 Core Concepts in Behavior Genetics (4)

Overview of current approaches to genetic analysis in psychology. Role of genetics in behavioral variation, and in regulating behavioral development. Techniques for quantifying genetic variation, behavioral effects of genes, and patterns of gene expression. Genetic effects on major behavioral differences. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: Shoda

PSYCH 504 Core Concepts in Behavioral Neuroscience (3) *Ellen Covey, Jeansok J Kim, Sheri J. Y. Mizumori*

Historical and contemporary perspectives in behavioral neuroscience. Current methodologies and research strategies. May include sensory processing, genetics, behavioral neuroendocrinology, developmental neural plasticity, neurobiology of learning and memory, lifespan perspectives on behavioral neurobiology, and psychopharmacology. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 505 Core Concepts in Neuroethology (3)

Sisneros Reviews the current topics and approaches to the study of the neurobiological basis of natural behaviors or "neuroethology." Explores core concepts in the field of neuroethology and examines the role of the nervous system and the underlying neural

circuits adapted for species-typical behaviors. Offered: AWSp.

PSYCH 506 Core Concepts in Cognitive Neuroscience (3)

Combines psychological models of information processing with research techniques in the biomedical sciences. Topics in vision, attention, memory, motor behavior, and language illustrate this integrative approach. Research methods include behavioral, single unit, lesion, and neuro-imaging techniques. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: Murray, Osterhout

PSYCH 507 Core Concepts in Cognitive Psychology (3)

Survey of the major topics in human cognition. Discussion of memory, concepts and categories, language, decision-making, and problem solving. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 508 Core Concepts in Perception (3)

Current topics in perception, psychophysics, sensory memory, pattern recognition, letter and word perception, and visual masking. Prerequisite: graduate standing in psychology, or permission of instructor. Offered: Sp.

PSYCH 509 Core Concepts in Computational Cognitive and Neural Modeling (5)

Introduction to the basics of computational modeling techniques for psychologists and neuroscientists. Covers two common modeling approaches (production system models and neural network models) and describes the principles of their application to semantic memory, working memory, perception, reinforcement learning, skill acquisition, and transfer.

PSYCH 510 Core Concepts in Social Psychology (4)

An overview of contemporary theories and research in social psychology, focusing on introducing graduate students to the field as practitioners of social psychological research. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: Cheryan, Kaiser, Shoda

PSYCH 511 Core Concepts in Personality (3) *Yuichi Shoda*

Review of personality research. Roles of cognitive, affective, motivational, and psychodynamic processes. Critical evaluation of current personality, its antecedents, and its

influences over behavior. Attention to role of personality variables in social relationships. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 512 Development of Prejudice (3) *Sapna Cheryan* Explores how prejudice emerges and develops across the lifespan. Each week focuses a big question (e.g., "What are the earliest signs of prejudice? Can the disadvantaged be prejudiced?") with supporting readings from the developmental, social, cultural, and evolutionary psychology literatures.

PSYCH 513 Core Concepts in Biological Basis of Development (4) Embryological, genetic, physiological, and evolutionary perspectives of human development; biological development in infancy; sensory development and its influence on the development of perception; primate models for human development. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 514 Core Concepts in Early Cognitive and Linguistic Development (4) *Andrew N Meltzoff* Origins and early development of thought and language. Piagetian theory and modern-day revisions. In-depth examination of historical and philosophical bases for current empirical research. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 515 Core Concepts in Personality and Social Development (4) Theories and empirical literature in personality and social development throughout infancy, childhood. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 516 Core Concepts: Early Social Cognition in Typical Development and Autism (3) Describes current theoretical and empirical approaches to understand social cognitive processes underlying infants' ability and motivation to attend to, interpret, and act on social information. Research findings from typical infants and those at elevated risk for autism identify the implications of divergent developmental trajectories.

PSYCH 520 Core Concepts in Affective Science (3) Provides an overview of the major theories, research findings, and applications in the scientific study of emotion. Topics include the function of emotion;

physiological and behavioral expression of emotion; emotion regulation; emotions and health; and how emotions influence intimate relationships.

PSYCH 521 Core Concepts in Decision Making (3) *S. Joslyn* Overview of theories and behavioral research on the cognitive processes involved in individual human decision-making including bounded rationality, prospect theory, dual systems, adaptive strategies and the nature of expertise. Offered: AWSpS.

PSYCH 522 Laboratory in Statistical Computation I (2) Techniques of computation using statistical software on personal computers. Organization of data files, transformations of variables, graphical representations of data, descriptive statistics, elementary inferential statistical analyses. Prerequisite: concurrent enrollment in PSYCH 524, or permission of instructor. Offered: A.

PSYCH 523 Laboratory in Statistical Computation II (2) Techniques of statistical computation using statistical software on personal computers and mainframe computers. Multiple regression, analysis of variance and covariance. Planned and post hoc comparisons and confidence intervals. Data analytic diagnostics for violations of regression assumptions. Prerequisite: PSYCH 522 and PSYCH 524, concurrent enrollment in PSYCH 525, or permission of instructor. Offered: W.

PSYCH 524 Introduction to Statistics and Data Analysis (4) Basic concepts of statistical theory and methods of data analysis. Emphasis on the integration of statistical theory, statistical computation, and psychological research methods. Required of all first-year graduate students in psychology. Prerequisite: concurrent enrollment in PSYCH 522, or permission of instructor. Offered: A.

PSYCH 525 Linear Models and Data Analysis (4) Analysis of data in the behavioral sciences. Required of all first-year graduate majors. Prerequisite: PSYCH 522, PSYCH 524; concurrent registration in PSYCH 523, or permission of instructor. Offered: W.

PSYCH 526 Multivariate Statistics (4) An introduction to statistical modeling; interactive data analyses; use of regression, ANOVA, logistic regression, and log-linear models in explanatory studies. Prerequisite: PSYCH 525.

PSYCH 527 Core Concepts in Cognitive Approach to Human Memory (3) *S. Joslyn* Topics in human memory focusing primarily on long-term memory. Begins with an overview of the cognitive perspective. Specific topics may include implicit and explicit memory, autobiographical memory, emotion and memory, memory for mental events, mechanisms for forgetting, source monitoring and factors that enhance memory. Offered: AWSpS.

PSYCH 528 Practical Methods for Behavioral Research (4, max. 8) *Yuichi Shoda* Examination of methodological, practical, and communication problems associated with research on human behavior. Topics include: selecting research problems, use of theory, types of validity, common sense about statistics, when to replicate, dealing with unpredicted results, strategies for presentation and publication. Offered: Sp.

PSYCH 529 Advanced Research Methods (5) Surveys advanced clinical research methods not covered in the required statistics sequence. Examples include structural equation modeling, hierarchical linear modeling, growth curve modeling, and taxometric analyses. Hands-on experience gained through weekly assignments using each method. Prerequisite: PSYCH 525.

PSYCH 530 Introduction to Manifest Path, Confirmatory Factor, and Latent Variable Path Analysis for Psychology (5) *B. Flaherty* Introduces broad class of path analysis models for Psychology research, including manifest (observed) variable models, confirmatory factor analysis, and latent variable path models. Students will conduct and write-up analyses of multiple data sets, including their own. Course focuses on testing complex scientific hypotheses, effects of measurement error, fit assessment and model selection, interpretation and presentation, and ethical use. Prerequisite: PSYCH 525, or permission of instructor. ; recommended: basic regression course. Offered: A, even years.

PSYCH 531 Practical Issues in Data Analysis and Presentation (4) Computational data "wrangling" and analysis as first steps researchers should take after collecting data. Teaches essential skills (including data analysis, data modeling, dimensionality reduction of "big data") that promote data visualization and effective presentation of data.

Prerequisite: PSYCH 524 and PSYCH 525; recommended: First two quarters of PSYCH grad statistics Offered: AWSpS.

PSYCH 535 Scientific Writing in Psychology (5, max. 10) Addresses issues in scientific writing and publishing; laboratories assist with writing, and provide feedback on drafts of articles throughout the writing process. Students write a journal article to submit for publication. Other writing projects are also possible with instructor's permission. Credit/no-credit only.

PSYCH 536 Grant Preparation in Psychology (3, max. 6) Prepare and submit an application for a major national fellowship. Joint registration in PSYCH 598 with faculty adviser is required. Prerequisite: graduate standing in psychology and permission of instructor. Instructors: Mizumori Credit/no-credit only.

PSYCH 537 Teaching of Psychology (3) Examines issues concerning the teaching of psychology, including educational goals, course development, instructional methods, TA-student and TA-faculty relations, grading, student diversity, and problem situations. Assignments designed to enhance students' organizational, presentational, and problem-solving skills. Prerequisite: graduate standing in the Department of Psychology. Instructors: Passer Credit/no-credit only.

PSYCH 538 Programming for Psychology and Neuroscience (4) *Geoffrey M Boynton, Ione Fine* Introduction to programming skills with the goal of teaching how to design, program, and analyze experiments. Topics include principles of programming, the programming environment, presentation software, and data collection, management, and analysis. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 540 Advances in Psychology (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 541 Advances in Animal Behavior (3-5, max. 30) *Eliot A. Brenowitz, Randall C KYES, Joseph A. Sisneros* Intensive readings from the current

literature on an emerging topic or theoretical perspective in animal behavior. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 542 Advances in Behavioral Neuroscience (3-5, max. 30) *Ellen Covey, Jeansok J Kim, Sheri J. Y. Mizumori* Intensive readings from the current literature on an emerging topic or theoretical perspective in behavioral neuroscience. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 543 Advances in Working Memory (3) S. *Joslyn* Provides an overview of theories in working memory, roughly synonymous with consciousness. Introduces the Baddeley model as well as alternative models and focus on recent research on a variety of topics including verbal and spatial memory, executive control, individual differences and training working memory. Offered: AWSpS.

PSYCH 545 Advances in Cognition/Perception (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in cognition/perception. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 546 Advances in Developmental Psychology (1-5, max. 30) *Peter Kahn, Andrew N Meltzoff, Betty Repacholi, Frank L Smoll* Intensive readings from the current literature on an emerging topic or theoretical perspective in developmental psychology. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 547 Advances in Social/Personality (3-5, max. 30) *Sapna Cheryan, Cheryl Kaiser, Yuichi Shoda* Intensive readings from the current literature on an emerging topic or theoretical perspective in social psychology/personality. Student presentations and discussion. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 548 Advances in Quantitative Psychology (3-5, max. 30) Intensive readings from the current literature on an emerging topic or theoretical perspective in quantitative psychology. Student presentations and discussion. Prerequisite: graduate

standing in psychology, or permission of instructor. Instructors: Flaherty

PSYCH 549 Seminar in Physiological Psychology (2)
Prerequisite: permission of instructor.

PSYCH 550 Seminar in Psychology (1-2, max. 30)
Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 551 Seminar in Animal Behavior (1-2, max. 30) *Eliot A. Brenowitz, Joseph A. Sisneros* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 552 Seminar in Behavioral Neuroscience (1-2, max. 30) *Ellen Covey, Jeansok J Kim, Sheri J. Y. Mizumori* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 555 Seminar in Cognition/Perception (1-2, max. 30) *Geoffrey M Boynton, Ione Fine, Scott O. Murray, Andrea Stocco, Chantel Prat* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 556 Seminar in Developmental Psychology (1-2, max. 30) Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor. Instructors: Meltzoff, Repacholi, Smoll

PSYCH 557 Seminar in Social/Personality (1-2, max. 30) *Jonathon D Brown, Sapna Cheryan, Cheryl Kaiser, Yuichi Shoda* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 558 Seminar in Quantitative Psychology (1-2, max. 30) *Brian P Flaherty, Laura Little* Weekly meetings for discussion of current topics. Prerequisite: graduate standing in psychology, or permission of instructor.

PSYCH 560 Research Strategies (1-2, max. 30) Group discussions of problems and continuing strategies for ongoing and future research projects. Prerequisite:

graduate standing in psychology; others by permission of department.

PSYCH 561 Current Trends in Psychology (*, max. 30) Prerequisite: permission of instructor. Offered: AWSpS.

PSYCH 562 Evolutionary Psychology of Gender, Mating, and Reproduction (3) *Joseph A. Sisneros* Reviews evidence for biological factors influencing human mating and reproductive behavior, through application of concepts and theory from animal behavior, behavioral genetics, and evolutionary biology. Offered: W.

PSYCH 563 Developmental Psychology and the Human Relationship with Nature (4) *Kahn* Theories of development used to investigate the ontogenesis of the human relationship with nature. An emphasis on social cognition, children's environmental moral reasoning, the effects of technology in children's lives, and evolutionary theory. Offered: W.

PSYCH 564 Advanced Attitude Theory (5) Theoretical, methodological, and empirical work on the concept of attitude and its practical applications. Topics include: definition of attitude, measurement of attitudes, information-processing theories, functional theories, cognitive structure theories, the self as attitude object, unconscious attitudinal processes. Prerequisite: PSYCH 445; PSYCH 525 or equivalent; or permission of instructor.

PSYCH 565 Quantifying Brain Analysis (3) Covers concepts and applications of statistically unbiased methods for quantifying brain structure. Hands-on learning and application of concepts, sampling strategies and calculations for unbiased stereological measure of the size and number of various brain components.

PSYCH 566 Neural Correlates of Perceptual Cognition (3) Contribution of sensory systems to perceptual capabilities. Critical review of literature on the neural correlates of abilities such as sensory discrimination, subjective perception, attention, imagery, object and face recognition, and spatial behavior. Some sensory disabilities reviewed. Offered: W.

PSYCH 567 Higher Order Cognition (3) Survey of research on higher-order cognition with an emphasis

on theoretical accounts of knowledge representation. Topics include problem solving, inductive and deductive reasoning, hypothesis testing, causal inferences, similarity judgments, and categorization.

PSYCH 568 Cognitive Approaches to Human Memory (3) Examination of current topics in human memory from the perspective of cognitive psychology. Offered: Sp.

PSYCH 596 Advanced Teaching Practicum (2, max. 6) Supervised participation in graduate teaching. Prerequisite: graduate student in psychology and permission of instructor. Offered: AWSpS.

PSYCH 598 Directed Reading in Psychology (*, max. 30) Selected topics. Prerequisite: permission of a supervising psychology faculty member.

PSYCH 599 Directed Research in Psychology (1-3, max. 24) Supervised participation in research. Prerequisite: permission of a supervising psychology faculty member.

PSYCH 600 Independent Study or Research (*-) Offered: AWSpS.

PSYCH 700 Master's Thesis (*-) Offered: AWSpS.

PSYCH 800 Doctoral Dissertation (*-) Offered: AWSpS.

SCANDINAVIAN STUDIES

DANISH

DANISH 101 First Year Danish 1 (5) VLPA Fundamentals of oral and written Danish. First in a sequence of three.

DANISH 102 First Year Danish 2 (5) VLPA Fundamentals of oral and written Danish, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: DANISH 101. Offered: W.

DANISH 103 First Year Danish 3 (5) VLPA Fundamentals of oral and written Danish, including introductory study of literature, film, and other

authentic texts. Third in a sequence of three.

Prerequisite: DANISH 102. Offered: Sp.

DANISH 199 Foreign Study: Elementary Danish (1-15, max. 15) Fundamentals of oral and written Danish.

DANISH 201 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. First in a sequence of three.

DANISH 202 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. Second in a sequence of three. Prerequisite: DANISH 201.

DANISH 203 Second-Year Danish (5) VLPA Intensive practice in speaking, reading, and writing. Review of grammar. Introduction of modern literary texts. Discussion of culture and current events in Denmark. Third in a sequence of three. Prerequisite: DANISH 202.

DANISH 299 Foreign Study: Intermediate Danish (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Denmark.

DANISH 310 Topics in Danish Short Prose (5, max. 15) VLPA Focuses on the fairy tale and story, with selections by Bicher, H.C. Andersen, Bang, Blixen, and others.

DANISH 311 Topics in Danish Literature and Culture (5, max. 15) VLPA Selected topics in modern Danish literature and culture, such as women's literature, Danish identity and the European Union, contemporary drama and film, or children's literature.

DANISH 312 Topics in the Danish Novel (5, max. 15) VLPA Focuses on selected novels from the nineteenth and twentieth centuries by figures such as J.P. Jacobsen, Herman Bang, J.V. Jensen, Hans Kirk, Scherfig and Ditlevsen.

DANISH 395 Foreign Study: Danish Area Studies (1-5, max. 10) I&S Courses in Danish history, society, and/or politics.

DANISH 399 Foreign Study: Topics in Danish Literature and Culture (1-5, max. 15) VLPA Topics in Danish literature, life, and civilization.

DANISH 411 Danish for Professionals (3) VLPA Combines intensive beginning Danish language for professionals with a substantive introduction to Danish culture and society. This course is geared to upper-division undergraduates and graduate students preparing to hold internships in professional offices in Denmark or study at Danish universities via UW study Abroad. Does not meet foreign language requirement. Offered: Sp.

DANISH 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Danish language, literature, or related fields.

ESTONIAN

ESTO 101 First Year Estonian 1 (5) VLPA Fundamentals of oral and written Estonian, including introductory study of literature, film, and other authentic texts. First in a sequence of three. Offered: A.

ESTO 102 First Year Estonian 2 (5) VLPA Fundamentals of oral and written Estonian, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: ESTO 101. Offered: W.

ESTO 103 First Year Estonian 3 (5) VLPA Fundamentals of oral and written Estonian, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Prerequisite: ESTO 102. Offered: Sp.

ESTO 111 Basic Estonian (3) L. ROOS, G. SMIDCHENS Fundamentals of Estonian language to develop reading and comprehension proficiency. Completion of all three quarters does not meet the foreign language requirement. Offered: A.

ESTO 112 Basic Estonian (3) L. ROOS, G. SMIDCHENS Fundamentals of Estonian language to develop

reading and comprehension Prerequisite: ESTO 111
Offered: W.

ESTO 113 Basic Estonian (3) *L. ROOS, G. SMIDCHENS*

Fundamentals of Estonian language to develop reading comprehension Prerequisite: ESTO 112
Offered: Sp.

ESTO 150 Intensive Estonian (15) Fundamentals of oral and written Estonian. Intensive practice in speaking, reading, and writing Estonian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Estonian culture and society. If Estonian is the student's language of admission, only 10 credits count towards graduation.

ESTO 201 Second-Year Estonian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either ESTO 103 or ESTO 150.

ESTO 202 Second-Year Estonian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: ESTO 201.

ESTO 203 Second-Year Estonian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: ESTO 202.

ESTO 250 Intensive Intermediate Estonian (15) VLPA Accelerated second-year Estonian. Systematic review of Estonian grammar. Intensive practice in conversation, reading, and writing. Prerequisite: either ESTO 103 or ESTO 150. Offered: S.

ESTO 490 Supervised Reading (1-5, max. 10)
Readings in a selected area of Estonian language, culture, or society.

FINNISH

FINN 101 First Year Finnish 1 (5) VLPA Fundamentals of oral and written Finnish, including introductory study of literature, film, and other authentic texts. First in a sequence of three. Offered: A.

FINN 102 First Year Finnish 2 (5) VLPA Fundamentals of oral and written Finnish, including introductory

study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: FINN 101. Offered: W.

FINN 103 First Year Finnish 3 (5) VLPA Fundamentals of oral and written Finnish, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Prerequisite: FINN 102. Offered: Sp.

FINN 150 Intensive First-Year Finnish (15)
Fundamentals of oral and written Finnish. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, and language and reading laboratories. Emphasis on contemporary Finnish culture and society. If Finnish is the student's language of admission, only 10 credits count towards graduation.

FINN 199 Foreign Study: Elementary Finnish (1-15, max. 15) Fundamentals of oral and written Finnish.

FINN 201 Second-Year Finnish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either FINN 103 or FINN 150.

FINN 202 Second-Year Finnish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: FINN 201.

FINN 203 Second-Year Finnish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: FINN 202.

FINN 250 Intensive Second-Year Finnish (15) VLPA
Intensive study of second-year Finnish. Prerequisite: either FINN 103 or FINN 150.

FINN 299 Foreign Study: Intermediate Finnish (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Finland.

FINN 310 Topics in Finnish Language and Culture (5, max. 15) VLPA Topics related to Finnish literature, life, and civilization.

FINN 395 Foreign Study: Finnish Area Studies (1-5, max. 10) I&S Courses in Finnish history, society, and/or politics.

FINN 399 Foreign Study: Topics in Finnish Literature and Culture (1-5, max. 15) VLPA Topics in Finnish literature, life, and civilization.

FINN 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Finnish language, culture, or society.

LATVIAN

LATV 101 First Year Latvian 1 (5) VLPA
Fundamentals of oral and written Latvian, including introductory study of literature, film, and other authentic texts. First in a sequence of three. Offered: A.

LATV 102 First Year Latvian 2 (5) VLPA
Fundamentals of oral and written Latvian, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: LATV 101. Offered: W.

LATV 103 First Year Latvian 3 (5) VLPA
Fundamentals of oral and written Latvian, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Prerequisite: LATV 102. Offered: Sp.

LATV 111 Basic Latvian (3) I. GRINBERGA
Fundamentals of Latvian language in order to develop reading and comprehension proficiency. Completion of all three quarters does not meet the foreign language requirement. Offered: A.

LATV 112 Basic Latvian (3) I. GRINBERGA
Fundamentals of Latvian language in order to develop reading and comprehension proficiency. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LATV 111. Offered: W.

LATV 113 Basic Latvian (3) I. GRINBERGA
Fundamentals of Latvian language in order to develop reading and comprehension proficiency. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LATV 112. Offered: Sp.

LATV 150 Intensive Latvian (15) Fundamentals of oral and written Latvian. Intensive practice in speaking, reading, and writing Latvian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Latvian culture and society. If Latvian is the student's language of admission, only 10 credits count towards graduation.

LATV 201 Second-Year Latvian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either LATV 103 or LATV 150.

LATV 202 Second-Year Latvian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: LATV 201.

LATV 203 Second-Year Latvian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: LATV 202.

LATV 250 Intensive Intermediate Latvian (15) VLPA
Accelerated second-year Latvian. Systematic review of Latvian grammar. Intensive practice in conversation, reading, and writing. Prerequisite: either LATV 103 or LATV 150. Offered: S.

LATV 310 Topics in Latvian Literature (5, max. 15) VLPA Topics in Latvian literature, life, and civilization.

LATV 490 Supervised Reading (1-5, max. 10) VLPA Readings in a selected area of Latvian language, culture, or society.

LITHUANIAN

LITH 101 First Year Lithuanian 1 (5) VLPA
Fundamentals of oral and written Lithuanian, including introductory study of literature, film, and other authentic texts. First in a sequence of three. Offered: A.

LITH 102 First Year Lithuanian 2 (5) VLPA
Fundamentals of oral and written Lithuanian, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: LITH 101. Offered: W.

LITH 103 First Year Lithuanian 3 (5) VLPA

Fundamentals of oral and written Lithuanian, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Prerequisite: LITH 102. Offered: Sp.

LITH 111 Basic Lithuanian (3) Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement.

LITH 112 Basic Lithuanian (3) Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LITH 111.

LITH 113 Basic Lithuanian (3) Covers the fundamentals of conversational Lithuanian language. Completion of all three quarters does not meet the foreign language requirement. Prerequisite: LITH 112.

LITH 150 Intensive Lithuanian (15) Fundamentals of oral and written Lithuanian. Intensive practice in speaking, reading, and writing Lithuanian. Interactive classroom, computer-assisted learning, language, and reading laboratories. Emphasis on contemporary Lithuanian culture and society. If Lithuanian is the student's language of admission, only 10 credits count towards graduation.

LITH 201 Second-Year Lithuanian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three. Prerequisite: either LITH 103 or LITH 150.

LITH 202 Second-Year Lithuanian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three. Prerequisite: LITH 201.

LITH 203 Second-Year Lithuanian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three. Prerequisite: LITH 202.

LITH 250 Intensive Intermediate Lithuanian (15) VLPA Accelerated second-year Lithuanian. Systematic review of Lithuanian grammar. Intensive

practice in conversation, reading, and writing. Prerequisite: either LITH 103 or LITH 150. Offered: S.

LITH 310 Topics in Lithuanian Literature and Culture (5, max. 15) VLPA Explores topics in Lithuanian literature, life, civilization. Recommended: LITH 203 Offered: AWSp.

LITH 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Lithuanian language, culture, or society.

NORWEGIAN

NORW 101 First Year Norwegian 1 (5) VLPA Fundamentals of oral and written Norwegian, including introductory study of literature, film, and other authentic texts. First in a sequence of three. Offered: A.

NORW 102 First Year Norwegian 2 (5) VLPA Fundamentals of oral and written Norwegian, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Offered: W.

NORW 103 First Year Norwegian 3 (5) VLPA Fundamentals of oral and written Norwegian, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Offered: Sp.

NORW 150 Intensive First-Year Norwegian (15) Fundamentals of oral and written Norwegian. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, language and reading laboratories. Emphasis on contemporary Norwegian culture and society. If Norwegian is the student's language of admission, only 10 credits count towards graduation.

NORW 199 Foreign Study: Elementary Norwegian (1-15, max. 15) Fundamentals of oral and written Norwegian.

NORW 201 Second-Year Norwegian (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three.

NORW 202 Second-Year Norwegian (5) VLPA

Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three.

NORW 203 Second-Year Norwegian (5) VLPA

Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three.

NORW 299 Foreign Study: Intermediate Norwegian (1-15, max. 15) VLPA

Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Norway.

NORW 310 The Norwegian Short Story (5) VLPA

Generic study of the Norwegian short story.

NORW 311 Drama after Ibsen (5) VLPA**NORW 312 Topics in Norwegian Literature and Culture (5, max. 15) VLPA**

Topics related to Norwegian literature, life, and civilization.

NORW 321 The Plays of Henrik Ibsen (5) VLPA

Study of selected plays of Ibsen.

NORW 395 Foreign Study: Norwegian Area Studies (1-5, max. 10) I&S

Courses in Norwegian history, society, and/or politics.

NORW 399 Foreign Study: Topics in Norwegian Literature and Culture VLPA (1-5, max. 15) VLPA

Topics in Norwegian literature, life, and civilization.

NORW 490 Supervised Reading (1-5, max. 10)

Readings in a selected area of Norwegian language, literature, or related fields.

SCANDINAVIAN

SCAND 100 Introduction to Scandinavian Culture (5) VLPA/I&S

The Scandinavian experience from the Viking Age to the present day; the background for contemporary Scandinavian democracy, with major emphasis on the cultural, political, and religious development of the Scandinavian countries.

SCAND 150 Norwegian Literary and Cultural History (5) VLPA

A survey of Norwegian literary and cultural

history from the Vikings to the present. Authors read include Bjornson, Ibsen, Hamsun, and Roolvaag.

SCAND 151 Finnish Literary and Cultural History (5) VLPA

A survey of Finnish literature and cultural history during the nineteenth and twentieth centuries. Authors studied include Lonrot, Snellmann, Kivi, Sodergran, Linna, Haavikko, and Kaurismaki.

SCAND 152 Latvian Literary and Cultural History (5) VLPA

Grinberga Survey of Latvian literary and cultural history from the nineteenth century to the present. Authors include Pumpurs, Rainis, Aspazija, Blaumanis, Nesaule, Bels, and Zalite.

SCAND 153 Introduction to Lithuanian Literary and Cultural History (5) VLPA

Valanciauskiene Surveys Lithuanian literary and cultural history from the Medieval period to the present. Authors include Dauksa, Maironis, Biliunas, Ciurlainis, Boruta, Granauskas, Aputis, Vilimaite, Milosz, and others.

SCAND 154 Estonian Literary and Cultural History (5) VLPA

G. Smidchens Surveys Estonian literary and cultural history from the prehistoric period to the present. Authors, musicians, artists, and filmmakers include Kaplinski, Koidula, Kreutzwald, Vilde, Part, Tormis, Meri, Parn, Pollu, and others. Offered: jointly with JSIS A 154; AWSpS.

SCAND 155 Danish Literary and Cultural History (5) VLPA

Hansen Introduces the literary and cultural history of Denmark. Focuses on several major literary works and cultural moments from the Viking Age, the Enlightenment, nineteenth-century Romanticism, twentieth-century Modernism, and current Danish literature, journalism, and film.

SCAND 156 Introduction to Swedish Literary and Cultural History (5) VLPA

I. DUBOIS, A. GAVEL ADAMS Introduction to modern Swedish literature, culture, and contemporary discourses on race, multiculturalism, gender equality, and LGBTI. Offered: WSp.

SCAND 200 Scandinavia Today (5) VLPA/I&S

C. INGBRITSEN Examines the distinctive policies, institutions, and social norms, and cultures of contemporary Scandinavian societies. Topics include: the development of a "middle way" between capitalism and socialism, the welfare state,

social policy, Scandinavia in the international system, and contemporary debates about market deregulation and immigration. Course uses examples from policy debate and culture as objects of study.

SCAND 230 Introduction to Folklore Studies (5)

VLPA/I&S *G. Smidchens* Folkloristics combines the methods and ideas of Literature Studies and Anthropology. Folktales (fairy tales), legends, jokes, songs, proverbs, customs and other forms of traditional culture are studied together with the living people and communities who perform and adapt them. Students learn the folklorist's methods of fieldwork (participant observation), ethnography, comparative analysis, and interpretation. Offered: jointly with C LIT 230; AWSpS.

SCAND 232 Hans Christian Andersen and the Fairy Tale Tradition (5) VLPA Influence of Hans Christian Andersen and the fairy tale on modern Scandinavian tales and stories. Investigates the significance of the fairy tale in the modern world, with attention to writers such as Isak Dinesen, Knut Hamsun, Villy Sorensen, William Heinesen.

SCAND 251 Holberg and His Comedies in English (2) VLPA Holberg and his major dramas, with attention to the comic tradition in the Scandinavian theatre.

SCAND 270 Sagas of the Vikings (5) VLPA Icelandic sagas and poetry about Vikings in the context of thirteenth-century society.

SCAND 271 Film Analysis: Northern Perspectives (5) VLPA *Andrew Nestingen* Tools and perspectives for exploring cinema, focusing on films from the circumpolar region. Objectives: (1) learning a set of key terms for the study of film and television; (2) gaining an understanding of film and television as cultural productions; (3) doing a sequence analysis. Recommended: first-year composition. Offered: W, even years.

SCAND 275 Crime Scenes: Investigating the Cinema and Its Cultures (5) VLPA Teaches how to analyze film by closely studying crime scenes from historical and contemporary German and Scandinavian cinema. Directors studied include Fritz Lang, Carl Th. Dreyer, Billy Wilder, and Lars von Trier. Offered: jointly with GERMAN 275.

SCAND 280 Ibsen and His Major Plays in English (5) VLPA Reading and discussion of Ibsen's major plays.

SCAND 312 Masterpieces of Scandinavian Literature (5) VLPA Major works of Scandinavian literature by selected authors.

SCAND 315 Scandinavian Crime Fiction (5)

VLPA *Nestingen* Studies Scandinavian crime-fiction literature and cinema since 1965, approaching crime fiction as a changing cultural artifact. Analyzes major issues and texts in the genre and its public status, while also training students in critical approaches to study of popular literature and culture. Offered: jointly with JSIS D 317; Sp.

SCAND 316 Child and School in Scandinavia (5)

VLPA/I&S *A. NESTINGEN* The child and school in Scandinavia as constructed and represented in film and literature. Approaches child and school through key cultural examples and scholarly studies of these topics. Focal areas include changing historical notions of childhood and youth, schooling, the welfare state, and Finnish schools. Offered: Sp.

SCAND 326 Scandinavia in World Affairs (5) I&S

C. INGEBRITSEN Introduction to the foreign relations of Scandinavia with a focus on Nordic security, international economic pressures, and global conflict resolution. Includes a survey of the national settings for international involvements and highlights the dilemmas for industrial societies exposed to the pressures of interdependence. Offered: jointly with POL S 326.

SCAND 327 Women in Scandinavian Society (5)

VLPA/I&S Examines the changing position of women in Norway, Denmark, Finland, and Sweden from the 1880s to the contemporary period. Readings in literature and political science.

SCAND 330 Scandinavian Mythology (5) VLPA

Integrative study of religious life in the pre-Christian North. Emphasis on source materials, including the Prose Edda and Poetic Edda. Discussion of historical, archeological, and folkloric evidence. Offered: AWSpS.

SCAND 331 Folk Narrative (5) VLPA

Survey of various genres of folk narratives studied in performance contexts to reveal their socio-cultural functions in a variety of milieux. Theory and history

of folk narrative study, taxonomy, genre classification, and interpretative approaches. Offered: jointly with C LIT 331.

SCAND 334 Immigrant and Ethnic Folklore (5) VLPA/I&S Survey of verbal, customary, and material folk traditions in ethnic context. Theories of ethnic folklore research applied to the traditions of American communities of Scandinavian, Baltic, or other European ancestry. Offered: jointly with C LIT 334.

SCAND 335 Scandinavian Children's Literature (5) VLPA The history, forms, and themes of Scandinavian children's literature from H. C. Andersen to the present. Exploration of the dominant concerns of authors, adult and non-adult audiences, and the uses to which juvenile and adolescent literature are put. Film adaptations and Scandinavian-American materials included.

SCAND 340 Kalevala and the Epic Tradition (5) VLPA An interdisciplinary approach to the Finnish national epic Kalevala, Estonian Kalevipoeg, and Saami Peivebarnen suongah jehtanasan maajisn. Discussion of traditional worldview, cultural revitalization, and emergent nationalism in nineteenth- and twentieth-century Finland, Estonia, and Saamiland.

SCAND 341 Sami Culture and History (5) I&S/VLPA, DIV An interdisciplinary look at the culture of the indigenous Sami people in Scandinavia from the earliest archeological and textual evidence to the present day. Focus on indigenous modes of expression and worldview, as well as contemporary cultural and political activism. The course pays special attention to the history of institutional racism, which has impacted the Sami people since the 18th century. Offered: Sp.

SCAND 344 The Baltic States and Scandinavia (5) I&S Survey of the cultures and history of Estonia, Latvia, and Lithuania from the Viking Age to the present, with particular attention to Baltic-Scandinavian contacts. Offered: jointly with JSIS A 344.

SCAND 345 Baltic Cultures (5) VLPA/I&S Cultures and peoples of Estonia, Latvia, and Lithuania. Baltic literature, music, art, and film in social and historical context. Traditional contacts with Scandinavia and

Central and East Europe. Offered: jointly with JSIS A 345.

SCAND 350 Environmental Norms in International Politics (5) I&S *Ingebritsen* Surveys development of international environmental consciousness from 1960s to present. Models of "green development"; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with ENVIR 360/JSIS B 350.

SCAND 351 Scandinavia, the European Union, and Global Climate Change (5) I&S Reviews the history of climate change, the role of Swedish scientist Svante Arrhenius in defining greenhouse effects, Scandinavian policy response, and the role of the European Union in global climate change. Offered: jointly with JSIS A 351; WSp.

SCAND 352 Innovation in Scandinavia (5) I&S C. *Ingebritsen* Innovation, the introduction of something new, an idea, a method, a device or product, is underexplored in the Humanities and Social Science literature. Reviews the major writers in the innovation literature. Innovation crosses disciplines, and creates wealth and employment from Scandinavian to North American neo-liberal capitalism, where ideas seek investment capital in a competitive, Darwinian environment. Offered: W.

SCAND 360 Scandinavian Cinema (5) VLPA A. *Doxtater, A. Nestingen* Major Scandinavian films and film directors from the 1920s to the present.

SCAND 361 Danish Cinema (5) VLPA Studies Danish Cinema from its first major director Carl Th. Dreyer to contemporary directors, such as Lars von Trier and Susanne Bier, as well as trends and forms, such as Art House, Popular Cinema, and TV-Series. Offered: AWSp.

SCAND 365 Finnish Popular Culture (5) VLPA *Ilona Harmavaara* Intensive exploration of Finnish culture. Popular culture is a window to the multilayeredness of a society: tradition and innovations, international and national, high and low cultures, mainstream and underground, majorities and minorities, and different media and genres. Recommended: SCAND 151; FINN 101; and FINN 102. Offered: Sp, odd years.

SCAND 367 Sexuality in Scandinavia: Myth and Reality (5) VLPA/I&S Examines selected Scandinavian literary and socio-political texts, films, and art to manifest the reality behind the myths of sexual freedom in Scandinavia.

SCAND 370 The Vikings (5) VLPA/I&S Vikings at home in Scandinavia and abroad, with particular emphasis on their activities as revealed in archaeological finds and in historical and literary sources. Offered: jointly with HSTAM 370.

SCAND 375 Vikings in Popular Culture (5) VLPA *Lauren Poyer* Explores media representations of "the Vikings" in popular culture over the past 200 years in Europe and the United States, including advertising, comics, film, literature, music, poetry, propaganda, television series, and video games. Compares these modern artistic productions with their medieval counterparts, and examines how the Vikings have functioned as vessels for a variety of cultural fantasies about gender, class, race, and religion.

SCAND 380 History of Scandinavia to 1720 (5) I&S Scandinavian history from the Viking Age to 1720, with an emphasis on the political, social, and economic development of Denmark, Norway, Sweden, Finland, and Iceland from the Middle Ages to the Enlightenment. Offered: jointly with HSTEU 380.

SCAND 381 History of Scandinavia Since 1720 (5) I&S Scandinavian history from the Enlightenment to the Welfare State with emphasis on the political, social, and economic development of the modern Scandinavian nations of Denmark, Norway, Sweden, Finland, and Iceland. Offered: jointly with HSTEU 381.

SCAND 399 Foreign Study in Scandinavia (1-5, max. 20) Pan-Scandinavian coursework in Scandinavia, including courses in English.

SCAND 402 International Political Economy and Scandinavia (5) I&S Overview of the most prominent theoretical approaches to the study of international political economy. Evaluates competing theories and applies these to explain contemporary problems in international political economy. Readings include examples from Scandinavia's experience.

SCAND 427 Scandinavian Women Writers in English Translation (5) VLPA, DIV Selected works by major Scandinavian women writers from mid-nineteenth-century bourgeois realism to the present with focus on feminist issues in literary criticism. Offered: jointly with GWSS 429.

SCAND 430 Readings in Folklore (5) VLPA Exploration of theoretical and methodological issues in folklore studies through independent reading of journal articles published during the last five years. Offered: jointly with C LIT 430.

SCAND 431 The Northern European Ballad (5) VLPA Integrative study of the Northern European Ballad, with an emphasis on texts, performance, context, history, theory, genre classification, and interpretive approaches. Offered: jointly with C LIT 431.

SCAND 437 Politics in Scandinavia (5) I&S C. *INGEBRITSEN* Twentieth-century politics in Scandinavia. How Scandinavian countries have been governed. Costs and consequences of their governmental style and its uncertain future. Optimal size of polities, problems of mature welfare states, process of leadership and representation in multiparty systems, decline of political parties. Offered: jointly with POL S 437.

SCAND 445 War and Occupation in Northern Europe: History, Fiction, and Memoir (5) VLPA/I&S, DIV The study of literary representations (fiction, memoirs, and personal narratives) dealing with World War II and the occupation of the Nordic and Baltic countries. Offered: jointly with JSIS A 442.

SCAND 450 Scandinavian Literary History (3) VLPA Survey of Scandinavian literary history.

SCAND 454 Baltic History (5) I&S Overview of the history of the area occupied by the Baltic countries of Latvia, Lithuania, and Estonia. Emphasizes their emergence as modern European nation-states. Era from World War I to present treated in depth, including the historical role and present situation of non-Baltic peoples, particularly Russians. Offered: jointly with HSTEU 454.

SCAND 455 Baltic Politics and Society Today (5) I&S *G. Smidchens* Intensive interdisciplinary survey of current social, political, and economic

developments in Estonia, Latvia, and Lithuania.
Offered: jointly with JSIS A 455; AWSp.

SCAND 460 History of the Scandinavian Languages

(5) VLPA Development of languages from common Scandinavian to contemporary Danish, Norwegian, Swedish, Faroese, and Icelandic.

SCAND 462 Isak Dinesen and Karen Blixen (5) VLPA

The fiction of Isak Dinesen (pseudonym for Karen Blixen) reevaluated in light of current issues in literary criticism, particularly feminist criticism. Close readings of selected tales, essays, and criticism. Offered: jointly with GWSS 462.

SCAND 465 Translation Workshop in Nordic and Baltic Languages (5) VLPA

Examines translation theories and good practices within the field of translation. Introduces the most common translation tasks within pragmatic text translation and literary translation. Provides students opportunities to strengthen their professional skill set and get feedback from professional translators. Language of instruction and target language for translations is English.

SCAND 470 Scandinavian Auteurs (5, max. 10)

VLPA *Nestingen* Studies the body of work of Scandinavia's auteur filmmakers. Introduces the theory and history of auteur cinema, with special attention to Scandinavian filmmakers' contribution. Offered: jointly with C LIT 474; AWSp.

SCAND 479 Eco-Capitalism (5) I&S *Ingebritsen*

Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with JSIS A 429.

SCAND 480 Kierkegaard and Decadence in European Literature (5) VLPA

Reading and discussion of core texts by Soren Kierkegaard, as well as a consideration of the relationship between Kierkegaardian thought and the literary practice of various writers of Scandinavian and European decadence. Offered: jointly with JSIS A 480.

SCAND 481 August Strindberg and European Cultural History (5) VLPA/I&S

Examines the work of Swedish dramatist, novelist, and painter August Strindberg, in the context of European literary movements and history of ideas from 1880 to 1912, and Strindberg's influence on twentieth-century drama and film. Offered: jointly with JSIS A 481.

SCAND 482 Knut Hamsun and Early European Modernism (5) VLPA

Reading and discussion of significant novels by Knut Hamsun, whose oeuvre is considered in the context of works by other European modernist writers. Offered: jointly with JSIS A 482.

SCAND 490 Special Topics (1-5, max. 15) Special topics in Scandinavian art, literature, culture, and history. Course offerings based on instructor's specialty and student demand.

SCAND 495 Foreign Study: Research Project (1-5, max. 10) Research on approved topic.

SCAND 498 Senior Capstone Project (3/5)

Undergraduate research and the preparation of a capstone project in Scandinavian area studies. Recommended: Completion of majority of major requirements. Typically taken winter or spring quarter of senior year. Offered: AWSpS.

SCAND 499 Independent Study or Research (1-5, max. 10) Independent study or research in Scandinavian area studies. May be done in a Scandinavian language or in English.

SCAND 500 Introductory Readings in Old Icelandic (5)

Systematic study of the grammatical structure of Old Icelandic and the reading of several short prose works.

SCAND 501 Old Icelandic Language and Literature (5)

Reading of a major work in Old Icelandic literature as a vehicle for discussions about literary history and genre, narrative, and rhetorical strategies.

SCAND 503 Methods of Scandinavian Studies (5)

Introduction to Scandinavian studies on the graduate level with emphasis on Scandinavian literature, folklore, history, and politics.

SCAND 504 Contemporary Literary Theory (5)

Contemporary literary theory and its application to Scandinavian texts. Prerequisite: graduate student standing or permission of instructor.

SCAND 505 Topics in Scandinavian Drama and Film (5, max. 15)

Seminar on a selected topic in Scandinavian drama or film, such as an author (Holberg, Ibsen, Strindberg, Bergman), a period, a genre, or a movement.

SCAND 508 Topics in Scandinavian Prose (5, max. 15)

Seminar on various topics in Scandinavian prose, including shorter prose texts, as well as a selection of the significant novels of the nineteenth and twentieth centuries.

SCAND 510 Archives in Scandinavian Studies (5, max. 10)

Guntis Smidchens, Andrew Nestingen, Marianne Stecher, Amanda Doxtater, Olivia N Gunn Investigates either actual archives (in buildings or online) in or related to the Nordic and Baltic regions; or, practices and methods of archival research; or, the archive as a theoretical concept. This concept refers to preservation, history, and memory, and also evokes law, authority, and social order. Offered: AWSp.

SCAND 511 Books in Scandinavian Studies (5, max. 10)

Olivia N Gunn, Andrew Nestingen, Amanda Doxtater, Guntis Smidchens, Marianne Stecher Literary texts, genres, movements, themes, authorships, and/or the material culture of texts significant to the field which challenge categorizations of literary scholarship. Topics drawn from Nordic and Baltic literature. Offered: AWSp.

SCAND 512 Institutions in Scandinavian Studies (5, max. 10)

Andrew Nestingen, Amanda Doxtater, Christine Ingebritsen, Marianne Stecher, Olivia N Gunn Cultural, educational, governmental, or social institutions significant to the Nordic and Baltic region; or, practices and methods of research on institutions; or, representation of the institution in literature and film. Role of cultural institutions and the arts in shaping public discourse. Offered: AWSp.

SCAND 513 Methods in Scandinavian Studies (5, max. 10)

Amanda Doxtater, Christine Ingebritsen, Olivia N Gunn, Marianne Stecher, Andrew Nestingen Emphasis on cultural-studies approaches to cinema, folklore, language, literature, politics, and society.

Investigates methods of Scandinavian Studies by exploring the critical theory of various sub-disciplines and examples of current scholarship. Offered: AWSp.

SCAND 514 Media in Scandinavian Studies (5, max. 10)

Amanda Doxtater, Olivia N Gunn, Andrew Nestingen Cinematic texts, genres, movements, themes, authorships, and technologies significant to the field. Theories of film authorship. Applying theoretical understanding to the study of Scandinavian film, television, and online media. Topics drawn from Nordic and Baltic media. Offered: AWSp.

SCAND 515 Translation in Scandinavian Studies (5, max. 10)

Amanda Doxtater, Andrew Nestingen, Olivia N Gunn, Guntis Smidchens, Marianne Stecher Literary and technical translation from Scandinavian, Finno-Ugric, and Baltic languages into English. Key translation theories and their applications. Exercises language skills by practicing and making use of different translation techniques. Offered: AWSp.

SCAND 518 Foreign Language Teaching

Methodology (2) *Brandl* Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with GERMAN 518/SLAVIC 518; A.

SCAND 519 Modern Scandinavian Politics (5)

Analyzes the political, economic, and historical development of Sweden, Norway, Denmark, Iceland, and Finland from World War II to the present. Readings focus on domestic and foreign policies that distinguish these countries from other advanced industrial societies. Offered: jointly with POL S 519.

SCAND 520 Topics in Scandinavian Poetry (5, max. 15)

Seminar on selected periods of Scandinavian poetry: romanticism, symbolism, modernism, and contemporary poetry. Poetry examined in relation to the literary canon of each country and to Scandinavian literature as a whole. International influences also discussed.

SCAND 525 Topics in Scandinavian History (5, max. 15)

Seminar on selected topics in Scandinavian history.

SCAND 530 Old Norse Literature (3) Studies in the poetry and prose tradition of medieval Iceland and Norway.

SCAND 533 Interdisciplinary Approaches to Community in Scandinavia (5) Humanistic examination of community creation, maintenance, and change in the Nordic region. Examples drawn from folklore, literature, activism, popular culture, history. Focus on issues of gender, belief, and art in relation to community. Coursework includes both individual and collaborative assignments.

SCAND 543 Folk Literature (5) *G. Smidchens* This course surveys theories and methods for interpreting folk literature (folk tales and legends) in a variety of contexts, from oral performance through modern literary and film adaptations.

SCAND 565 Translation Workshop in Nordic and Baltic Languages (5) Examines translation theories and good practices within the field of translation. Introduces the most common translation tasks within pragmatic text translation and literary translation. Provides students opportunities to strengthen their professional skill set and get feedback from professional translators. Language of instruction and target language for translations is English.

SCAND 570 Scandinavian Auteurs (5, max. 10) *VLPA Nestingen* Seminar on auteur filmmakers in Scandinavian cinema, studying specific auteurs' bodies of work, theories of auteur cinema, and the history of auteurism in Scandinavian cinema. Offered: jointly with C LIT 574; AWSp.

SCAND 579 Eco-Capitalism (5) *Ingebritsen* Explores the idea of environmentalism and sustainability across societies. Compares and contrasts how prominent authors in the field assess the risks and opportunities of human effects on climate and ecology. Questions explored include: will ecological solutions be critical to the revival of the global economy? Why do place such as Europe adapt more readily to environmental challenges? Offered: jointly with JSIS A 529.

SCAND 580 Kierkegaard and Decadence in European Literature (5) *Sjavik* Examines Kierkegaardian thought and the literary practice of

various writers of Scandinavian and European decadence. Offered: Sp.

SCAND 581 August Strindberg and European Cultural History (5) *Adams* Seminar on Swedish dramatist, novelist, scientist, and painter August Strindberg (1849-1912), one of Europe's most influential artists, and one of the most important innovators of modern drama. Offered: Sp.

SCAND 582 Knut Hamsun and Early European Modernism (5) *Sjavik* Examines Knut Hamsun's early works and their relationship to early European modernist literature. Offered: W.

SCAND 590 Special Topics in Scandinavian Literature (1-5, max. 15)

SCAND 594 Modern Methods and Materials in Teaching Scandinavian and Baltic Languages (3) Theory and practice of communicative language teaching; current developments in foreign-language teaching; evaluation of teaching materials; includes attendance at the departmental and university-wide fall orientation; required for beginning teaching assistants of Scandinavian and the Baltic languages. May not be taken for credit if GRDSCH 615 already taken. Prerequisite: SCAND 518. Credit/no-credit only.

SCAND 595 Teaching Assistant Workshop (1) Focuses on topics in language pedagogy. Required for continuing teaching assistants in Scandinavian studies. Includes participation in the departmental and University-wide fall orientation teaching workshops. Prerequisite: SCAND 518; SCAND 594. Instructors: Brandl Credit/no-credit only. Offered: A.

SCAND 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

SCAND 700 Master's Thesis (*-)

SCAND 800 Doctoral Dissertation (*-)

SWEDISH

SWED 101 First Year Swedish 1 (5) VLPA Fundamentals of oral and written Swedish, including introductory study of literature, film, and other

authentic texts. First in a sequence of three. Offered: A.

SWED 102 First Year Swedish 2 (5) VLPA

Fundamentals of oral and written Swedish, including introductory study of literature, film, and other authentic texts. Second in a sequence of three. Prerequisite: SWED 101 Offered: W.

SWED 103 First Year Swedish 3 (5) VLPA

Fundamentals of oral and written Swedish, including introductory study of literature, film, and other authentic texts. Third in a sequence of three. Prerequisite: SWED 102 Offered: Sp.

SWED 150 Intensive First-year Swedish (15)

Fundamentals of oral and written Swedish. Intensive practice in speaking, reading, and writing. Interactive classroom, computer-assisted learning, language and reading laboratories. Emphasis on contemporary Swedish culture and society. If Swedish is the student's language of admission, only 10 credits count towards graduation.

SWED 199 Foreign Study: Elementary Swedish (1-15, max. 15) Fundamentals of oral and written Swedish.

SWED 201 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. First in a sequence of three.

SWED 202 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Second in a sequence of three.

SWED 203 Second-year Swedish (5) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Third in a sequence of three.

SWED 299 Foreign Study: Intermediate Swedish (1-15, max. 15) VLPA Intensive practice in speaking, reading, and writing. Functional review of grammar. Discussion of culture and current events in Sweden.

SWED 300 Swedish Women Writers (5) VLPA Readings from works by Swedish women writers.

SWED 301 Topics in Swedish Literature and Culture (5, max. 15) VLPA Topics in Swedish literature, life, and civilization.

SWED 302 The Swedish Novel (5) VLPA Selected works by novelists of the nineteenth and twentieth centuries.

SWED 352 Strindberg and His Works (5) VLPA Representative short stories, dramas, autobiographical works, poems, and one novel.

SWED 395 Foreign Study: Swedish Area Studies (1-5, max. 10) I&S Courses in Swedish history, society, and/or politics.

SWED 399 Foreign Study: Topics in Swedish Literature and Culture (1-5, max. 15) VLPA Topics in Swedish literature, life, and civilization.

SWED 490 Supervised Reading (1-5, max. 10) Readings in a selected area of Swedish language, literature, or related fields.

SWED 510 Graduate Level Proficiency in Swedish (2-5, max. 15) Advanced training in graduate level proficiency in Swedish. Prerequisite: 15 credits of 300-400 level SWED courses. Instructors: Adams, Dubois Offered: AWSpS.

SLAVIC LANGUAGES AND LITERATURES

BOSNIAN/CROATIAN/MONTENEGRIN/SERBIAN

BCMS 401 First Year Bosnian/Croatian/Montenegrin/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, Montenegrin, and Serbian. First in a sequence of three. Offered: A.

BCMS 402 First Year Bosnian/Croatian/Montenegrin/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, Montenegrin, and Serbian. Second in a sequence of three. Prerequisite: BCMS 401, which may be taken concurrently during summer quarter. Offered: W.

BCMS 403 First Year Bosnian/Croatian/Montenegrin/Serbian (5) Comprehensive introduction to spoken and written literary Bosnian, Croatian, Montenegrin, and Serbian. Third in a sequence of three. Prerequisite: BCMS 402 Offered: Sp.

BCMS 404 Second-Year**Bosnian/Croatian/Montenegrin/Serbian (5) VLPA**

Continuation of BCMS 401, BCMS 402, BCMS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, Montenegrin, and Serbian. First in a sequence of three. Prerequisite: minimum grade of 2.0 in BCMS 403. Offered: A.

BCMS 405 Second-Year**Bosnian/Croatian/Montenegrin/Serbian (5) VLPA**

Continuation of BCMS 401, BCMS 402, BCMS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, Montenegrin, and Serbian. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in BCMS 404. Offered: W.

BCMS 406 Second-Year**Bosnian/Croatian/Montenegrin/Serbian (5) VLPA**

Continuation of BCMS 401, BCMS 402, BCMS 403; reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns through the reading of contemporary short stories in Bosnian, Croatian, Montenegrin, and Serbian. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in BCMS 405. Offered: Sp.

BCMS 410 Intensive Third Year**Bosnian/Croatian/Montenegrin/Serbian (10)**

VLPA B. *Belic* Advanced grammatical exercises and listening, reading, and writing skills development. Emphasis on strengthening of conversational and presentational competence. Prerequisite: BCMS 406 Offered: A.

BCMS 420 Literature, Film, and Culture of the Former Yugoslavia and the Yugoslav Successor States (5, max. 15) VLPA

A travelogue through the intellectual and cultural landscape of the former Yugoslavia and the Yugoslav successor states, studying select literary works, films, and other artifacts, with the exploration of both how these phenomena are a part of their intellectual and historical environment, and how they transcend and change it.

BULGARIAN

BULGR 401 First-Year Bulgarian (5) Introduction to Bulgarian phonology and grammar in terms of the modern spoken language. Writing conventions of literary Bulgarian. First in a sequence of three. Offered: A.

BULGR 402 First-Year Bulgarian (5) Introduction to Bulgarian phonology and grammar in terms of the modern spoken language. Writing conventions of literary Bulgarian. Second in a sequence of three. Prerequisite: BULGR 401. Offered: W.

BULGR 403 First-Year Bulgarian (5) Reading of modern texts to increase command of grammar and vocabulary. Third in a sequence of three. Prerequisite: BULGR 402. Offered: Sp.

BULGR 404 Second-Year Bulgarian (5) VLPA

Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. First in a sequence of three. Prerequisite: minimum grade of 2.0 in BULGR 403. Offered: A.

BULGR 405 Second-Year Bulgarian (5) VLPA

Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Second in a sequence of three. Prerequisite: BULGR 404. Offered: W.

BULGR 406 Second-Year Bulgarian (5) VLPA

Continuation of BULGR 401, BULGR 402, BULGR 403. Selected readings in Bulgarian literature, history, and culture. Reinforces and extends basic knowledge of Bulgarian grammar and vocabulary. Third in a sequence of three. Prerequisite: BULGR 405. Offered: Sp.

CZECH

CZECH 401 First-Year Czech (5) Introduction to spoken and written Czech. First in a sequence of three. Offered: A.

CZECH 402 First-Year Czech (5) Introduction to spoken and written Czech. Second in a sequence of three. Prerequisite: CZECH 401. Offered: W.

CZECH 403 First-Year Czech (5) Modern Czech prose, leading to a command of the language as a research tool and providing an adequate basis for further study. Third in a sequence of three. Prerequisite: CZECH 402. Offered: Sp.

CZECH 404 Second-Year Czech (5) VLPA
Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. First in a sequence of three. Prerequisite: minimum grade of 2.0 in CZECH 403. Offered: A.

CZECH 405 Second-Year Czech (5) VLPA
Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. Second in a sequence of three. Prerequisite: CZECH 404. Offered: W.

CZECH 406 Second-Year Czech (5) VLPA
Continuation of CZECH 401, CZECH 402, CZECH 403. Selected readings from the main works of Czech authors of the nineteenth and twentieth centuries. Reinforces and extends basic knowledge of Czech grammar and vocabulary. Third in a sequence of three. Prerequisite: CZECH 405. Offered: Sp.

CZECH 420 Modern Czech Literature in English (5) VLPA Representative works of Czech literature from the 1920s to the present in the context of earlier Czech and general European literary trends. Emphasis on prose and drama of major writers, including Hasek, Capek, Vancura, Skvorecky, Kundera, Vaculik, and Havel.

POLISH

POLSH 320 Introduction to Contemporary Polish Culture (5, max. 15) VLPA/I&S Topics vary and may include overview of contemporary Polish culture: literature (prose, poetry, and drama), film (feature, documentary, and video art), music, theatre, art, and architecture, as well as an introduction to the

cultural life in Poland in the twenty-first century. Offered: AW.

POLSH 401 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected texts, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. First in a sequence of three. Offered: A.

POLSH 402 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected texts, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. Second in a sequence of three. Prerequisite: POLSH 401. Offered: W.

POLSH 403 First-Year Polish (5) Focuses on oral communication in basic everyday life situations, sentence level grammar, reading simple connected texts, and writing simple letters and notes. Conducted mostly in Polish, to help enable students to move from novice to intermediate low/mid-level on the ACTFL Proficiency Scale. Third in a sequence of three. Prerequisite: POLSH 402. Offered: Sp.

POLSH 404 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. First in a sequence of three. Prerequisite: minimum grade of 2.0 in POLSH 403. Offered: A.

POLSH 405 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. Second in a sequence of three. Prerequisite: POLSH 404. Offered: W.

POLSH 406 Second-Year Polish (5) VLPA Reinforces basic grasp of the language and enlarges vocabulary and command of grammatical patterns beyond the sentence level. Pays special attention to oral communication, listening comprehension, and writing. Helps enable students to move from Novice High to Intermediate Mid/High-level on the ACTFL Proficiency Scale. Third in a sequence of three. Prerequisite: POLSH 405. Offered: Sp.

POLSH 420 Modern Polish Literature in English (5, max. 15) VLPA Topics vary. Overview of Polish intellectual and cultural history as represented in literary works by modern Polish writers and/or filmmakers.

ROMANIAN

ROMN 420 Romanian Literature, Art, and Film: One Century of Cultural Transformations (5) VLPA/I&S Explores Eastern and Western artistic trends and ideologies in Romanian literature and culture during the last 100 years. Investigates contributions to surrealism, dadaism, theatre of the absurd, and practices of resistance against communism as well as women's roles in forging a post-Soviet identity. Taught in English.

RUSSIAN

RUSS 101 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. First in a sequence of three. Offered: A.

RUSS 102 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. Second in a sequence of three. Prerequisite: minimum grade of 2.0 in RUSS 101. Offered: W.

RUSS 103 First-Year Russian (5) Introduction to Russian. Emphasis on oral communication with limited vocabulary. Short readings and writing exercises. Basic grammar. Conducted mostly in Russian. Third in a sequence of three. Prerequisite: minimum grade of 2.0 in RUSS 102. Offered: Sp.

RUSS 110 Introduction to Russian Culture and Civilization (5) VLPA/I&S Introduction to Russian culture and history from pre-Christian times to the present, as seen through literary texts, music, film, visual art, and historical works. All lectures and written materials in English. No prior knowledge of Russian necessary. Offered: jointly with JSIS A 110; A.

RUSS 111 First-Year Medical Russian (1) Intended as a 1-credit add-on to the regular first-year Russian sequence. Exposes students to a variety of medical terminology, providing opportunities for practicing medical communication, and reading and analyzing written texts. Prerequisite: RUSS 101, which must be taken concurrently. Offered: A.

RUSS 112 First-Year Medical Russian (1) Intended as a 1-credit add-on to the regular first-year Russian sequence. Exposes students to a variety of medical terminology, providing opportunities for practicing medical communication, and reading and analyzing written texts. Prerequisite: RUSS 111; RUSS 102, which must be taken concurrently. Offered: W.

RUSS 113 First-Year Medical Russian (1) Intended as a 1-credit add-on to the regular first-year Russian sequence. Exposes students to a variety of medical terminology, providing opportunities for practicing medical communication, and reading and analyzing written texts. Prerequisite: RUSS 112; RUSS 103, which must be taken concurrently.

RUSS 120 Topics in Russian Literary and Cultural History (5, max. 15) VLPA Introduces important trends and movements in Russian literary and cultural history. Offered in English.

RUSS 150 Intensive First-Year Russian (15) Covers material of RUSS 101, RUSS 102, RUSS 103 in one quarter. Meets three to four hours daily. For continuation, see RUSS 250 or RUSS 201, RUSS 202, RUSS 203. No credit if RUSS 101, RUSS 102, RUSS 103 previously taken. Offered: S.

RUSS 201 Second-Year Russian (5) VLPA Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. First in a sequence of three. Prerequisite: either 2.0 in RUSS 103 or 2.0 in RUSS 150. Offered: A.

RUSS 202 Second-Year Russian (5) VLPA

Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. Second in a sequence of three. Prerequisite: RUSS 201. Offered: W.

RUSS 203 Second-Year Russian (5) VLPA

Comprehensive review of Russian grammar with continuing oral practice and elementary composition. Conducted mostly in Russian. Third in a sequence of three. Prerequisite: RUSS 202. Offered: Sp.

RUSS 210 From Paganism to Christianity: Medieval Russian Mythology, Literature, and Culture (5) VLPA/I&S

Covers Pagan mythology and folk tales; Christian hagiography and morality tales; the beginnings of secular literature; and fashions, music, paintings, and architecture. Up to 1600. Offered: W.

RUSS 220 Topics in Russian Literary and Cultural History (5, max. 15) VLPA Explores important trends and issues in Russian literary and cultural history. Taught in English.

RUSS 223 Russian Cinema (5) VLPA Covers Russian cinema from its beginnings to the present day. Directors include Yevgenii Bauer, Sergei Eisenstein, Vsevolod Pudovkin, Dziga Vertov, Mikhail Kalatozov, Andrei Tarkovsky, Aleksei Balabanov, and Aleksandr Sokurov. Also "Russians in Hollywood." Covers the relevant sociopolitical context. Also features documentaries and animation. Offered: AWSp.

RUSS 230 Masterpieces of Russian Literature (5, max. 15) VLPA Examines the greatest authors and masterpieces of Russian literature, including Tolstoy, Dostoevsky, and Chekhov. All readings, discussions, and assignments in English.

RUSS 240 Vladimir Nabokov (5) VLPA Examines the works of Vladimir Nabokov, from his early novels written in Europe to his later masterpieces, including *Lolita*, *Invitation of a Small Animal*, *Pale Fire*, and *Invitation of a Small Animal*. Offered: Sp.

RUSS 250 Intensive Second-Year Russian (15) VLPA Covers material of RUSS 201, RUSS 202, RUSS 203 in one quarter. Meets three to four hours daily. No credit if RUSS 201, RUSS 202, RUSS 203 previously taken. Prerequisite: either 2.0 in RUSS 103 or 2.0 in RUSS 150. Offered: S.

RUSS 260 Underworlds (5) VLPA B. HENRY Examines real and metaphoric underworlds in literature and films about the afterlife, the heroic journey, guilt, grief, violence, and redemption. Students learn how the mythic underworld functions not only in art, but in their own lives.

RUSS 301 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. First in a sequence of three. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: A.

RUSS 302 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. Second in a sequence of three. Prerequisite: RUSS 301. Offered: W.

RUSS 303 Third-Year Russian (5) VLPA Extensive practice in spoken and written Russian based on a variety of prose readings. Intensive review and supplementation of strategic grammatical concepts. Third in a sequence of three. Prerequisite: RUSS 302. Offered: Sp.

RUSS 304 Reading and Translation (1, max. 3) VLPA Translation techniques with emphasis on development of vocabulary and reading skills. Primarily for Russian regional studies majors. Prerequisite: either RUSS 203 or RUSS 250. Credit/no-credit only. Offered: AWSp.

RUSS 313 Business Russian (5) VLPA Emphasizes the language and practice of business in Russia today. Prerequisite: either RUSS 203 or RUSS 250. Offered: W.

RUSS 314 Business Russian II (5) VLPA Emphasizes the language and practice of business in Russia today. Prerequisite: RUSS 203 or RUSS 250. Offered: Sp.

RUSS 316 Extended Russian through Science, Technology, Engineering, and Math (5, max. 15) VLPA For students already relatively proficient in spoken and written Russian to extend their language skills to the topics of STEM (Science, Technology, Engineering, and Math). Designed for heritage learners, students of Russian as a second language,

and students working in either technical fields or the humanities. Prerequisite: either RUSS 301 or permission of instructor for heritage speaker.

RUSS 320 Topics in Russian Literary and Cultural History (5, max. 15) VLPA Important trends and issues in Russian literacy and cultural history. Topics and instructors vary. In English.

RUSS 321 Eighteenth Century Russian Literature and Culture (5) VLPA Introduction, in English translation, to the literature and culture of Russia from 1700 to the 1830s, starting with two important examples from earlier periods. Works of literature, art, and music studied in relation to the development of Russian thought, both secular and religious.

RUSS 322 The Golden Age: Nineteenth Century Russian Literature and Culture (5) VLPA/I&S *Diment, Henry* Explores Russian literature and culture during the "Golden Age" of the nineteenth century. Authors include some of the best-known and most influential Russian writers, including Tolstoy, Dostoevsky, Gogol, Turgenev, Chekhov, and Goncharov. Students gain a comprehensive knowledge of major literary themes, ideas, and developments of nineteenth century Russian literature. Offered: W.

RUSS 323 Revolution: Twentieth Century Russian Literature and Culture (5) VLPA/I&S Explores Russian literature and culture during the twentieth century before perestroika, a period of "revolutions" and unprecedented change in political, cultural, and economic life. Authors include Babel, Bulgakov, Il'f and Petrov, and Nabokov. Periods include symbolism, revolution, Soviet, Stalinist, the "thaw", and post-Soviet. Offered: Sp.

RUSS 324 Russian Folk Literature in English (5) VLPA/I&S Explores the diversity of forms, themes, and functions of the Russian folktale, the literary art of the historically and culturally marginalized Russian peasantry. Discussion of theoretical frameworks for interpretation, resistance strategies, and with dominant literary models.

RUSS 340 Russia's Big Books (5, max. 15) VLPA J. *ALANIZ, G. DIMENT, B. HENRY* Studies one big/epic novel by the titans of Russian literature per quarter. Includes such novels as Tolstoy's *War and Peace* and

Anna Karenina, Dostoevsky's *Brothers Karamazov*, Goncharov's *Oblomov*, Bulgakov's *Master and Margarita*, Pasternak's *Doctor Zhivago*, and Nabokov's *Invitation to a Beheading*. All readings are in English. Offered: AWSp.

RUSS 350 Intensive Third-Year Russian (15) VLPA Covers material of RUSS 301, RUSS 302, RUSS 303 in one quarter. Meets three hours daily. No credit of RUSS 301, RUSS 302, RUSS 303 previously taken. Prerequisite: either 2.0 in RUSS 203 or 2.0 in RUSS 250. Offered: S.

RUSS 401 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. First in a sequence of three. Prerequisite: either 2.0 in RUSS 303 or 2.0 in RUSS 350. Offered: A.

RUSS 402 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. Second in a sequence of three. Prerequisite: RUSS 401. Offered: W.

RUSS 403 Fourth-Year Russian (5) VLPA Class discussion, oral presentations, and composition, based on reading a variety of texts, both literary and non-literary. Advanced grammar. Translation one full course period per week. Third in a sequence of three. Prerequisite: RUSS 402. Offered: Sp.

RUSS 420 Topics in Russian Literary and Cultural History (5, max. 20) VLPA A special topic in the literary and cultural history of Russia. Topics vary.

RUSS 421 Post-Soviet Literary and Cultural Scene (5, max. 15) VLPA Covers Russian literature of the post-Soviet period. In English.

RUSS 422 Russian Literature in Emigration and Exile (5) VLPA Examines writers who left the Soviet Union during the post-Stalin period up to the fall of the Soviet Union. Features writers: Vladimir Nabokov, Nina Berberova, Nadezhda Terri, Vasily Aksyonov, Andrei Siniavsky, and Gary Shteyngart.

RUSS 423 Russian Film (5, max. 15) VLPA Explores early Russian, Soviet, and post-Soviet film. Features filmmakers: Sergei Eisenstein, Dziga Vertov, Vsevolod Pudovkin, Andrei Tarkovsky, Alexandr Sokurov, and others. Focuses on critical materials pertaining to filmmaking and film theory.

RUSS 424 Topics in Ethnicity and Cultural Identity (5, max. 15) VLPA/I&S Issues of cultural and ethnic identities and neo-colonialism. Special focus on Russian and East European Jewish literature and culture, and central Asian literature, art, and culture. Taught in English.

RUSS 425 Russian Drama (5, max. 15) VLPA Analysis of history and development of Russian drama from the eighteenth century to present times. Playwrights featured include Alexander Griboedev, Alexander Ostrovsky, Anton Chekhov, Vladimir Mayakovsky, and others. Taught in English.

RUSS 426 Russian Art and Architecture (5) VLPA West Survey of Russian art and architecture from the middle ages to the twentieth century, covering the place of the visual arts in Russian culture, the relationship between visual and verbal art, and the appropriate reading of works of Russian art of all periods. Offered: A.

RUSS 427 Russian Jewish Experience (5) VLPA/I&S, DIV A. *Senderovich* Examines the experience of Russian Jews from the late 19th century to the present through fiction, films, memoirs, graphic novels set during the Bolshevik Revolution, Stalinism, the Holocaust, the Cold War, the post-Soviet era. Explores issues of identity, gender, class, place of Jews as individuals and as a minority within Russian & Soviet society, as well as Jewish-Russian emigration to USA, Israel and elsewhere at the turn of the 21st century. Offered: jointly with JEW ST 427; A.

RUSS 430 Major Authors (5, max. 15) VLPA Explores major Russian writers of the nineteenth and twentieth centuries. Features authors: Pushkin, Gogol, Goncharov, Turgenev, Tolstoy, Dostoevsky, Chekhov, Babel, Bulgakov, Olesha, and Pasternak. Content varies.

RUSS 450 Intensive Fourth-Year Russian (15) VLPA Covers material of RUSS 401, RUSS 402, RUSS 403 in one quarter. Meets three hours daily. No credit if

RUSS 401, RUSS 402, RUSS 403 previously taken. Prerequisite: either 2.0 in RUSS 303 or 2.0 in RUSS 350. Offered: S.

RUSS 451 Structure of Russian (5) VLPA Descriptive analysis of contemporary standard Russian. Includes detailed phonetic transcription, discussion of major Great Russian dialects, as well as variations in popular speech, examination of common roots, and productive derivational elements in Russian words, and elementary principles of syntax. Prerequisite: either RUSS 203 or RUSS 250; and either LING 200 or LING 400. Offered: W.

RUSS 481 Russian Language in Russia (1-5, max. 45) VLPA Daily work in phonetics, grammar, conversation, translation, analytical reading, stylistics, newspaper analysis, and advanced syntax. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 482 Research Project in Russia (3, max. 15) VLPA Supervised research in student's selected area of concentration, combined with language instruction tailored to the student's field. Successful completion of course requires a 15-page term paper in Russian. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 483 Russian Literature in Russia (3, max. 15) VLPA Selection of courses on specialized topics in Russian literature; specific authors or periods. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 486 Culture in Russia (3, max. 15) VLPA/I&S Lectures on education, history, economics, law, the arts, ethnography, architecture; complemented by visits to places of cultural and historical interest and meetings with Russian groups. 4 credits for summer abroad program, 6 for semester abroad program. Prerequisite: either RUSS 203 or RUSS 250. Offered: AWSpS.

RUSS 490 Studies in Russian Literature (3-5, max. 15) VLPA In either Russian or English. Topics vary.

RUSS 499 Directed Study or Research (1-5, max. 15) Individual study of topics to meet specific needs. By arrangement with the instructor and the Department of Slavic Languages and Literatures office. Offered: AWSpS.

RUSS 501 Russian Language for Graduate Students (2, max. 10) Develops skills of particular use to graduate students. Emphasis on rapid assimilation of variety of written materials with sophisticated understanding and maximum retention of vocabulary, and ability to discuss in Russian the more theoretical and abstract kinds of material. Prerequisite: RUSS 403 or equivalent and graduate standing in Russian, East European, and Central Asian Studies.

RUSS 502 Russian Translation (3) Introduction to the theory of translation; translation to and from Russian of selected prose passages in a variety of styles, with emphasis on idiomatic accuracy and stylistic compatibility. Prerequisite: two quarters of RUSS 501 or permission of instructor.

RUSS 512 Russian Literary Criticism (3) A study of critical positions, problems, and literary values of major Russian literary critics from Belinsky to the present.

RUSS 520 Topics in Russian Literature and Culture (5, max. 20) Detailed study of a single author or a movement, theme, or short period in Russian literature or culture.

RUSS 521 Russian Literature to 1800 (5) Representative works of East Slavic, Muscovite, and Russian literature from the beginnings to 1800. Studies include a varied selection of primary texts. Intended as an introduction to the study of modern literature for beginning graduate students in Russian literature.

RUSS 522 Russian Literature of the Nineteenth Century (5) Survey of nineteenth-century Russian poetry and prose. Representative works of Russia's major and minor authors, literary trends, and genres.

RUSS 523 Russian Literature of the Twentieth Century (5) Survey of twentieth-century Russian poetry and prose. Pre-revolutionary, Soviet, and emigre authors, trends, and genres. Includes survey of twentieth-century literary criticism as well, in particular Russian formalists and Mikhail Bakhtin.

RUSS 526 Modern Russian Literary, Cultural, and Film Studies (5, max. 15) Modern literature and film. Topics include post-colonialism, gender, reflections

of social upheavals, artistic experimentation, issues of commercialism in art, search for new cultural expressions and identity. Readings in both Russian and English. Offered: Sp.

RUSS 542 Seminar in Russian Poetry (5, max. 20) One specific problem or theme in Russian poetry, seen in its widest possible dimensions. Students read, in Russian, the literary works involved and become familiar with the social, historical, and philosophical backgrounds that inspire them.

RUSS 543 Seminar in Contemporary Russian Prose (5, max. 20) Analysis of Russian prose fiction. Selected authors and topics.

RUSS 554 History of the Russian Literary Language (5) Russian literary language from the eleventh through the twentieth centuries, with special attention to syntax and lexicon and to the development of notions of literary styles. Offered in Russian. Prerequisite: SLAV 565, or permission of instructor.

RUSS 570 Research Seminar in Russian Literature (5, max. 40) Working in consultation with a faculty adviser, students formulate a topic and prepare a 30-minute oral presentation to be delivered at the seminar and submit a written paper to be read and critiqued by all participants.

RUSS 577 Russian Folk Literature (5) Examines the artistic forms, varieties, and themes of the Russian folktale, its roots in pre-Christian Slavic religion, connections with myth and legend, adaptation for Soviet and modern Russian literature, film, and music.

RUSS 600 Independent Study or Research (*-)

SLAVIC LANGUAGES AND LITERATURES

SLAVIC 101 Slavic Lands and Peoples (5) I&S Introduces students to basic concepts regarding the whole body of present-day Slavs as well as the area inhabited by or under the influence of present-day Slavs. Uses latest achievements in technology and in social media advancements to retrieve relevant information from present-day Slavs themselves. Taught in English.

SLAVIC 110 The Slavic Languages (5) VLPA

Introduces the basic concepts of Slavic linguistics. Addresses the origin of the Slavs and major stages of their linguistic history. Considers Slavic languages and their peculiarities in detail. Taught in English.

SLAVIC 130 Introduction to Slavic Culture and Civilization (5) VLPA

Examines the culture of the Slavs, an ethno-linguistic group of peoples living primarily in Central/Eastern Europe. Among nations investigated: the Czech Republic, Russia, Poland, and Ukraine. Students gain a fundamental grasp of major issues and historical events of this region, expressed through culture. Offered: jointly with JSIS A 130.

SLAVIC 175 The Slavic Text and Its Context (2/3,

max. 10) VLPA A contextual study of a significant work or intellectual movement from a Slavic culture. Study includes literature, film, music, or art. Credit/no-credit only.

SLAVIC 200 Introduction to Slavic Literature (5)

VLPA *Gordana P Crnkovic* Introduces major Slavic literary works of different types (stories, novels, poetry), mostly from the 20th and 21st century, focusing on the intense "close reading" of these texts that identifies their main literary features. Excellent beginning training for the informed reading of any kind of literature. Taught in English.

SLAVIC 210 Introduction to Bilingualism (5)

VLPA/I&S K. DZIWIWIREK A multidisciplinary examination of bilingualism as a societal and individual phenomenon. Considers language versus dialect, diglossia, state language policies, language rights, indigenous languages, and linguistic minorities. Explores bilingualism and biculturalism as human experience and as indexes of identity and diversity. Includes a fieldwork project focused on linguistic diversity in the Pacific Northwest. Offered: W.

SLAVIC 223 East European Cinema (5, max. 20)

VLPA Emphasizes international cultural, artistic, and historical diversity by introducing select contemporary Eastern European film directors. Focuses on a single filmmaker and studies his/her opus in depth, both in his/her Eastern European country of origin and abroad. Special attention paid to Eastern European filmmakers in Hollywood.

SLAVIC 320 The Other Europe: Post-World War II East European Fiction (5) VLPA

Crnkovic Introduces post-WWII Eastern European fiction created during and after the communist era, both in Eastern European countries and in exile. Includes works by Polish, Czech, Yugoslav, post-Yugoslav, Hungarian, and Baltic writers. Taught in English.

SLAVIC 323 Masterpieces of East European Cinema (5) VLPA

Crnkovic Studies aesthetically most interesting films from Eastern Europe from the 1950s to present. Includes select films by Polish film icon Andrzej Wajda, the Czech 1960s New Wave, the Zagreb School of Animated Film, works by Eastern European women directors, as well as more recent internationally awarded and acclaimed films.

SLAVIC 351 Introduction to the History of Slavic Languages (5) VLPA

History of Slavic languages from Indo-European to present time, including development of writing systems and national languages. Principles of historical linguistics: sound change, analogy, semantic change, as well as relevance of historical linguistics to our knowledge of human development, ancestral culture, etc. Prerequisite: either SLAVIC 110, LING 200, or LING 400. Offered: Sp.

SLAVIC 370 What is in a Language Name? The Case of Bosnian, Croatian, Montenegrin, and Serbian (5)

VLPA Examines diverse phenomena related to the language known as Serbo-Croatian, and to the Bosnian, Croatian, Montenegrin, and Serbian languages. Explores concepts such as language death, birth, politics, standardization, and codification. The relation between dialect and language is observed in an ecology exhibiting ethnic and religious diversity.

SLAVIC 401 Research Methods and Writing (2)

Introduces writing and research in Slavic studies. Students review secondary literature in their chosen fields, rewrite and revise their own work to bring it up to discipline standard, and work collaboratively to evaluate their own work and that of their peers.

SLAVIC 423 East European Film (5, max. 15)

VLPA *Crnkovic* Studies major East European film makers who left their countries at some point in their careers. Compares East European and Western production of those directors who worked partially in the West. Offered: jointly with CMS 423.

SLAVIC 425 Ways of Meaning: Universal and Culture Specific Aspects of Language (5) VLPA/I&S, DIV K.

Dziwirek Focuses on the diversity of human experience and the social and cultural conditioning of language use. Language as a mirror of culture and national character. Universal and culture/language specific components in linguistic expression of emotions, courtesy/politeness and rudeness, prejudice and (in) sensitivities, linguistic expression of gender differences in different cultures. Offered: Sp.

SLAVIC 426 Ways of Feeling: Expressions of Emotions Across Languages and Cultures (5) I&S/VLPA K.

DZIWIWIREK Investigate the diversity of human experience by focusing on culture specific aspects of linguistic expression of emotion. Examination of the meaning and form of emotion words in different languages, facial expressions, cultural attitudes to emotion and emotional behavior, and gender-specific emotional expressions.

SLAVIC 470 Special Topics in Slavic Linguistics (3-5, max. 15) VLPA

Augerot, Belic, Dziwirek Special topics in Slavic linguistics. Course offerings based on instructor's specialty and student demand. Offered: AWSp.

SLAVIC 481 East European Language in Eastern Europe (1-5, max. 45) VLPA

Daily work in phonetic, grammar, conversation, translation, analytical reading, stylistics, newspaper analysis, and advanced syntax. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWSpS.

SLAVIC 482 Research Project in Eastern Europe (3, max. 15) VLPA

Supervised research in student's selected area of concentration, combined with language instruction tailored to the student's field. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWSpS.

SLAVIC 483 East European Literature in Eastern Europe (3, max. 15) VLPA

Selection of courses on specialized topics in East European literature; specific authors or periods. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWSpS.

SLAVIC 486 East European Culture in Eastern Europe (3, max. 15) VLPA

Lectures on various

aspects of Eastern European culture, complemented by visits to places of cultural historical interest. Provides an opportunity to earn credits while studying in Eastern Europe. Offered: AWSpS.

SLAVIC 490 Studies in Slavic Literatures (3-5, max. 15) VLPA

Topics vary.

SLAVIC 498 Senior Honors Thesis ([3-9]-, max. 9) VLPA

Directed research on a topic approved by department for a thesis presented in partial fulfillment of requirement for degrees "With College Honors" or "With Distinction." Offered: AWSpS.

SLAVIC 499 Directed Study or Research (1-5, max. 15)

Individual study of topics to meet specific needs. By arrangement with the instructor and the Department of Slavic Languages and Literatures office. Prerequisite: permission of instructor and undergraduate adviser. Offered: AWSpS.

SLAVIC 501 Using Slavic Resources (2)

Introduction to graduate studies in Slavic languages, literatures, and cultures. Discusses field of study and research materials and techniques employed.

SLAVIC 518 Foreign Language Teaching Methodology (2) Brandl

Current foreign language teaching methods and approaches. Learning and teaching strategies and techniques for the four skills (reading, writing, speaking, listening) including cultural notions. Current and future trends in pedagogy and technology. Offered: jointly with GERMAN 518/SCAND 518; A.

SLAVIC 519 Slavic Language Pedagogy (3, max. 6) Augerot, Belic

Introduction to current issues of foreign language pedagogy. Concentrates on the practical classroom application of methodological theory through lectures and micro-teaching presentation. Topics discussed and practiced include testing, proficiency teaching, teaching listening and reading skills, writing, teaching grammar, and computers. Offered: A.

SLAVIC 520 New Trends in Literary Theory (5) Crnkovic

Explores recent theoretical trends which no longer search for a unified theoretical meta-narrative (i.e., post-structuralism or new historicism), but instead explore various literary genres (such as diary or fictional book reviews) and texts as the

primary terrain of theory. Bakhtin, Lem, Bruns, Corradi-Fiumara, Crnkovic, and others.

SLAVIC 550 Synchronic Slavic Linguistics (5)

Linguistic analysis of the phonology, morphology, and syntax of Russian and other Slavic languages. Investigation of current theoretical work in these areas.

SLAVIC 551 Introduction to the History of Slavic Languages (5)

History of Slavic languages from Indo-European to present time, including development of writing systems and national languages. Principles of historical linguistics: sound change, analogy, semantic change, as well as relevance of historical linguistics to our knowledge of human development, ancestral culture, etc. Prerequisite: either SLAVIC 110, LING 200, or LING 400. Offered: Sp.

SLAVIC 561 History of the East Slavic Languages (5)

Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of the Ukrainian and Byelorussian literary languages.

SLAVIC 562 History of the West Slavic Languages (5)

Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of literary Polish, Czech, Slovak, and Upper and Lower Sorbian languages.

SLAVIC 563 History of the South Slavic Languages (5)

Designed to acquaint majors in Slavic linguistics with the details of the historical development of the phonological and morphological structure of the South Slavic languages.

SLAVIC 565 Old Church Slavic (5) Rise and development of earliest Slavic literary language and a descriptive study of its orthography, phonology, morphology, and syntax. Readings from normalized texts.

SLAVIC 566 Readings in Old Church Slavic (4)

Reading and grammatical interpretation of a selected group of canonical texts, as well as some examples of the various later recensions of Old Church Slavonic. Prerequisite: SLAVIC 565.

SLAVIC 570 Special Topics in Slavic Linguistics (3-5, max. 15) Investigation and discussion of special topics in Slavic linguistics.

SLAVIC 600 Independent Study or Research (*-)

SLAVIC 700 Master's Thesis (1-10, max. 30) Limited to premaster graduate students. Prerequisite: permission of Supervisory Committee or graduate program adviser. Credit/no-credit only.

SLAVIC 800 Doctoral Dissertation (*-)

SLOVENIAN

SLVN 401 Introductory Slovene Language (3/5)

Introduction to spoken and written Slovene language. First in a two course sequence. Prerequisite: either BCS 403, BULGR 403, CZECH 403, GERMAN 103, ITAL 103, POLISH 403, ROMN 403, RUSS 103, RUSS 150, UKR 403, or status as a heritage speaker of Slovene. Instructors: Biggins

SLVN 402 Introductory Slovene Language (3/5)

Introduction to spoken and written Slovene language. Second in a two course sequence. Prerequisite: SLVN 401. Instructors: Biggins

SLVN 404 Second-Year Slovene Language (3/5)

Reinforces and expands foundational knowledge of Slovene language through grammatical topics and exercises, reading of authentic texts, composition, listening, oral presentations, and conversation. Prerequisite: SLVN 402. Instructors: Biggins

SLVN 406 Second-Year Slovene Language II (3-5)

VLPA Consolidates knowledge of Slovene language through advanced grammatical topics, exercises, reading, composition, listening, and conversation. Prerequisite: SLVN 404. Instructors: Biggins

SLVN 499 Directed Study in Slovene (1-5, max. 15)

Biggins Individual study of topics in Slovene culture, linguistics, or current affairs to meet specific needs, based primarily on readings of undapated Slovene texts. Offered: AWSp.

UKRAINIAN

UKR 320 Introduction to Ukrainian Literature and Culture (5) VLPA Provides an overview of Ukrainian culture: literature, film, music, theatre, art, and architecture, as well as an introduction to Ukrainian cultural life. Taught in English.

UKR 401 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. First in a sequence of three.

UKR 402 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. Second in a sequence of three. Prerequisite: UKR 401, which may be taken concurrently.

UKR 403 First-Year Ukrainian (5) Introduction to spoken and written Ukrainian. Third in a sequence of three. Prerequisite: UKR 402, which may be taken concurrently.

UKR 404 Second-Year-Ukrainian (5) VLPA
Continuation of UKR 401, UKR 402, UKR 403. Reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns. Prerequisite: Minimum grade of 2.0 in UKR 403 Offered: A.

UKR 405 Second-Year-Ukrainian (5) VLPA
Continuation of UKR 404. Reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns. Prerequisite: minimum grade of 2.0 in UKR 404 Offered: W.

UKR 406 Second-Year-Ukrainian (5) VLPA
Continuation of UKR 405. Reinforces basic grasp of language and enlarges both vocabulary and command of grammatical patterns. Prerequisite: minimum grade of 2.0 in UKR 405 Offered: Sp.

UKR 420 Literature, Film, and Culture of Ukraine (5) VLPA Representative prose works by leading Ukrainian authors. Shows originality of Ukrainian literature through acquaintance with the peculiar historical and political situation of Ukraine. Offered in English.

SOCIOLOGY

SOC 110 Survey of Sociology (5) I&S Human interaction, social institutions, social stratification, socialization, deviance, social control, social and cultural change. Course content may vary, depending upon instructor.

SOC 111 American Society (5) I&S Explores the power of social structures using examples drawn primarily from the American culture. The impact of social institutions, the emergence of concrete patterns of social relations which organize and regulate social life and the inequality inherent in most social structures.

SOC 195 Study Abroad: Sociology (2-5, max. 10) I&S Lower-division sociology courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

SOC 201 Special Topics in Sociology (3-5, max. 10) I&S Topics of contemporary interest taught at an introductory level. Topics will vary.

SOC 211 Stability and Change in American Society (5) I&S Examines two views of American life that dominate public discourse: one, that the United States is the best country in the world, the other that it is in decline. Addresses questions like: what is the United States really like; what values do Americans share; how do their values affect success and hope for a better society?

SOC 212 Evolution and Revolution: An Introduction to the Study of Comparative Social Change (5) I&S, DIV Examines the major aspects of human societies, including political and economic systems, family structure, social stratification, and demographic patterns as influenced by environmental conditions, technology, cultural traditions, and legacies of prior history and relationships to other societies.

SOC 215 Introduction to Urban Sociology (5) I&S Introduces the field of urban sociology. Focuses primarily on urban dynamics in the United States with attention to the global context in which they operate.

SOC 218 War, Peace, and the Sociology of Survival (5) I&S Explores war, peace, and how people live in situations of war. Focuses on conversations at the macro-level, addressing politics and security, and the micro-level, how civilians survive in the context of war.

SOC 220 Introduction to Sociological Methods (5) I&S, QSR Familiarizes students with the logic of analysis in social sciences. Students learn to recognize good research design, understand and interpret main arguments employing different methods, and evaluate whether research findings support stated conclusions.

SOC 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR Develops statistical literacy. Examines objectives & pitfalls of statistical studies; study designs, data analysis, inference; graphical & numerical summaries of numerical & categorical data; correlation and regression; estimation, confidence intervals, & significance tests. Emphasizes social science examples and cases. May only receive credit for one of STAT 220, STAT 221/CS&SS 221/SOC 221, or STAT 290. Offered: jointly with CS&SS 221/STAT 221; AWSp.

SOC 222 Sociology of Sport (5) I&S *Weis* Introduction to the sociological analysis of sport. Issues discussed include the history, definition, and functions of sport; role of sport in the socialization of children; the relationship between sport and values; athletics within the social organization of education; deviance, crime, and violence in sport; the business and economics of sport.

SOC 223 Sociology of Rock and Roll (5) I&S Sociological analysis of a very influential and popular musical art form, from its origins in the first half of the twentieth century to more contemporary social contexts. Examines the roles of race relations, social class, gender, inequalities, region, genre, commercial exploitation, and technology in the evolution of rock and roll.

SOC 225 Data and Society (3/5) I&S Social implications of the digital revolution, including ethical issues associated with algorithmic design and privacy. Discusses data science as a new occupation that uses data to understand or influence people's behavior. Students will use a sociological lens to

explore how our increasingly digital lifestyle changes institutions and social relations.

SOC 230 Introduction to Racial and Ethnic Health Disparities in the United States (5) I&S, DIV Examines health status and healthcare disparities among racial/ethnic minority groups in the United States. Utilize sociological, demographic, (social) epidemiological, and (social) psychological concepts to introduce students to racial/ethnic health disparities research.

SOC 235 Representations of Disability in Popular Culture (5) I&S, DIV Social construction of 'disability' reflected in and shaped by popular culture. Examples from sports coverage, film, television, fashion, and art both by and about disabled people. Ways in which disability representations in the media reify, problematize, and/or challenge marginalization of this social status. Offered: jointly with CHID 235/DIS ST 235.

SOC 240 Introduction to Social Psychology (5) I&S Introduction to social psychology with an emphasis on sociological perspectives and problems.

SOC 247 Contemporary Social Movements (5) I&S Introduction to theory and research on national-level collective mobilizations organized for political change. Emphasis on how political, organizational, and cultural factors shape social movement emergence and development, and individual participation.

SOC 250 Media and Society (5) I&S Explores how modern media impacts society. A significant portion of the course will be dedicated to the emerging effects of new media, such as online reporting and social networking applications, on the current political and social landscape.

SOC 260 African American Family (5) I&S, DIV Explores the structures and functioning of various types of black families. Single-parent families, two-parent families, extended families, and consensual families are explored. Their consequences for male/female relationships are linked and critiqued. Offered: jointly with AFRAM 260.

SOC 261 The African American Experience through Literature (5) VLPA/I&S Instructs students in hermeneutical and sociological methods of analyses.

Analyzes selected novels, essays, poems, short stories, and plays with the purpose of understanding the structures and functions of both society and personality. Offered: jointly with AFRAM 261.

SOC 266 Introduction to Labor Studies (5) I&S Conceptual and theoretical issues in the study of labor and work. Role of labor in national and international politics. Formation of labor movements. Historical and contemporary role of labor in the modern world. Offered: jointly with HSTCMP 249/POL S 249.

SOC 270 Social Problems (5) I&S, DIV Processes of social and personal disorganization and reorganization in relation to poverty, crime, suicide, family disorganization, mental disorders, and similar social problems.

SOC 271 Introduction to the Sociology of Deviance and Social Control (5) I&S Examination of deviance, deviant behavior, and social control. Deviance as a social process; types of deviant behavior (e.g., suicide, mental illness, drug use, crime, "sexual deviance," delinquency); theories of deviance and deviant behavior; nature and social organization of societal reactions; and social and legal policy issues.

SOC 275 Murder (5) I&S Introduces topics related to the crime of murder, including: laws of homicide; research on the characteristics of victims, killers, and murders; theories of murder and related violence; investigation strategies; and crime and control policies.

SOC 287 Introduction of the Sociology of Sexuality (5) I&S, DIV Investigates sexuality on the basis of social construction of norms and values, within the context of gender, race, class, and sub-cultures and in the social control of sexuality and why it is so highly regulated. Looks for social rather than biological or personal explanations for why human sexuality is conceptualized or practiced in a certain way.

SOC 292 Who Gets Ahead? Public Schooling in America (5) I&S, DIV Addresses fundamental questions about the relationship between education and society. Examines why some students learn more and advance further than others; what factors shape how schools are run/organized and which materials are taught; how race/class/gender affect

students within schools; how schools maintain our economic system and can become more effective.

SOC 299 Sociology Interest Group (2) I&S Provides opportunity for students new to the major, or contemplating the major, to meet twice weekly in a small group to discuss issues relating to two designated five-credit sociology courses. Concurrent enrollment in the two five-credit designated courses required. See department adviser.

SOC 300 Foundations of Social Inquiry (5) I&S Covers what makes social science a science, the components of good research design, and what counts as valid evidence for sociological claims. Pays special attention to links between theory, research questions, and data. Offered: AWSpS.

SOC 301 Special Topics in Sociology (3-5, max. 10) I&S Topics of contemporary interest taught at an intermediate level. Topics will vary.

SOC 306 War (5) I&S Origins and conduct of war; readings from anthropology, political science, economics, and history, as well as novels and some recent works on the arms-control controversy. Modern forms of warfare, including guerrilla war, world war, and nuclear war. Offered: jointly with JSIS B 301.

SOC 316 Introduction to Sociological Theory (5) I&S Introduction to sociological theory. Includes classical theorists Adam Smith, Karl Marx, Emile Durkheim, and Max Weber and their influence on contemporary theoretical debate.

SOC 320 Evaluating Social Science Evidence (5) I&S, QSR A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates "facts and findings" by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with CS&SS 320/STAT 320.

SOC 321 Data Science and Statistics for Social Sciences I (5) I&S, QSR Introduction to applied data analysis for social scientists. Focuses on using programming to prepare, explore, analyze, and present data that arise in social science research. Data science topics include loading, cleaning, and exploring data, basic visualization, reproducible

research practices. Statistical topics include measurement, probability, modeling, assessment of statistical evidence. Lectures intermixed with programming and lab sessions. Offered: jointly with CS&SS 321/STAT 321; W.

SOC 322 Case-Based Social Statistics II (5) I&S, QSR Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with CS&SS 322/STAT 322.

SOC 328 Methodology of Sociological Research (5-) I&S, QSR Logic of formulating, testing, and modifying hypotheses. Methods of producing social data (survey research, evaluation research, field observation) and utilizing stored data (census tapes, historical materials). Methods of quantitative data analysis techniques commonly used in contemporary sociological analysis. Not open for credit to students who have taken SOC 320.

SOC 329 Methodology of Sociological Research (-5) I&S, QSR Logic of formulating, testing, and modifying hypotheses. Methods of producing social data (survey research, evaluation research, field observation) and utilizing stored data (census tapes, historical materials). Methods of quantitative data analysis techniques commonly used in contemporary sociological analysis. Not open for credit to students who have taken SOC 320 or SOC 323.

SOC 330 Human Ecology (5) I&S Factors and forces that determine the distribution of people and institutions.

SOC 331 Population and Society (5) I&S Population growth and distribution, population composition, population theory, urbanization. Determinants and consequences of fertility and mortality trends and migration in economically developed and underdeveloped areas.

SOC 337 Social Construction of Madness and Mental Health in the United States (5) I&S The construct of "mental health" and mental "un-health" from a sociological perspective. How categories such

as mental illness, intellectual and developmental disability, cognitive impairment, and Mad Studies developed in the United States. Offered: jointly with CHID 337/DIS ST 337.

SOC 340 Symbolic Interaction (5) I&S Examines the role of language, culture, and the symbolic environment in shaping interpersonal processes.

SOC 341 Tutoring Sociology (2-4, max. 4) Trains students to serve as tutors in designated courses. Teaches how to assist with writing assignments, explain course material, and lead group discussions. Credit/no-credit only.

SOC 344 Cognitive Social Psychology (5) I&S Cognitive structures and processes and their antecedents and consequences, both societal and individual. Reciprocal influences of social roles, social institutions, and social cognition.

SOC 345 Sects and Violence: Cults, Religious Innovation, and Social Conflict (5) I&S Examines controversial religious groups often called cults. Uses sociological lenses to examine cults' occasionally catastrophic conflicts with government authorities, established religious organizations, and anti-cult movements.

SOC 346 Group Processes (5) I&S Systematic analysis of social processes in small groups, including conformity, deviance, cooperation, competition, coalition formation, status and role differentiation, inequity, communication, and authority and power. A variety of methods of research are considered: field studies, field experiments, laboratory studies, and the simulation of social processes.

SOC 347 National Social Movements: Current Trends and Explanations (5) I&S Introduction to theory and research on a specific form of social movement: national-level collective mobilizations organized for political change. Emphasizes how political, organizational, and cultural factors shape social movement emergence and development. Focuses on American activism, New Left, women's movements, the abortion conflict, gay/lesbian activism, and Central American Peace movement.

SOC 351 Intimate Relationships (5) I&S Explores the nature of love, desire, and commitment between heterosexual and homosexual couples, as well as

parenting as a dyadic act. Evaluates political and social pressures and preferences on these topics within our society in a comparative context.

SOC 352 The Family (5) I&S The family as a social institution. Historical changes and societal variation in family patterns. Changes over the life cycle. Alternative family forms.

SOC 353 The Family in Cross-Cultural Perspective (5) I&S Form, content, and functions of families through case studies of different countries. Family organization, including family structure, inheritance, sexual division of labor, and socialization with attention given to life-cycle stages.

SOC 355 Social Change in Latin America (5) I&S Explores cultures, identities, political economy, and popular mobilization in Latin America. Examines relations of power and production between social classes and ethnic groups, as well as ideologies and intellectual movements. Offered: jointly with JSIS A 355.

SOC 356 Society and Politics (5) I&S Causes of political change in democratic countries, including public opinion, social movements, interest group activity, and party organization. Offered: jointly with POL S 356.

SOC 357 Sociology of Religion (5) I&S The relations between religion, polity, economy, and social structure; in particular, the political, economic, and social impact of religious beliefs and organizations, as well as the social determination of these beliefs and organizations; the rise of secularism, the rationalization of modern life, and the emergence of political quasi-religions.

SOC 360 Introduction to Social Stratification (5) I&S, DIV Social class and social inequality in American society. Status, power, authority, and unequal opportunity are examined in depth, using material from other societies to provide a comparative and historical perspective. Sociological origins of recurrent conflicts involving race, sex, poverty, and political ideology.

SOC 362 Race Relations (5) I&S, DIV Reviews social science perspectives on race and ethnicity. Explores sociological definitions and understandings associated with race and ethnicity and the

construction of identities. Examines different issues that impact individuals' and groups' life chances.

SOC 363 Ethnicity, Business, Unions, and Society (5) I&S Interrelationships of ethnicity, business, unions, and the larger society. Examines financial and sociological structure of business and manufacturing sector, how this sector performs, and consequences of performance for selected ethnic groups in United States. Offered: jointly with AES 361.

SOC 364 Women in the Social Structure (5) I&S Gender and social institutions; the family, politics, education, medicine, law, the labor force. Intersection of gender with other minority statuses such as race, age, socioeconomic status, and sexual orientation. Structural, ideological, and historical determinants of gender relations.

SOC 365 Urban Community (5) I&S Comparative and analytic study of organization and activities of urban groups.

SOC 366 Sociology of Organizations (5) I&S Introduction to the sociological study of organizations including what organizations are, where they come from, and how they relate to individuals, other organizations, and other institutions of society.

SOC 368 Sociology of Black Americans (5) I&S Socio-cultural context of the Black person's environment and consequences of interaction with that environment.

SOC 371 Criminology (5) I&S Survey of legal definitions, types of criminal behavior, trends and patterns, recidivism, characteristics of offenders, environmental influences, diagnostic methods, prediction, theories of crime and delinquency prevention, social policy.

SOC 372 Crime, Politics, and Justice (5) I&S Examines role of police, courts, and corrections in criminal justice; investigates critical legal and sociological factors and perspectives that shape criminal procedure; considers the relationship between criminal procedure and wider concerns of justice and equality in society. Offered: jointly with LSJ 375.

SOC 374 Law and Society (5) I&S Introduces major issues of the sociological foundations and implications of legal institutions; examines social life within legal institutions, the individual and collective justice, the malleability of precedent, and truth and the effects of inequality on legal outcomes. Encompasses legal practice and social science.

SOC 375 Sociology of Juvenile Justice (5) I&S Harris Overviews the United States juvenile justice system and related societal issues, including racial and ethnic disproportionality, the criminalization of delinquent offenders, and the future of the juvenile justice system.

SOC 376 Drugs and Society (5) I&S Explores the questions of drug use and abuse, social and political factors that shape response to their use, and the social conditions under which drug use is likely to have adverse consequences. Also covers U.S. drug control policy, the political economy of legal and illegal drugs, and political aspects of drug use. Offered: jointly with LSJ 376.

SOC 377 The American Jewish Community (5) I&S, DIV Examines how American Jews adapt to a changing world. Explores impact of diverse immigration, acculturation, social mobility, social justice movements, and changing relations between Jews and non-Jews. Encompasses concerns that all communities have adapting to change, when they are also agents of change. Offered: jointly with JEW ST 377.

SOC 378 Contemporary Jewish American Identities (5) I&S, DIV Introduction to the debates about post-Holocaust Jewish identities in multicultural America. Explores whether a distinctive Jewish community is headed toward assimilation, experiencing revival, or merely transforming the multiple ways Jewish experience is lived. Topics include new Jewish immigrants, the new Orthodox, Black Jews, Jewish feminism, children of Holocaust survivors. Offered: jointly with JEW ST 378.

SOC 379 Environmental Sociology (5) I&S/NW S. ASAH Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem,

community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ENVIR 379/ESRM 371; A.

SOC 395 Study Abroad: Sociology (2-5, max. 15) I&S Upper-division sociology courses for which there are no direct University of Washington equivalents, taken through a University of Washington study abroad program.

SOC 399 Undergraduate Internship (2-5, max. 10) Students serve in approved internships. Credit/no-credit only.

SOC 401 Special Topics in Sociology (5, max. 15) I&S Selected topics taught at an advanced level. Topics vary and may be substantive, theoretical, or methodological. Designed for Sociology majors and others with permission.

SOC 402 Sociology in Practice: Education Service Program (5) I&S Combines an experience in tutoring with critical reflection on practical and theoretical issues in education. Gives practical classroom experience as well as insight into the complexity of public schools and issues in education policy. Students may receive a maximum of 10 credits from SOC 402, SOC 403, SOC 404, and SOC 494.

SOC 403 Sociology in Practice: Applied Community Research Program (5) I&S Participation in a project-based research group for a real-world client, addressing complex and enduring problems of urban life. Students may receive a maximum of 10 credits from SOC 402, SOC 403, SOC 404, and SOC 494.

SOC 404 Sociology in Practice: Community/Civic Internship Program (5) I&S Combines real-world benefits of internships with critical reflections provided in a seminar. Students intern as local agencies and organizations, and may either come with their own internship or apply for specialized internships through the Sociology Department. Students may receive a maximum of 10 credits from SOC 402, SOC 403, SOC 404, and SOC 494.

SOC 410 History of Sociological Thought (5) I&S Contributions of individual theorists (from Comte to the present) ; emphasis on cumulative development

of concepts and principles, emergence of sociology as a science, probable future developments.

SOC 415 The City and Neighborhood Dynamics (5)

I&S Focuses on a diverse set of topics including the changing social meaning of community, the effects of the urban setting on social interactions and attitudes, urban poverty, residential segregation, and the neighborhood dynamics of crime. Students have the opportunity to contribute directly to research- and policy-related projects.

SOC 416 Sociological Theory (5) I&S Theories of individual action, social order, and institutional change. Cumulative development of solutions rather than on works of given theorists. Theories of social order. How sociological treatments of these issues compare with those offered by economists and other social scientists.

SOC 420 Sociology of Food (5) I&S Provides a historical and comparative overview of what people eat and how this relates to other types of social differentiation.

SOC 430 Social Determinants of Health and Health Disparities (5) I&S, DIV Examines the social conditions related to the health of populations. How patterns of health vary by social class, race/ethnicity, and gender and some mechanisms that produce and maintain these differences.

SOC 432 Population and Modernization (3)
I&S *Hirschman, Lavelly* Examines role of demographic factors in the process of social modernization and economic growth. The approach is both historical, focusing on populations of developed countries since 1700, and analytic, stressing the attempts made by different disciplines to model demographic relationships, with attention to less-developed regions. Offered: jointly with JSIS D 435.

SOC 434 Demographic Issues in Asia (3-5)
I&S *Hirschman, Lavelly* Contemporary Asian countries face a number of issues with demographic components, including environmental and resource issues, ethnic rivalries, international migration, and public health. Addresses a set of these issues by focusing on the demography of one or more countries in Asia. Offered: jointly with JSIS A 431.

SOC 440 Comparative Social Problems (5) I&S

Examines a variety of social problems from a comparative perspective. Issues such as epidemics, slavery, and genocide within and beyond U.S. borders analyzed with historical and contemporary examples.

SOC 445 Religious Movements: The Sociology of Cults and Sects (5) I&S

Investigates the organizational dynamics of new religious movements. Seeks to understand why 'cults' emerge and how they proliferate or decay. Examines conflicts within established churches, counter-movements, and the state.

SOC 447 Social Movements (5) I&S Social movements as collective attempts to change society: why people join; characteristics of successful and unsuccessful movements; consequences of social movement activities.

SOC 450 Political Economy of Women and Family in the Third World (5) I&S

Theoretical and empirical aspects of the political economy of women and the family in the Third World during the process of development, with a focus on labor. Main theoretical approaches examined and applied to case studies from Asia and Latin America. Offered: jointly with JSIS D 450.

SOC 451 Theory and Process of Social Change (5)

I&S Basic trends in economic and social development; comparative and historical analysis of social and economic changes; the rise of capitalist societies.

SOC 456 Political Sociology (5) I&S

Relationships between social change and political change. Focus on selected issues, including social bases of democracy, political organization, elections, and consequences of public policy.

SOC 459 The New Inequality (5) I&S, DIV

Examines "who gets what" in contemporary societies. Students will learn not only how income, wealth, housing, and health are unequally distributed, but how individuals or groups differ in access to "public goods" or the protection of legal rights and liberties. Examines some of the leading explanations for these inequalities, and applies these theories to specific social problems in the U.S. and around the world.

SOC 460 Social Differentiation (5) I&S Analysis of societal organization based on sex, age, residence, occupation, community, class, caste, and race.

SOC 461 Comparative Ethnic Race Relations in the Americas (5) I&S Sketches the ethn racial systems operating in American society. Studies these systems as systems and examines their institutional and interpersonal dynamics. Compares ethn racial systems in order to arrive at empirical generalizations about race/ethn relations in the Americas. Offered: jointly with AES 461.

SOC 462 Comparative Race and Ethnic Relations (5) I&S, DIV Race and ethnicity as factors of social differentiation in a number of Western and non-Western societies in Europe, Africa, Asia, and the Americas. Offered: jointly with AES 462.

SOC 463 African-American Political Thought (5) I&S Examines the historical and sociological experiences of African-Americans from slavery, emancipation, mobilization, and organization, to present socioeconomic situation. Reviews the political philosophy of black leaders from the early black conventions to today, the black experience in the American education system, and origins and evolution of the black middle class.

SOC 464 Contemporary Society in the People's Republic of China (5) I&S *Lavelly* Separate development of rural and urban social institutions in the People's Republic of China since 1949 from a sociological perspective. Family and marriage, social control, educational institutions. Dilemmas of contemporary China and reasons for institutional change. Offered: jointly with JSIS A 464.

SOC 465 Complex Organizations (5) I&S Examination of the structure of complex organizations. Attention to developing generalizations applicable to industrial organizations, businesses, hospitals, prisons, labor unions, governments, universities, armies, and similar formally instituted organizations. The major focus is on empirical research, with some attention to methodological problems in studying such organizations.

SOC 466 Economic Sociology (5) I&S Changing focus of field; cultural variation, work, and the worker; technology, society, and the evolution of industrial forms; types and forms of industrial organizations;

industrial organizations as social and technical systems; issues of control, process, and change; the individual in social and technical systems.

SOC 467 Immigration and Ethnicity (5) I&S, DIV Focus on contemporary American diversity - the multiethnic, multicultural society created by recent immigrants from Latin America, Asia, and by people of European, African, and American Indian origins; its issues and debates, including ethnic conflict, integration, multiculturalism, and assimilation, as viewed through comparisons with the past and with other societies.

SOC 468 Sociology of Occupations and Professions (5) I&S Frameworks for study of occupations and professions; occupational structure and mobility in American society in relation to adult socialization and career development; occupational and professional associations and society.

SOC 469 Balkan Societies (5) I&S Examination of the roots of Balkan social problems (economic backwardness, minority-group conflicts, peasant problem) , the failure of pre-1945 attempts to solve these problems, the post-1945 communist failures, the causes of the upheavals of 1989, and the prospects for success in the 1990s.

SOC 470 Contemporary Southeast Asia (5) I&S Sociological survey of Southeast Asia, including development, demographic changes, family structure, and ethnic relations.

SOC 472 Juvenile Delinquency (5) I&S Factors in delinquency, juvenile courts. Programs of treatment and prevention.

SOC 476 Miscarriages of Justice (5) I&S Examines legal and social factors that shape criminal case outcomes, analyzing how one type of miscarriage of justice - wrongful conviction - occurs. How can cases of wrongful conviction be explained? Why are some people, against whom there is only weak evidence, convicted-and sometimes even executed? Offered: jointly with LSJ 476.

SOC 481 Issues in Analytic Sociology (5, max. 15) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 482 Issues in Analytic Sociology (3, max. 9) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 483 Issues in Analytic Sociology (1-3, max. 9) I&S Examination of current issues in sociological analysis. Specific content of the course varies according to recent developments in sociology and the interests of the instructor.

SOC 487 Sociology of Gender and Sexuality (5) I&S Addresses the intersection of gender and sexuality in U.S. society, social institutions and movements, families, and the individual. Topics include the history of sexuality as practiced and politicized since colonial times, major theoretical approaches to sexuality, and how gender and other social status characteristics influence the meanings of sexuality.

SOC 490 The Urban Underclass (5) I&S Examines underlying issues which have led to the emergence and perpetuation of an underclass within an affluent society. Explores some of the consequences for these people and for this society. Considers policies that might be used to address problems of the urban underclass.

SOC 491 Sociology of Science (5) I&S

SOC 492 Sociology of Education (5) I&S Emphasizes the ways in which schools and colleges reproduce, reinforce, and challenge prevailing social, economic, and political relationships. Examines the structures, practices, content, and outcomes of schooling and its relationship to the wider society as well as the rise and dynamics of the modern education system.

SOC 494 Practicum (5, max. 10) I&S Exploration of selected sociological concepts or problems through advanced practical experience in research, internships, or other applications. Topics vary.

SOC 496 Honors Seminar ([3/5]-) I&S Exploration of selected sociological problems with emphasis on research experience and the interpretation of data. For sociology majors only, primarily for Honors students. Offered: A.

SOC 497 Honors Seminar (-[3/5]-) I&S Exploration of selected sociological problems with emphasis on research experience and the interpretation of data. For sociology majors only, primarily for Honors students. Offered: W.

SOC 498 Honors Thesis (1-5, max. 5) I&S Preparation of Honors thesis. Sociology majors only. Credit/no-credit only.

SOC 499 Undergraduate Independent Study or Research (2-5, max. 10) Credit/no-credit only.

SOC 500 Teaching Sociology as a Teaching Assistant (1) Techniques of quiz section administration, advising of students, and student evaluation important to successful teaching as a Teaching Assistant. Students develop presentations and classroom materials and develop and grade student examinations. Prerequisite: admission to graduate program in sociology. Credit/no-credit only.

SOC 501 Proseminar (1-3, max. 3) Introduction for first-year graduate students to substantive areas of sociology, research and information resources, and issues in graduate education and professional socialization. Credit/no-credit only. Offered: AWSp.

SOC 502 Seminar on Teaching Sociology (3) Techniques of lecturing, leading discussion, evaluating student performance, and other pedagogical skills ancillary to successful teaching. Students develop a course and obtain videotaped feedback of presentations.

SOC 503 Seminar on Writing Social Science (3) Techniques, skills, and strategies helpful for publishing in the social sciences. Includes writing and revision of own work and evaluation of the writing of other students. Also includes social scientific analysis of writing and other forms of academic communication. Prerequisite: completion of MA.

SOC 504 Applied Social Statistics (3-) Applications of statistics in sociology and related social sciences. Emphasis on problems of analysis with imperfect data. Probability in statistical inference. Analysis of variance; contingency table analysis, nonparametric procedures; regression analysis in social research.

SOC 505 Applied Social Statistics (-3) Applications of statistics in sociology and related social sciences. Emphasis on problems of analysis with imperfect data. Probability in statistical inference. Analysis of variance; contingency table analysis, nonparametric procedures; regression analysis in social research.

SOC 506 Methodology: Quantitative Techniques in Sociology (3) Applied regression analysis with emphasis on interactive computer graphics techniques and interpretation. Application to typical sociological problems. Offered: jointly with CS&SS 507.

SOC 507 Statistical Classification and Measurement (3) Application of statistical principles and methods to problems of classification and measurement in social research.

SOC 508 Logic of Social Inquiry (3) Study design from problem formulation to the analysis and interpretation of data.

SOC 509 Practicum in Data Analysis (3) Introduction to selected programs for data analysis and practice in their application. Practice in coordination of research problem, data, and mode of analysis into a coherent, interrelated set. Interpretation of results. Offered: A.

SOC 510 Seminar in Sociological Theory (3) Macrosociological theories; functionalism and neoevolutionism; conflict and consensus approach; comparative strategies; models and long-range theories; ideology and sociology. From Marx and de Tocqueville to contemporary literature.

SOC 511 Classical Social Theory (3) Study of classical masters of social theory: Marx, Durkheim, and Weber, their precursors, and their immediate successors.

SOC 512 Review of Mathematics for Social Scientists (1) Reviews basic mathematical skills needed for a meaningful understanding of elementary statistics, data analysis, and social science methodology. Overview of core knowledge required for graduate courses in quantitative methods in social sciences. Topics include discrete mathematics, differential and integral calculus, review of matrix algebra, and basic probabilistic and

statistical concepts. Credit/no-credit only. Offered: jointly with CS&SS 505.

SOC 513 Demography and Ecology (3) Theories and research on human fertility, mortality, mobility, migration, and urbanization in social/economic context. Comparative and historical materials on Europe, the United States, and the Third World. Offered: jointly with CSDE 513.

SOC 514 Current Theories in Social Psychology (3) Broad graduate-level introduction to the theories in the field of social psychology.

SOC 515 Current Research in Social Psychology (3) *Howard* Broad graduate-level introduction to the research in the field of social psychology.

SOC 516 Organizations (3) Broad graduate-level introduction to the theory and research on complex organizations.

SOC 517 Deviance and Social Control (3) Survey of current research on deviant behavior and mechanisms of social control; definitions and forms of deviant behavior, causal analysis, and legal or other methods of social control.

SOC 518 Social Stratification (3) Intensive preparation in theoretical, methodological, and substantive topics in social stratification.

SOC 519 Fieldwork: Observation and Interviewing (3-) Perspective, logic, and techniques of qualitative social research and analysis. Nature and uses of intensive interviewing, participant observation, and analytic ethnography. Application of field research principles. Research project required in addition to reading and analysis of classic studies.

SOC 520 Fieldwork: Observation and Interviewing (-3) Logic and techniques of qualitative social research and analysis. Intensive interviewing, participant observation, qualitative data analysis (including applications of data base technology, problem reformulation, and techniques of visual documentation) . Results of student work reported and discussed in class.

SOC 524 Master's Thesis Research Seminar (1, max. 3) Facilitates the development of a thesis and its

execution. Forum for refining research questions, presenting work in progress, and receiving feedback from instructor and other students on ideas and written work. Credit/no-credit only.

SOC 526 Causal Approach to Theory Building and Data Analysis (3) Theory construction and testing from a causal models perspective. Path analysis, standardized versus unstandardized measures, feedback models, identification problems, estimation in overidentified models, difference equations, differential equations, stability conditions. Multiplicative models as alternatives to additive ones. Causal approach to measurement error.

SOC 527 Measurement of Basic Sociological Concepts (3) Conceptualization and measurement problems in sociology, using major concepts as illustrations of basic issues. Causal approach to measurement to deal with problems of indirect measurement, cross-level measurement problems, aggregation and disaggregation. Consequences of crude measurement for data analyses. Prerequisite: SOC 504.

SOC 528 Seminar on Selected Statistical Problems in Social Research (3) Prerequisite: SOC 506.
Instructors: Raftery

SOC 529 Structural Equation Models for the Social Sciences (3) Structural equation models for the social sciences, including specification, estimation, and testing. Topics include path analysis, confirmatory factor analysis, linear models with latent variables, MIMIC models, non-recursive models, models for nested data. Emphasizes applications to substantive problems in the social sciences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with CS&SS 526.

SOC 530 Urbanism and Urbanization (3) I&S Human population distribution and migration patterns. Causes and consequences of world urbanization. Spatial and social patterns in the metropolis. Aggregate population movements and selectivity of migrants.

SOC 531 Fertility and Mortality (3) I&S Theories of fertility and mortality, demographic transitions, individual variations. Specific analytic approaches.

Familiarity with basic fertility and mortality measures, and with the life table, is assumed.

SOC 533 Research Methods in Demography (3) Basic measures and models used in demographic research. Sources and quality of demographic data. Rate construction, standardization, the life table, stable population models, migration models, population estimation and projection, measures of concentration and dispersion, measures of family formation and dissolution. Offered: jointly with CS&SS 533/CSDE 533.

SOC 534 Statistical Methods for Spatial Data (3) Motivates the need for, and describes methods for, the analysis of spatial data. Topics: Clustering, cluster detection, spatial regression, modeling neighborhood effects, geographical information systems. Point and aggregated data considered and data from complex surveys. Offered: jointly with CS&SS 554/STAT 554; W.

SOC 535 Foundations of Population Health and Health Disparities (3) Provides an overview of the nature and social determinants of the health of human populations, investigates disparities in health within and between populations, and examines the ways in which population health may be improved by the translation of scientific knowledge into interventions and public policy.

SOC 536 Analysis of Categorical and Count Data (3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with CS&SS 536/STAT 536.

SOC 537 Modeling Emergence: Social Simulation (3) Seminar and practicum in computational modeling of social processes with emphasis on using agent-based simulation models to investigate and refine theory.

SOC 538 Data Science and Population Processes (3) Today's large and complex data sets ("big data") allow social scientists to address core social questions in new ways. Examines how traditional social science and demographic methods can be used to make sense of new data sources, and how

these new data sources may require new approaches and research design.

SOC 539 Selected Topics in Demography and Ecology (3, max. 9) Specialized problems in demography or ecology are covered; for example, migration, fertility, mortality, language, race and ethnic relations, metropolitan community. See quarterly announcement for specific problem to be covered.

SOC 542 Selected Topics in Group Processes (3) Theories, methodology, and studies in the area of small-group research. Prerequisite: permission of instructor for nonmajors.

SOC 543 Seminar on Group Solidarity (3) Interdisciplinary perspectives on solidarity, focusing on member commitment, group structure, and contributions to collective goals.

SOC 547 Social Cognition and Attribution (3) Theories and research on social cognition and attribution. Theoretical and methodological debates on cognition. Sociological aspects of attribution. Prerequisite: SOC 514 or equivalent.

SOC 551 Family and Gender Relations (3) Overview of major research findings on marriage, the family, and gender, including demographic trends, the place of children in society, courtship, the internal management of intimate relationships, divorce, and social policy.

SOC 553 Seminar on Gender and Sexuality (3) Research seminar considering theoretical and empirical approaches to sexuality, with particular attention to the importance of gender. Examines the social control of sexuality by the state and by families, as well as social meanings of sexuality within social movements related to various aspects of sexuality.

SOC 554 Seminar in the Sociology of Religion (3) Survey of significant and active areas of theory and research in contemporary social scientific studies of religion.

SOC 555 Methods in Macro, Comparative, and Historical Sociology (3) Systems of conducting

research with qualitative methods brought to bear on broad questions.

SOC 559 Seminar on Gender Roles (3) Broad graduate-level introduction to theoretical issues concerning gender and society. Current state of empirical knowledge on the sociology of gender and strategies for research. Cross-cultural variations in conception of gender roles and how gender intersects with social institutions and social interactions.

SOC 560 Hierarchical Modeling for the Social Sciences (4) Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested within states. Provides a basic theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with CS&SS 560/STAT 560.

SOC 562 Seminar in Comparative Race Relations (3) Cross-cultural approach to race and ethnic relations, including case studies from Africa and Latin America. Prerequisite: graduate standing in social sciences.

SOC 563 Statistical Demography (4) A. Raftery Statistical methods and models for estimating and forecasting population quantities. Topic: Demographic rates; Population projection; Leslie matrix; modeling age-specific patterns; probabilistic population projections and Bayesian hierarchical models; estimating past and present fertility, mortality, migration and population; big data in demography. Prerequisite: Either STAT 509/CS&SS 509/ECON 509, STAT 513, or permission from the instructor. Offered: jointly with CS&SS 563/STAT 563; Sp.

SOC 565 Inequality: Current Trends and Explanations (3) Discussion of recent growth in economic inequality in the United States and competing explanations for these new trends through examination of labor market demographics, industrial composition and restructuring, and the broader political context that impacts policies like minimum wage, strength of unions, and foreign trade. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with CS&SS 565.

SOC 566 Seminar in Complex Organizations (3)

Special topic seminars in the field of complex organizations or industrial sociology.

SOC 567 Seminar in Complex Organizations (3)

Special topic seminars in the field of complex organizations or industrial sociology.

SOC 568 Social Mobility (3) Description and measurement of social mobility. Determinants of mobility and cross-national comparisons. Consequences of mobility for social behaviors. Emphasizes movement from the socioeconomic position of family of origin to adult position. Prerequisite: SOC 518.

SOC 569 Demographic Studies of Stratification (3)

Overview of development of models of socioeconomic achievement ("status attainment" paradigm) in the field of stratification. Begins with work of Blau and Duncan. Covers elaboration of basic models to include race and ethnicity, social psychological variables, class, school and labor market effects, and other structural variables. Prerequisite: SOC 513, SOC 518.

SOC 570 Seminar in Environmental Sociology (3)

Offered: jointly with SEFS 570.

SOC 574 Seminar in Methods of Criminological Research (3)

Provides training in the technical analysis of published research in criminology; designs and processes studies in parole prediction, prediction of prison adjustment, and prediction of treatment effect.

SOC 575 Social Movements: Politics and Organization (3)

Theoretical perspectives and research on the dynamics of national social movements from a macrosociological perspective. Introduces dominant models that stress organizational and political processes, with some examination of approaches that consider the intersection of politics, organization, and culture. Emphasis on the United States.

SOC 581 Special Topics in Theory and the History of Sociological Thought (3, max. 9)

Examination of current topics in theory and the history of sociological thought. Content varies according to recent developments in the field and the interests of the instructor.

SOC 582 Special Topics in Research Methods and Statistical Analysis in Sociology (3, max. 9)

Examination of current topics in research methods and statistical analysis in sociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 583 Special Topics in Demography and Ecology (3, max. 9)

Examination of current topics in demography and ecology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 584 Special Topics in Social Psychology (3, max. 9)

Examination of current substantive topics in social psychology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 585 Special Topics in Marriage and Family (3, max. 9)

Examination of current substantive topics in marriage and the family. Content varies according to recent developments in the field and the interests of the instructor.

SOC 586 Special Topics in Organization and Industrial Sociology (3, max. 9)

Examination of current substantive topics in organizational and industrial sociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 587 Special Topics in Deviance and Social Control (1-3, max. 9)

Examination of current substantive topics in deviance and social control. Content varies according to recent developments in the field and the interests of the instructor.

SOC 588 Special Topics in Stratification and Race Relations (3, max. 9)

Examination of current substantive topics in stratification and race relations. Content varies according to recent developments in the field and the interests of the instructor.

SOC 589 Special Topics in Macrosociology (3, max. 9)

Examination of current substantive topics in macrosociology. Content varies according to recent developments in the field and the interests of the instructor.

SOC 590 Special Topics in Sociology (1-3, max. 21)

Examination of current substantive topics in sociology. Content varies according to recent developments in the field and the interests of the instructor. Topics covered in courses with this number lie outside those covered by other special topics courses numbered SOC 581 through SOC 589.

SOC 591 Political Sociology (3) Introduction to political sociology, considering the rise of the modern state, power, political organization, social movements, and other related topics.

SOC 597 Field Seminar in States, Markets, and Societies (5) Exposes students to theoretical and empirical debates about engagement of states with their societies and with transnational actors in their historical, political, and social settings. Topics include state formation, social change, development, state-market relations, globalization, identities, ethnicities, gender, revolutions, democratization, corruption, clientalism, civil societies, NGOs, and social movements. Offered: jointly with JSIS 597.

SOC 600 Independent Study or Research (*-)

Credit/no-credit only.

SOC 700 Master's Thesis (*-) Credit/no-credit only.

SOC 800 Doctoral Dissertation (*-) Credit/no-credit only.

SPANISH AND PORTUGUESE STUDIES

PORTUGUESE

PORT 103 Elementary Portuguese (5) Methods and objectives are primarily oral-aural. Covers all major elements of Portuguese grammar. Third in a sequence of three. Prerequisite: PORT 102.

PORT 105 Intensive Portuguese for Spanish Speakers (6) VLPA Covers the verbal system and major grammatical points. Does not satisfy foreign language requirement. Prerequisite: either SPAN 203 or SPAN 216, or either SPAN 301, SPAN 302, SPAN 303, SPAN 314, SPAN 315, or SPAN 316 any of which may be taken concurrently.

PORT 110 Accelerated Elementary Portuguese (5) Covers the equivalent of PORT 101 and PORT 102 to

prepare for PORT 103. May not be taken in addition to PORT 101 or PORT 102.

PORT 199 Foreign Study: Elementary (2-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through PORT 103.

PORT 201 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. First in a sequence of three. Prerequisite: either PORT 103 or PORT 105.

PORT 202 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. Second in a sequence of three. Prerequisite: PORT 201.

PORT 203 Intermediate Portuguese (5) VLPA Modern texts, compositions, conversation, and a systematic review of grammar. Third in a sequence of three. Prerequisite: PORT 202.

PORT 299 Foreign Study: Intermediate (2-16, max. 16) VLPA Intermediate instruction in approved foreign study program. Further study at 200-level subject to department evaluation.

PORT 301 Advanced Portuguese (5) VLPA Emphasizes oral skills while continuing to refine reading comprehension and written expression. Aims to develop abilities to successfully deal with comprehension and production of oral texts of an academic and professional nature. Not a conversation course. Prerequisite: PORT 203.

PORT 310 Introduction to Lusophone Literature (3) VLPA Introduction to the studies of Lusophone literature and culture.

PORT 335 Twentieth Century Brazilian Fiction in English (5, max. 10) VLPA Reading texts in connection with cultural and theoretical issues.

PORT 365 Mapping Luso-Brazilian Cultures (5) I&S/VLPA Explores cultures of Brazil, Portuguese-speaking Africa, Asia, and Europe within the framework of cultural studies theory. Follows an interdisciplinary approach, drawing from readings,

audio files (radio) , films and documentaries in history, literature, arts and performances, anthropology, among others. Focuses on selected cultural aspects and countries. Taught in ENGLISH. Offered: jointly with JSIS A 365; Sp.

PORT 366 Port-Language Track for Mapping Luso-Brazilian Cultures (2) Language track option in Portuguese for intermediate or higher level students, in conjunction with PORT 365/JSIS A 365. Must be registered in PORT 365/JSIS A 365, to take this class. Explores readings and films/documentaries in the cultures of Brazil and the Portuguese-speaking world. Prerequisite: PORT 201 or permission of instructor. Offered: Sp.

SPANISH

SPAN 101 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Language laboratory is required. First in a sequence of three. Prerequisite: score of 0-15 on SP100A placement test if Spanish is language of admission. No credit if Spanish is the language of admission. Cannot be taken for credit if SPAN 121 already taken.

SPAN 102 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Second in a sequence of three. Prerequisite: either SPAN 101, or score of 16-44 on SP100A placement test. Cannot be taken for credit if SPAN 122 already taken.

SPAN 103 Elementary Spanish (5) Methods and objectives are primarily oral-aural. Third in a sequence of three. Prerequisite: either SPAN 102, SPAN 110 or score of 45-69 on SP100A placement test. Cannot be taken for credit if SPAN 123 already taken.

SPAN 110 Basic Spanish Review (5) Covers the equivalent of SPAN 101 and SPAN 102 to prepare for SPAN 103. May not be taken in addition to SPAN 101 or SPAN 102. Prerequisite: score of 10-44 on SP100A placement test. Offered: AWSp.

SPAN 121 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 101) . Uses an alternative "planned immersion" method with video as the central medium of presentation. First in a sequence of three. Prerequisite: no previous Spanish study, or score of 0-15 on SP100A placement

test if Spanish is language of admission. Cannot be taken for credit if SPAN 101 already taken.

SPAN 122 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 102) . Uses an alternative "planned immersion" method with video as the central medium of presentation. Second in a sequence of three. Prerequisite: SPAN 121. Cannot be taken for credit if SPAN 102 already taken.

SPAN 123 Spanish Immersion (5) Covers the equivalent of elementary Spanish (SPAN 103) . Uses an alternative "planned immersion" method with video as the central medium of presentation. Third in a sequence of three. Prerequisite: SPAN 122. Cannot be taken for credit if SPAN 103 already taken.

SPAN 134 Intensive First-Year Spanish (15) Intensive course. Covers the equivalent of SPAN 101, SPAN 102 and SPAN 103, the three courses of the first-year Spanish Language Program. Total credit will be reduced for students who have taken SPAN 101, SPAN 102, SPAN 103, SPAN 110, SPAN 121, SPAN 122, or SPAN 123. No prerequisites. Offered: S.

SPAN 199 Foreign Study - Elementary (1-16, max. 16) Elementary instruction in approved foreign study program. Students who wish to satisfy foreign language proficiency requirement must see the departmental adviser and may be required to take additional courses through SPAN 103.

SPAN 201 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. First in a sequence of three. Prerequisite: either SPAN 103, SPAN 123, SPAN 134, score of 70-80 on SP100A placement test, or score of 0-75 on SP200A placement test.

SPAN 202 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and cultural readings. Second in a sequence of three. Prerequisite: either SPAN 201 or score of 76-145 on SP200A placement test.

SPAN 203 Intermediate Spanish (5) VLPA Intensive practice in speaking, reading, and writing. Review of Spanish grammar. Oral practice based on literary and

cultural readings. Third in a sequence of three.
Prerequisite: either SPAN 202, SPAN 210, or score of 146-165 on SP200A placement test.

SPAN 206 Arts and Culture of Oaxaca (3) VLPA/I&S

Introduction to the contemporary culture of Oaxaca, Mexico, particularly painting, folk arts, and Days of the Dead, in the context of recent Mexican politics and society. Prerequisite: SPAN 103, which may be taken concurrently. Instructors: Gonzalez

SPAN 207 Culture and Civilization in Spain (5)

I&S/VLPA M. RANEDA CUARTERO Multi-disciplinary course that explores and examines particular aspects of the history, literature, art, society, and geography of Spain through a series of original readings and content-based activities that are specifically designed to encourage critical thinking and enhance linguistic proficiency in Spanish. Prerequisite: SPAN 203, may be taken simultaneously. Offered: W.

SPAN 216 Spanish for Heritage Learners (5) VLPA

First of a four-course sequence designed for Heritage Spanish Speakers. Develops competence in students' reading and writing skills. Helps heritage speakers master grammar points, improve presentational skills, and take into account the experience and influences of bilingual and bicultural upbringing.

SPAN 224 Spanish for Health Professionals I (3)

Exposes students to a variety of medical terminology, providing opportunities for practicing medical-focused communication, and reading and analyzing written texts, as they would in a clinical setting. Not equivalent to any other Spanish language course. Prerequisite: either SPAN 201, or score of 76-145 on SP200A test.

SPAN 225 Spanish for Health Professionals II (3)

Understand and use more complex structures of Spanish; with precision and fluency in the healthcare field. Starts with review of conducting a simple physical exam and follow-up on tests. Includes concepts such as learning to create a medical history, and discussing hospitalization/discharge of patients. Prerequisite: SPAN 224.

SPAN 226 Spanish for Health Professionals III (3)

Helps students understand and use more complex structures of Spanish, with precision and fluency in the healthcare field. Includes independent research

into topics of professional relevance and personal interest to students and topics of importance to Spanish-speaking populations in the United States and the Puget Sound region. Prerequisite: SPAN 225.

SPAN 227 Intermediate Conversation (2, max. 6)

VLPA Focuses on developing intermediate conversation skills - listening and speaking - and increasing vocabulary in varying situations. Discussions are based on contemporary Spanish films, current articles, fiction, and essays. Not open to students whose native language is Spanish. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

SPAN 237 Foreign Study - Intermediate

Conversation (2-6, max. 6) VLPA For participants in approved foreign study programs. Prerequisite: either SPAN 103, SPAN 123, or SPAN 134.

SPAN 292 Experiential Learning in Spanish -

Intermediate (1-3, max. 3) I&S An experiential learning project in an NGO or non-profit organization in the Spanish-speaking community that engages students in ways that supplement their formal in-class trainings. Prerequisite: SPAN 103.

SPAN 294 Special Topics in Spanish

Literary/Cultural Studies (5, max. 10) VLPA Focuses on a special topic related to Spanish literary or cultural studies. Taught in English.

SPAN 298 Advanced Placement (AP) Spanish

Literature (5-15, max. 15) VLPA Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

SPAN 299 Foreign Study - Intermediate (1-16, max.

16) VLPA Intermediate instruction in approved foreign study program. Further study at 200 level subject to placement test score.

SPAN 301 Advanced Spanish (5) VLPA

Emphasizes oral skills while continuing to refine reading comprehension and written expression. It aims to develop the abilities to successfully deal with comprehension and production of oral texts of an academic and professional nature. Not a conversation course. Prerequisite: either SPAN 203 or score of 166-175 on SP200A placement test.

SPAN 302 Advanced Spanish (5) VLPA Develops writing techniques and strategies for the production of Spanish texts of an academic and professional nature. Prerequisite: SPAN 301 or SPAN 310, either of which may be taken concurrently.

SPAN 303 Advanced Spanish (5) VLPA Develops writing techniques and strategies for the creation of essays on literary criticism and cultural analysis. Prepares students to deal successfully with academic writing in Hispanic literature and culture courses. Prerequisite: either SPAN 302 or SPAN 310.

SPAN 304 Survey of Spanish Literature: 1140-1498 (3) VLPA Masterpieces of Spanish literature from origins to 1498. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 305 Survey of Spanish Literature: 1498-1681 (3/5) VLPA Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Gilbert

SPAN 306 Survey of Spanish Literature: 1681 to the Present (3/5) VLPA Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Mercer

SPAN 307 Introduction to Latin American Literature: Colonial Era through Early Independence (3/5) VLPA *J. ROBLES RIVERA* Study of selected works from the sixteenth through the nineteenth century, with special emphasis on their historical and cultural relevance. Development of reading and writing skills. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 308 Introduction to Latin American Literature: Independence to the Present (3/5) VLPA Study of selected works of twentieth-century Latin American literature and their sociohistorical context. Development of reading and writing skills. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 309 Salamanders and Graffiti: Julio Cortazar's Fantastic Nightmares (3/5) VLPA *S. JAFFEE* Explores short fiction and theoretical readings by Argentine writer Julio Cortazar (1914-1984), studied in the context of the Latin American new-narrative "boom"

and fantastical literature. Key concepts include: urbanization, visibility, otherness, international modernity, and Argentine history. Additional topics of study include: classical mythology, Renaissance art, American jazz, and French "new wave" cinema. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 313 Business Communication in Spanish (5) VLPA *M. MEDIAVILLA* This intermediate level course offers students the opportunity to develop their Spanish language skills (reading, writing, speaking, and listening) within the context of the Spanish-speaking business world. Business-specific culture emphasized. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 314 Spanish for Bilingual/Heritage Students (5) VLPA *Gillman* Provides bilingual students whose formal education has primarily been in English with the skills necessary to succeed in upper-division Spanish classes. Intensive review of grammar, readings of literary and journalistic texts, Web-based exercises, writing review, and a play to enhance their verbal skills. Offered: AW.

SPAN 315 Spanish for Bilingual/Heritage Students (5) VLPA Emphasizes reading, with attention to problems particular to Spanish-heritage students. Emphasis on critical reading, vocabulary expansion, and grammar review. Prerequisite: SPAN 314. Instructors: Gillman Offered: WSp.

SPAN 316 Stylistics and Composition for Heritage Students (5) VLPA *M. GILLMAN, A. WITTE* Emphasis on the process of writing essays to help students develop a notion of style in Spanish, with attention to problems particular to Spanish heritage students. Prerequisite: SPAN 315. Offered: ASp.

SPAN 317 Spanish and Latin American Literature in English Translation (5, max. 10) VLPA Spanish and Latin American literature in English translation, with consideration of their background and influence. Does not fulfill any major or minor requirement.

SPAN 318 Cervantes' Don Quixote in English (5) VLPA *Gilbert* Cervantes' *Don Quixote de la Mancha*: close study of this comic masterpiece, and the life,

times, and works of its author. Consideration of the work's enduring influence and vitality. Does not fulfill any major or minor requirement.

SPAN 319 Mexican Literature (3) VLPA, DIV Analysis of selected works of Mexican literature from the second half of the twentieth century: short stories, poetry, essay, and theatre. Focus on issues such as nationalism and national identity, gender, ethnicity, dependent development, and globalization. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Witte

SPAN 320 The Origins of Race and Racism in the Spanish World (5) VLPA, DIV Cultural, social, linguistic, and ideological constructions that helped establish an idea of race and racism in the context of Spanish premodern cultures. Topics include medicine, art, religion, food, urban design, state and political structure, as well as literature and popular culture. Taught in English. Offered: Sp.

SPAN 321 Introduction to Hispanic Literary Studies (5) VLPA A. *WITTE* Acquaints the third-year student with elementary techniques of literary analysis, as applied to examples of narrative, poetry, and theater, within the context of the Spanish and Latin American literary traditions. Prerequisite: either SPAN 301 or SPAN 314, or SPAN 302, SPAN 303, SPAN 310, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Offered: W.

SPAN 322 Introduction to Hispanic Cultural Studies (5) VLPA/I&S Introduces students to elite, mass, and folk cultures of Latin America, Spain, and Latinos in the United States. Sample topics include transculturation, globalization, border culture, and relations between culture, democratization, and human rights. Prerequisite: either SPAN 301 or SPAN 314, or SPAN 302, SPAN 303, SPAN 310, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Instructors: Gomez-Bravo. Offered: Sp.

SPAN 323 Introduction to Spanish Linguistics (5) VLPA Synchronic and diachronic linguistic analysis of Spanish, including Spanish phonetics and phonology, morphology, syntax, and evolution of the language. Prerequisite: either SPAN 301 or SPAN 314, or SPAN 302, SPAN 303, SPAN 310, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Offered: Sp.

SPAN 327 Advanced Conversation (2-6, max. 6) VLPA Focuses on developing advanced conversational skills - listening and speaking - to fluency and increasing vocabulary in varying situations. Discussions are based on contemporary Spanish films, current articles, fiction, and essays. Does not fulfill any major or minor requirement. Not open to students whose native language is Spanish. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 328 Spanish Cultural Studies (5, max. 10) VLPA/I&S Focusing on historical, social, and ideological aspects of modern Spanish culture. Lectures, readings, discussions, and written work in Spanish. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314.

SPAN 329 Latin American Cultural Studies (5, max. 10) VLPA/I&S Focuses on historical, social, and ideological aspects of modern Latin American culture. Lectures, readings, discussions, and written work in Spanish. Prerequisite: either SPAN 301, SPAN 310, or SPAN 314.

SPAN 331 Themes in Mexican-American Studies (5) VLPA/I&S Examination of significant historical and cultural themes of the Mexican-American experience. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 332 Chicano Film and Narrative (5) VLPA/I&S Provides an historical overview of the evolution of Chicano culture through film. Critically examines the portrayal and self-portrayal of Chicanos in film and selected works of narrative. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently. Instructors: Flores

SPAN 333 Hispanic Film Studies (5) VLPA/I&S Introduction to major issues in the study of Hispanic cinema from various national contexts. The relationship of film to other types of narrative, and of film to society, specifically relations between class, gender, ethnicity, and artistic production, as well as between cinema and social change. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN

330, any of which may be taken concurrently.
Instructors: Mercer

SPAN 334 Latin American Film (5) VLPA/I&S

Overview of the history of Latin American cinema, including the new Latin American cinema of the 1960s; the development of strong film industries in Mexico, Cuba, and Brazil; and recent developments in the context of globalization and democratization. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 335 Spanish and Latin American Film (5)

I&S/VLPA Introduction to major issues in the study Hispanic Cinema from various national contexts as well as to film theory and the basics of cinematic techniques. Relationship between film and class, gender and ethnicity. Taught in English. Prerequisite: SPAN 301 or SPAN 314.

SPAN 336 Creative Storytelling in Spanish (5)

VLPA/I&S Introduction to the theory and practice of storytelling in Spanish. Helps prepare the Spanish language teacher for the classroom. Focuses on the improvement of presentation skills, creativity, and the integration of story in the (second) language classroom.

SPAN 337 Foreign Study Advanced Conversation (2-6, max. 6) VLPA

For participants in foreign study program. Does not fulfill any major requirement. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 339 Women Writers (3) VLPA

Critical analysis of Chicana/Latina writers in the United States; or by Spanish-American, Luso-Brazilian, and Spanish women writers in their specific socio-historical context. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Diaz

SPAN 340 Introduction to Latin American Poetry (3)

VLPA Traces the oral, musical, and written traditions of Latin American poetry. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 350 Drama (3) VLPA Generic study of Spanish drama. Prerequisite: either SPAN 301, SPAN 302,

SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Gilbert

SPAN 351 Poetry (3) VLPA

Generic study of Spanish poetry. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: O' Hara

SPAN 352 Fiction (3) VLPA

Generic study of Spanish fiction. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Petersen

SPAN 354 The Power of Spanish in Contemporary Language and Politics (3) VLPA

A. Raftery
Introduction to the relation of Spanish language with the state, including matters of policy, citizenship and nationhood, political and religious institutions, immigration and language minorities. Recommended: SPAN 301, SPAN 314, SPAN 302, SPAN 303, SPAN 310, SPAN 315, SPAN 316, SPAN 330, any of which may be taken concurrently. Offered: Sp.

SPAN 360 Contemporary Spain (5) VLPA/I&S

Social, political, and cultural developments in Spain since the end of the Franco dictatorship in 1975. Extensive use of Spanish Web sites. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Raneda Offered: jointly with JSIS A 360.

SPAN 362 Food and Community: Cultural Practices in the Hispanic World (5) I&S

Ana M. Gomez-Bravo
Intersections of food and community in Hispanic cultures. Past and present practices. Food and material culture, urban design, foodways and gender roles, food and race, diet and hygiene, religious, and civic celebrations, and food preparation techniques. Offered: jointly with GEOG 373/JEW ST 362; S.

SPAN 390 Supervised Study (2-6, max. 20)

SPAN 392 Experiential Learning in Spanish (1-3, max. 3)

Experiential learning project in the local Spanish-speaking community. Engages students in ways that supplement/enhance formal in-class language training. Prerequisite: SPAN 203. Credit/no-credit only.

SPAN 393 Foreign Study (1-10, max. 20) VLPA Study in Spanish speaking country outside the standard Spanish curriculum of the University of Washington. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330, any of which may be taken concurrently.

SPAN 394 Special Topics in Spanish Literature (3/5, max. 10) VLPA Focuses on an individual Spanish author or a special topic in Spanish literature. May be repeated once. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330. Instructors: Gomez-Bravo

SPAN 395 Special Topics in Latin American Literature (3/5, max. 10) VLPA *J. ROBLES RIVERA* Focuses on an individual Latin American author or a special topic in Latin American literature. May be repeated once. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 396 Special Topics in Spanish Cultural Studies (3/5, max. 10) VLPA/I&S Focuses on a special topic related to Spanish cultural studies. Taught in English. Prerequisite: either SPAN 301, SPAN 302, SPAN 303, SPAN 310, SPAN 314, SPAN 315, SPAN 316, or SPAN 330.

SPAN 398 Special Topics in Spanish Linguistics (3-5, max. 10) VLPA Focuses on a special topics related to Spanish linguistic studies. May be repeated once. Prerequisite: either SPAN 301 or SPAN 314.

SPAN 400 The Syntactic Structure of Spanish (5) VLPA Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 400.

SPAN 401 The Morphological Structure of Spanish (5) VLPA Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 401.

SPAN 402 The Phonological Structure of Spanish (5) VLPA Phonological component of the generative grammar of Spanish; representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 402.

SPAN 403 The Evolution of the Spanish Language (5) VLPA Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 403.

SPAN 404 Dialects of World Spanish (5) VLPA *A. FERNANDEZ DOBAO* Introduction to dialectical variants of Spanish. Considers standardization and the real academia; variation and change; pragmatics and politeness; Spanish in contact; sound, word formation, and grammar variation. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 404.

SPAN 405 Hispanic Sociolinguistics (5) VLPA/I&S, DIV Theoretical and methodological foundations of Hispanic Sociolinguistics, and main advances in recent years. Examines the correlations between language and social factors such as gender, age, and socioeconomic status. Addresses issues like attitudes toward language, bilingualism in the United States, Spanish as a heritage language, and Spanish in contact with other languages. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 405.

SPAN 406 Advanced Spanish Grammar (5) VLPA Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Instructors: Fernandez-Mallat Offered: jointly with SPLING 406; A.

SPAN 407 Bilinguismo: Made in USA (5) I&S/VLPA, DIV *Ana Fernandez Dobao* Introduces students to the study of bilingualism, focusing on Spanish/English bilingualism in the United States. Examines bilingualism as both an individual and social phenomenon, and aims to raise students'

awareness of the intersection between language and the social constructs of race, ethnicity, and social class. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; and either SPAN 323, LING 200, or LING 400. Offered: jointly with SPLING 407.

SPAN 408 Spanish Translation Workshop (5) VLPA
Intensive practice in translation to and from Spanish. Texts include literary prose, poetry, expository writing, newspaper and magazine articles. Problems of standard versus colloquial language, transposition of cultural references, concept of fidelity in translation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Instructors: Witte

SPAN 409 Translation For Performance (5) VLPA
Focuses on the translation of a selection of one full length or several short plays from English into Spanish with special attention given both to translation methodology and to the particular challenges encountered when translating/adapting a play for performance. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400.

SPAN 410 Creative Writing in Spanish (5) VLPA
Creative writing in poetry for students undertaking fourth year advanced coursework in Spanish literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 414 Spanish Literature: Eighteenth Century (5) VLPA Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 415 Spanish Literature: Nineteenth Century (5) VLPA Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 416 Spanish Literature: 1900 to the Present (5) VLPA Spanish literature of the twentieth century prior to the Civil War to the present. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Geist, Mercer

SPAN 420 Spanish Poetry: Origins through the Fifteenth Century (5) VLPA Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Petersen

SPAN 423 Spanish Poetry: The Golden Age, Sixteenth through Seventeenth Centuries (5) VLPA
Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 424 Hispanic Poetry: 1870 - 1936 (5) VLPA
Modern lyric poetry of the Hispanic world. The period studied extends from 1870 to 1936 and deals with thirteen major poets, from Becquer to Hernandez. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Geist

SPAN 433 Golden Age Prose (5) VLPA
Representative, and outstanding, prose works of sixteenth- and seventeenth-century Spain. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 436 Spanish Novel of the Nineteenth Century (5) VLPA Representative works of Galdos, Clarin, Pereda, Valera, and Blasco Ibanez. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 438 Spanish Novel: 1900 - Present (5) VLPA
Spanish novel from the generation of 1898 to the present. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Geist

SPAN 439 Women Writers (5) VLPA/I&S, DIV
Feminist analysis of selected texts by Chicana/Latina writers in the United States as well as by Spanish-American, Luso-Brazilian and/or Spanish women writers in their specific socio-historical contexts. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Diaz

SPAN 440 Spanish Drama: 1150-1600 (5) VLPA From the beginning to Lope de Vega. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 441 Spanish Drama: 1600-1635 (5) VLPA
Spanish theatre of the seventeenth century, with emphasis on Lope de Vega. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 442 Latin American Colonial Theatre and Performance (5) VLPA *J. ROBLES RIVERA* Study of formal Spanish American theatre, performance, and theatricalization of power in political, religious, and

social life. Emphasizing how indigenous and European forms combined to create unique forms of spectacle in the Americas. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 445 The Modern Theatre in Spain, 1700-1900 (5) VLPA Literature and historical context of Spain's theatre in the eighteenth and nineteenth centuries. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 446 Modern Spanish Theatre: 1900 to Present (5) VLPA Examines works of Spain's major dramatists since 1900 and their relationship to Spain's changing social and political context. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 447 Modern Latin American Theater (5) VLPA Study of the origin, development, and achievements of Latin American theater with an overview of its history prior to the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Witte

SPAN 449 Spanish Drama and Play Production (5, max. 10) VLPA Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Witte Credit/no-credit only.

SPAN 453 Cervantes and His Times (5) VLPA Study of Cervantes and his moment in Spanish history, with special attention to his cultural and artistic environment. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 457 Food, Ethnicity, and Identity in Hispanic Culture (5) I&S/VLPA *Ana M. Gomez-Bravo* Explores food, ethnicity, and identity in the Hispanic World, including Sephardic, Muslim, Native American, Basque, and Catalan groups. Taught in English. Prerequisite: Either SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with JSIS B 457; Sp.

SPAN 458 Sexuality and Gender in Pre-Modern Spanish Culture (5) VLPA/I&S *Ana M. Gomez-Bravo* Offer an overview of the cultural, social, linguistic, and ideological constructions of gender and sexuality in the context of Spanish pre-modernities. Prerequisite: Either SPAN 303 or SPAN 316; SPAN 322 Offered: A.

SPAN 459 Hispanic Food and Culture (5) VLPA/I&S *Ana M. Gomez-Bravo* Introduction to food culture in the Hispanic world, with an overview of different periods and regions, and an emphasis on material culture, cultural practices, gender, ethnicity, and identity. Prerequisite: SPAN 303 or SPAN 316; SPAN 322. Offered: Sp.

SPAN 460 Sephardic Culture before 1492 (5) VLPA/I&S *Ana M. Gomez-Bravo* Explores Sephardic art. Music, food, film, literature, citizenship and nationhood, identity, and the origins of ladino, among other topics. Taught in English. Prerequisite: SPAN 303 or SPAN 316; SPAN 322. Offered: jointly with JEW ST 460; W.

SPAN 461 Topics in Latin American Cultural Studies (5, max. 10) VLPA/I&S *J. ROBLES RIVERA* Examines Latin American society and its cultural production. Major movements in the development of Latin American society and intellectual life as reflected in music, the visual arts, literature, etc. Specific topics vary. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 462 Topics in Spanish Cultural Studies (5, max. 10) VLPA/I&S Examines Spanish society and its cultural production. Major movements in the development of Spanish society and intellectual life as reflected in music, the visual arts, literature, etc. Specific topics vary. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322. Instructors: Gomez-Bravo, Gilbert, Petersen

SPAN 463 Romani/Gypsy Culture in Spain and the Hispanic World -- Fifteenth Century to the Present (5) I&S, DIV *Antonio M. Rueda* Development of Roma people from their arrival in Spain as persecuted minority in the fifteenth century to the present in the Hispanic world. Explores creation of international stereotypes based on fictional representations. Musical, literary, cultural, and historical works; materials developed by Gypsies as response to marginalized figure conceived by non-Gypsy artists. Prerequisite: either SPAN 303 or SPAN 316; recommended: coursework in either Spanish, Spanish literature and culture, Race Studies, Romani studies, or early modern and colonial history and society. Offered: Sp.

SPAN 464 Chicana Expressive Culture (5) VLPA/I&S Expressive culture of Mexican women in United

States. Cultural and artistic practices in home, film, literary (print, oral) , performing, and visual arts. Focuses on ways Chicana visual artists re-vision traditional iconography. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 465 Contemporary Chicano Literature (5) VLPA Examines one or more problems, themes, and/or figures in the developing body of Chicano literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Flores

SPAN 466 Chicano Literature: Fiction (5) VLPA Examines nineteenth- and early twentieth-century fiction, as well as contemporary works in attempts to trace the development of Chicano fiction in the proper historical trajectory. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Flores

SPAN 467 Spanish Women (5) VLPA/I&S, DIV Women's culture in Spain, focusing on women's experience during Civil War; persecution and censorship of women activists, artists, intellectuals during Franco years; changes in women's culture brought about by reintroduction of democracy; major issues addressed by contemporary Spanish feminists. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322.

SPAN 468 Latin American Women (5) VLPA/I&S, DIV J. ROBLES RIVERA The elaboration of discourses of identity in relation to gender, ethnicity, social class, and nationality, by women writers from South America, Mexico, Central America, and the Caribbean. Testimonial literature, literature and resistance, women's experimental fiction. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Offered: jointly with GWSS 468.

SPAN 469 The Probable Improbability of Gabriel Garcia Marquez's Cien anos de soledad (5) VLPA S. JAFFEE Creative-Critical close reading of Garcia Marquez's novel *Cien anos de soledad* (1967) in the context of Latin American new-narrative "boom" and aesthetic philosophies of the marvelous real, magical realism, and Impressionism. Key concepts: myth, archive, chronology, storytelling, family, generation, invisibility, visibility, otherness/outside, and Colombian, Latin American, and world history Prerequisite: either SPAN 303, or SPAN 316 and SPAN 321

SPAN 470 Andean Cultures and Communities: Identities, Artists, and Innovators (5) VLPA, DIV Samuel J Jaffee Design-based inquiry on cultural difference, political inequity, and economic marginality in the Andean region. Analysis of material culture, literature, music, festivals, and entrepreneurial innovations reflecting sociocultural/ethnolinguistic diversity, indigenous spirituality, industrial abuses, internal migration, postwar demographic effects. Curricular through-lines: ethical, cultural, and social justice perspectives; inquiry and research. Prerequisite: either SPAN 303 or SPAN 316; and SPAN 321.

SPAN 472 Colonial Prose (5) VLPA J. ROBLES RIVERA Study of major genres of prose writing in Spanish America during the sixteenth through eighteenth centuries, including history writing, travel writing, historiography, and nascent forms of fictional writing. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 473 Latin American Fiction: Nineteenth Century (5, max. 15) VLPA J. ROBLES RIVERA Study of prose fiction in Latin America in the nineteenth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 474 Latin American Fiction: Twentieth Century (5) VLPA Study of prose fiction in Latin America in the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 475 Latin American Poetry: Colonial through Nineteenth Century (5) VLPA J. Robles Rivera Poetic movements of the seventeenth, eighteenth, and nineteenth centuries in Spanish American, Renaissance, baroque, neoclassicism, romanticism, and modernism. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 476 Contemporary Latin American Poetry (5) VLPA Evolution of Latin American poetry, from postmodernism and vanguardism to the most recent poetic expression: Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 477 Latin American Essay (5) VLPA Literary expression of ideas in Latin American countries, nineteenth and twentieth centuries. Prerequisite:

either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 479 The City and Latin American Literature: Points of Departure (5) VLPA/I&S Representations of Latin American, United States, and European cities by Latin American authors, and of Latin American and Latino cities by authors from other literary traditions. The literary relation of urbanization to modernization, globalization, exile, and alienation. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 480 Spanish Medieval Literature (5) VLPA Principal literary works of the Spanish Middle Ages in the context of evolving intellectual, spiritual, and artistic climates of the period. Covers the evolution of narrative and lyric prose and verse in both their traditional and learned manifestations. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Petersen

SPAN 481 Sixteenth- and Seventeenth-Century Spanish Literature (5) VLPA Spanish literature of the sixteenth and seventeenth centuries. Close study of key texts from all genres as well as their socio-historical contexts. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Gilbert

SPAN 482 Eighteenth- through Twentieth-Century Spanish Literature (5) VLPA Survey of Spanish literature since 1700, and its historical context. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Mercer

SPAN 483 Latin American Literature: Origins to Independence (5) VLPA *J. ROBLES RIVERA* The elaboration of discourses of legitimization by the Spanish conquistadores, and of resistance and accommodation by native and mestizo peoples; the development of a New World Baroque aesthetic; literatures of independence from Spain and of nation-building. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 484 Latin American Literature: Modernismo to the Present (5) VLPA Principal literary movements of Latin America, late nineteenth century to the present, with particular emphasis on poetry and narrative: modernismo, postmodernismo, the vanguard, nueva and novísima narrativa. Includes essays and autobiographical writings to help place

the literary works in socio-historical perspective. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 485 Desmadre patria: Latin American Myth in Film and Literature (5) VLPA *S. JAFFEE* Reviews films from Mexico, Cuba, Peru, Colombia, Argentina, and Brazil (1960's to the 2000's), and literary, theoretical, historical, and critical readings on ongoing preoccupations in national consciousness. Topics of study include: civilization and barbarism; religion and revolution; urban migration; the idea of a shared identity as patria; and racial fetish and stereotype. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 486 Photography and Cultural Studies in Latin America (5) VLPA/I&S Interdisciplinary exploration of the connections between visual anthropology (ethnography through photography and film), documentary and art photography, and colonial and post-colonial discourse in Latin America during the twentieth century. Prerequisite: either SPAN 303 or SPAN 316; SPAN 322. Instructors: Steele Offered: jointly with JSIS A 486.

SPAN 487 Mexican Cinema (5) VLPA/I&S Analysis of representative films about post-revolutionary Mexico by directors from both the Golden Age of Mexican Cinema (1940-1960) and the Mexican New Film movement (1975-the present). Revolutionary nationalism, modernization and its discontents; construction of gender, class, and ethnicity; migration and globalization. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: Steele

SPAN 488 The Fantastic in Latin American Literature (5) VLPA Introduction to the Fantastic in literature, in contrast to realism, and how the concept has been adapted by Latin American authors. May focus on a particular writer: Augusto Monterroso (Guatemala) or Julio Cortázar (Argentina), or survey various authors. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321. Instructors: O' Hara

SPAN 489 The Mexico-U.S. Border in Literature and Film (5) VLPA/I&S, DIV Analysis of the Mexico-U.S. Border region in literature and film of the 1990s and early 2000s. Includes migration, tourism, NGOs, globalization, transnational commerce, multiculturalism, and politics of gender, sexuality, and race. Prerequisite: either SPAN 303 or SPAN 316;

SPAN 321. Instructors: Steele Offered: jointly with JSIS A 489.

SPAN 490 Honors Seminar (2-5, max. 10) VLPA
Special studies in Spanish literature. Required of candidates for Honors and Distinction in Spanish.

SPAN 491 Individual Authors and Special Topics in Spanish Literature (5, max. 10) VLPA Focus on an individual Spanish author or a special problem in Spanish literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 492 Individual Authors and Special Topics in Latin American Literature (5, max. 10) VLPA Focuses on an individual Latin American author or a special problem in Latin American literature. Prerequisite: either SPAN 303 or SPAN 316; SPAN 321.

SPAN 493 Foreign Study (2-10, max. 20) VLPA
Advanced study in Spanish speaking country outside the standard Spanish curriculum of the University of Washington. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, SPAN 394, or SPAN 395.

SPAN 495 Study in Spain (2-10, max. 20) VLPA
Advanced study in Spain in approved foreign study programs. Prerequisite: either SPAN 303, SPAN 316, or SPAN 330; SPAN 321; SPAN 322; either SPAN 304, SPAN 305, SPAN 306, SPAN 307, SPAN 308, SPAN 319, SPAN 339, SPAN 340, SPAN 350, SPAN 351, SPAN 352, SPAN 394, or SPAN 395.

SPAN 498 Special Topics in Spanish Linguistics (5, max. 10) VLPA Focuses on a special topic related to Spanish linguistic studies. May be repeated once. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400.

SPAN 499 Special Topics (1-5, max. 10) Topics to meet special needs.

SPAN 510 Methodology of Spanish Language Teaching (5) *Fernandez Dobao* Theoretical and practical foundations of current trends in second/foreign language teaching. Emphasis on communicative and task-based approaches to

Spanish language teaching. Required for beginning Spanish teaching assistants. Credit/no-credit only.

SPAN 521 The Renaissance in Spain (5, max. 20) *Gilbert* Literary creation and the cultural, social, historical context of Spanish literature from *La Celestina* through the sixteenth century. Extensive study of secondary materials, intensive analysis of representative literary texts.

SPAN 522 The Renaissance in Spain (5, max. 20) *Gilbert* Literary creation and the cultural, social, historical context of Spanish literature from *La Celestina* through the sixteenth century. Extensive study of secondary materials, intensive analysis of representative literary texts.

SPAN 541 Topics in Spanish Applied Linguistics (5, max. 20) *Ana Fernandez Dobao* Selected topics in Applied Linguistics. Discusses current theoretical approaches to the study of Applied Linguistics problems, with a special focus on Spanish. Examines empirical research from these different approaches and their main contributions to the field. Introduces Applied Linguistics research methods.

SPAN 542 Topics in Spanish Second Language Acquisition (5, max. 20) *Ana Fernandez Dobao* Selected topics in Second language Acquisition. Discusses current theoretical approaches to the study of Second Language Acquisition problems, with special emphasis on Spanish Second Language Acquisition. Examines empirical research from these different approaches and their main contributions to the field. Introduces Second Language Acquisition research methods.

SPAN 543 Heritage Language Learning and Teaching (5, max. 20) *Ana Fernandez Dobao* Topics in heritage language research. Current theoretical approaches to the study of heritage languages and their speakers. Examines empirical research on heritage language learning and heritage language pedagogy. Introduces students to the methodology and design of heritage language research.

SPAN 561 Spanish-American Novel From 1940 to the Present (5, max. 20)

SPAN 571 The Modern Essay in Spanish America (5, max. 20)

SPAN 572 Twentieth-Century Spanish Poetry (5, max. 20)

SPAN 573 Twentieth-Century Spanish-American Poetry (5, max. 20)

SPAN 575 Literary Criticism (5)

SPAN 577 Contemporary Literary Theory (5) D. *GILBERT* Introduction to various structuralist and poststructuralist theories of literary analysis, including those developed by Hispanic theorists, and their application to the study of texts from the Spanish and Latin American traditions.

SPAN 590 Special Seminar and Conference (1-10, max. 30) Group seminars, or individual conferences, are scheduled under this number to meet special needs. Prerequisite: permission of the Graduate Program Coordinator.

SPAN 591 Literary Problems: Middle Ages (5, max. 20) *Gomez-Bravo, Petersen*

SPAN 592 Literary Problems: Renaissance (5, max. 20) *Gomez-Bravo*

SPAN 593 Literary Problems: Golden Age (5, max. 20) *D. GILBERT*

SPAN 594 Literary Problems: Eighteenth Century (5, max. 20)

SPAN 595 Literary Problems: Nineteenth Century (5, max. 20)

SPAN 596 Literary Problems: Twentieth Century (5, max. 20)

SPAN 597 Literary Problems: Spanish-American Colonial Literature (5, max. 20) *J. ROBLES RIVERA*

SPAN 598 Literary Problems: Latin America (5, max. 20) *E. O'HARA*

SPAN 600 Independent Study or Research (*-)

SPAN 610 Reading Credit for Graduate Exams (1-10, max. 70) Reading preparation for MA and PhD exams. Credit/no-credit only.

SPAN 700 Master's Thesis (*-) Credit/no-credit only.

SPAN 800 Doctoral Dissertation (*-) Credit/no-credit only.

SPANISH LINGUISTICS

SPLING 400 The Syntactic Structure of Spanish (5) VLPA Scientific study of the syntax of Spanish: structure of phrases, transformationally derived structures, grammatical relations, principles of interpretation. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 400.

SPLING 401 The Morphological Structure of Spanish (5) VLPA Principles of word formation, including derivational and inflectional morphology. Relationship between inflectional morphology and other components of grammar. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 401.

SPLING 402 The Phonological Structure of Spanish (5) VLPA Phonological component of the generative grammar of Spanish; representations of syllabic and segmental units, phonological rules, distinctive features and their articulatory correlates. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 402.

SPLING 403 The Evolution of the Spanish Language (5) VLPA Historical survey of Spanish phonology, morphology, and syntax, from Latin origins to the modern language. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 403.

SPLING 404 Dialects of World Spanish (5) VLPA A. *FERNANDEZ DOBAO* Introduction to dialectal variants of Spanish. Considers standardization and the real academia; variation and change; pragmatics and politeness; Spanish in contact; sound, word formation, and grammar variation. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 404.

SPLING 405 Hispanic Sociolinguistics (5) VLPA/I&S, DIV Theoretical and methodological foundations of

Hispanic Sociolinguistics, and main advances in recent years. Examines the correlations between language and social factors such as gender, age, and socioeconomic status. Addresses issues like attitudes toward language, bilingualism in the United States, Spanish as a heritage language, and Spanish in contact with other languages. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 405.

SPLING 406 Advanced Spanish Grammar (5) VLPA Problems of Spanish grammar. Differences from English grammar. Techniques for the effective teaching of Spanish. Prerequisite: either SPAN 303 or SPAN 316; either SPAN 323, LING 200, or LING 400. Instructors: Fernandez-Mallat Offered: jointly with SPAN 406; A.

SPLING 407 Bilinguismo: Made in USA (5) I&S/VLPA, DIV Ana Fernandez Dobao Introduces students to the study of bilingualism, focusing on Spanish/English bilingualism in the United States. Examines bilingualism as both an individual and social phenomenon, and aims to raise students' awareness of the intersection between language and the social constructs of race, ethnicity, and social class. Taught in Spanish. Prerequisite: either SPAN 303 or SPAN 316; and either SPAN 323, LING 200, or LING 400. Offered: jointly with SPAN 407.

SPEECH AND HEARING SCIENCES

SPHSC 100 Voice and Articulation Improvement (3) VLPA For native speakers of English only. Voice production and the sound system of standard American speech. Speech standards, regional and social dialects, voice quality and basic language-oriented characteristics. Practice for improving speech style. May not be repeated. Offered: AWSpS.

SPHSC 111 The American English Sound System (2, max. 4) For non-native speakers of English only. Speech sounds of American English. Practice in listening and using American speech sounds and intonation patterns. Credit/no-credit only. Offered: AWSpS.

SPHSC 250 Introduction to Speech and Hearing Sciences (3) I&S/NW Introduction to the field of speech and hearing sciences and its associated professions. Provides broad overview of normal and

impaired speech, language, swallowing, hearing, and balance disorders, and clinical practice settings. Discusses impact of social-cultural, ethical, and technological factors in diagnosis, treatment, and research. Required for majors; open to nonmajors. Offered: AS.

SPHSC 261 The Nature of Sound (3) NW A. BROWN Fundamental principles of sound and vibration with emphasis on examples relevant to the speech and hearing systems. Required for majors; open to nonmajors. Offered: A.

SPHSC 302 Phonetics: Theory and Transcription (4) VLPA M. Kapsner-Smith Introduction to phonetics for speech and hearing sciences. Topics include broad and narrow transcription of spoken English using the International Phonetic Alphabet, articulatory classification of the consonants and vowels of English, non-native accented speech, dialectal variations, developmental speech patterns, speech disorders, and clinical applications of phonetics in speech and hearing sciences. Required for majors; open to nonmajors. Prerequisite: SPHSC 250; and either LING 200 or LING 400 Offered: W.

SPHSC 303 Language Science (3) VLPA J. Thorne Introduction to techniques of linguistic analysis (morphology, syntax, semantics, pragmatics, etc.) used in clinical application to understand communication capacities in individuals. Required for majors; open to nonmajors. Prerequisite: SPHSC 250; and either LING 200 or LING 400 Offered: SpS.

SPHSC 304 Speech and Language Acquisition (5) I&S A. Pace Introduction to the study of speech and language from a developmental perspective. Overview of typical communicative development patterns and milestones in English speaking children. Application to broader issues in communication science and development. Required for majors; open to nonmajors. Prerequisite: SPHSC 250 and SPHSC 303 Offered: A.

SPHSC 305 Developmental Communication and Swallowing Disorders (3) NW S. Kover Etiology and nature of developmental communication and swallowing disorders. Behavioral characteristics and common treatment approaches for language delay and disorders, developmental apraxia of speech, phonological disorders, fluency, craniofacial anomalies, cognitive-communication disorders, and

feeding/swallowing disorders. Required for majors; open to nonmajors. Prerequisite: SPHSC 250; SPHSC 304; and SPHSC 320 Offered: W.

SPHSC 306 Acquired Communication and Swallowing Disorders (3) NW C. Baylor Etiology and nature of acquired speech, language, cognitive-communication and swallowing disorders in adult and geriatric populations. Behavioral characteristics and common treatment approaches related to neurological and other conditions such as stroke, traumatic brain injury, dementia, degenerative diseases, and head and neck cancer. Prerequisite: SPHSC 250; SPHSC 302; SPHSC 303; SPHSC 304; and SPHSC 320 Offered: W.

SPHSC 308 Social-Cultural Aspects of Communication (3) I&S P. DOWDEN Introduction to human communication in context. Exploration of ways communication is influenced by context, including situational, social/interpersonal, and cultural variables. Studies systems and cultural practices as they influence communication. Required for majors; open to nonmajors. Offered: WS.

SPHSC 320 Anatomy and Physiology of Speech (5) NW M. Burns Anatomy and physiology of the speech and swallowing mechanism, including the respiratory, phonatory, and resonatory systems and their neural control. Examples and laboratory work are directed toward clinical issues in speech-language pathology. Required for majors; open to nonmajors. Prerequisite: SPHSC 250 Offered: A.

SPHSC 371 Hearing Disorders (4) I&S/NW S. Anderson, K. Tremblay Introduction to abnormal hearing and pathologies of the ear. Audiometric assessment and correlates of hearing function, including standard pure-tone audiometry, speech audiometry, and basic impedance audiometry. Communicative and social consequences of hearing loss. Overview of management and treatment of children and adults. Required for majors; open to nonmajors. Prerequisite: SPHSC 250 Offered: WS.

SPHSC 391 Practicum in Audiology (1-4, max. 10) Illich Guided experiences in audiological assessment and aural rehabilitation of children and adults. Credit/no-credit only.

SPHSC 405 Clinical Decision Making in Speech-Language Pathology (4) NW C. Baylor Introduction

to principles and practices of assessment and treatment for speech-language pathologists. Includes foundation in skills and issues common in assessment and treatment across communication and swallowing disorders. Prerequisite: SPHSC 250; SPHSC 305; and SPHSC 306 Offered: Sp.

SPHSC 406 Treatment of Speech and Language Disorders (4) NW C. BAYLOR Principles and procedures for planning, implementing, and evaluating treatment for speech and language disorders. Required for majors. Prerequisite: SPHSC 405. Offered: SpS.

SPHSC 425 Speech, Language, Hearing, and the Brain (5) I&S/NW J. Yeatman Addresses the neural bases of topics in speech, language, and hearing with an emphasis on the normal aspects of central nervous system anatomy, physiology, and function. Gives attention to issues relevant to understanding disordered systems and to points of contemporary debate among neuroscientists. Majors only. Prerequisite: SPHSC 250; SPHSC 305; SPHSC 306; and SPHSC 371 Offered: Sp.

SPHSC 445 Models of Speech Processing (3) NW Examines models and basic issues concerning how spoken language is processed. Presents current issues, theories, and research relative to the levels of processing entailed in producing and comprehending speech. Required for majors; open to nonmajors.

SPHSC 449 Special Studies in Speech Pathology and Audiology (*, max. 30) M. BURNS Selected special problems in speech pathology and audiology. Offered: S.

SPHSC 461 Hearing Science (5) NW M. Winn Basic aspects of the ear, hearing, and auditory nervous system. How the auditory system constructs an image of the acoustic environment. How attention and memory influence hearing. Effects of damage to the auditory system. Required for majors; open to non-majors. Prerequisite: SPHSC 250; SPHSC 261; and SPHSC 371 Offered: Sp.

SPHSC 462 Hearing Development (3) NW L. WERNER Description of the changes that occur in human hearing during development. Consideration of the possible explanations for early immaturity. Prerequisite: SPHSC 461; may not be repeated. Offered: A, odd years.

SPHSC 471 Basic Audiometry (4) NW R. FOLSOM Theory and practice of the assessment of hearing function, including standard pure-tone audiometry, speech audiometry, and basic impedance audiometry. Required for majors. Prerequisite: SPHSC 371; SPHSC 461; may not be repeated. Offered: A.

SPHSC 481 Management of Hearing Loss (3) NW Introduction to methods of communicative rehabilitation of people with hearing loss. Remediation principles of auditory and visual perception, amplification, communication strategies, and information counseling. Required for majors; open to non-majors Prerequisite: SPHSC 250; SPHSC 261; SPHSC 371 Offered: W.

SPHSC 491 Audiology Practicum in Schools (2) R. FOLSOM Special projects in clinical audiology practicum, offered only in the school setting. Provides an opportunity for students to extend audiology practicum experiences into the school environment. Prerequisite: SPHSC 371. Credit/no-credit only. Offered: AS.

SPHSC 495 Guided Observations in Speech and Hearing Sciences (1, max. 6) Julie Ann Dalessio, Michael I Burns Faculty guided clinical observations of speech-language pathology and audiology diagnostic and treatment services. Clinical populations across culturally and linguistically diverse backgrounds and the lifespan. Includes various types and severities of communication and/or related disorders, differences, and disabilities. Credit/no-credit only. Offered: AWSpS.

SPHSC 498 Undergraduate Honors Research ([1-5]-, max. 15) Faculty supervised, undergraduate Honors research project. Includes design and implementation, culminating in written thesis and oral presentation. SPHSC Honors Program students only. Offered: AWSpS.

SPHSC 499 Undergraduate Research ([1-5]-, max. 15) Offered: AWSpS.

SPHSC 500 Clinical Methodology for Documenting Change (3) Carolyn Baylor Introduction to clinical methodology for conducting efficacious assessment and treatment of individuals with communication disorders. Emphasis on methodological approaches to collecting and analyzing data for informed clinical

decision-making in a framework of holistic, patient-centered care. Offered: A.

SPHSC 501 Neural Bases of Speech, Language, and Hearing (3) Michael I Burns Neuroanatomical and neurophysiological bases of language, hearing, sensory, and motor function. Special emphasis given to brain behavior correlates and behavioral consequences to speech, language, and hearing as a result of neurologic injury or disease. Offered: A.

SPHSC 503 Current Issues in Speech and Hearing Sciences (3) Application of experimental methods to research in speech and hearing sciences. Offered: S.

SPHSC 504 Research Methods in Speech and Hearing Sciences (3) S. KOVER Introduction to empirical methods in the speech and hearing sciences. Offered: W.

SPHSC 506 Research Methods in Speech and Hearing Sciences (3) Sara T Kover Examines empirical methods in speech, language, and hearing sciences, with an emphasis on understanding, evaluating, and generating/applying research designs and methods. Prerequisite: introductory, undergraduate-level statistics course that is computational in nature. Offered: W.

SPHSC 507 Evidence Based Practice (3) P. DOWDEN Prepares students to conduct evaluation and treatment in speech-language pathology according to Evidence-Based Practice (EBP) principles. Examines integration of "internal" and "external" evidence in the context of clinical practice. Prerequisite: graduate status in SPHSC or permission of instructor. Offered: Sp.

SPHSC 509 Advanced Hearing Science (3) Consideration of physiological acoustics and psychoacoustics, the pertinent literature, and the experimental techniques related to study in these areas. Offered: A.

SPHSC 510 Physiological Acoustics (3) Study of pertinent literature and experimental techniques incident to the physiology of the normal and abnormal auditory system. Prerequisite: SPHSC 461 or permission of instructor.

SPHSC 511 Psychoacoustics (3) Review of significant literature and theory pertinent to normal auditory sensitivity, pitch, loudness, and other attributes of auditory sensation. Prerequisite: SPHSC 461; permission of instructor.

SPHSC 514 Speech Physiology (3) Study of the physiological parameters of acoustic speech production. Prerequisite: SPHSC 560.

SPHSC 518 Seminar in Speech and Hearing Sciences (1, max. 50) *L. MAX* Reviews selected research area and methods in the speech and hearing sciences. Discusses topics related to developing a career in research or academics. Credit/no-credit only. Offered: AWSp.

SPHSC 519 Seminar in Speech Science (2, max. 50)

SPHSC 520 Advanced Instrumentation for Speech and Hearing Sciences (3) Design and use of electronic and electroacoustic devices in the speech and hearing sciences. Four hours of laboratory required each week.

SPHSC 521 Instrumentation for Audiology (4) Introduction to basic instrumentation used in audiology and hearing science; detailed instruction in audiometer calibration including a review of current national and international standards pertinent to audiology; emphasis on use rather than theory. Prerequisite: permission of instructor. Offered: A.

SPHSC 522 Hearing Instrument Modification/Repair (1) *Martha L. Harney* Minor repair and modification of hearing aids, earmolds and associated accessories. Includes operation of hand tools and small power tools used in repair and earmold modification. Familiarity with different materials used to make or repair hearing aids/accessories. Troubleshooting damaged, malfunctioning, or inoperative instruments. Interpreting acoustic and electroacoustic test results to aid in troubleshooting or repair. Credit/no-credit only. Offered: W.

SPHSC 523 Special Topics in Audiology (3, max. 12) *K. TREMBLAY* Applied and theoretical issues related to audiology. Weekly seminar includes guest speakers discussing current and future trends in science that relate to hearing and the practice of audiology. Offered: W, even years.

SPHSC 525 Speech Signal Processing (3) Theory, evaluation, and use of speech signal processing algorithms such as sampling, filtering, spectral analysis, autocorrelation, and speech synthesis. Laboratory assignments develop skills in using signal analysis and synthesis software applied to normal and pathological speech.

SPHSC 526 Assessment and Treatment of Literacy Disorders (3) *L. SNOW* Examines the principles and procedures used in the assessment and treatment of literacy disorders with an emphasis on childhood literacy disorders as well as the relationship between verbal language impairment and literacy skills. Prerequisite: SPHSC 536. Offered: S.

SPHSC 529 Assessment and Treatment of Birth-to-5 Communication Disorders (3) *Amy E Pace* Examination of assessment and intervention approaches to developmental language disorders in children from the pre-linguistic level through the developing language stage (birth to age 5) . Prerequisite: SPHSC 539. Offered: W.

SPHSC 531 Neurogenic Motor Speech Disorders (4) *Kristie Spencer* Examines the nature, assessment, and management of the dysarthrias, acquired apraxia or speech, and childhood apraxia of speech. Prerequisite: SPHSC 501 or permission of instructor. Offered: Sp.

SPHSC 532 Assessment and Treatment of Neurogenic Language and Cognitive-Communication Disorders (4) *Diane L. Kendall* Provides an overview of the nature, evaluation, and management of acquired language and cognitive-communication disorders in adults. Addresses aphasia, alexia, agraphia, right brain injury, dementia, and traumatic brain injury. Examines the systems that support language (e.g. attention, verbal working memory) and focuses on the underlying neuropathologies and evidence-based approaches to assessment and management of these disorders. Prerequisite: SPHSC 501 or permission of instructor. Offered: W.

SPHSC 533 Medical Speech Pathology (3) Nature of speech pathology practiced in medical settings. Prerequisite: SPHSC 501, SPHSC 531, and SPHSC 532, or permission of instructor. Offered: S.

SPHSC 534 Assessment and Treatment of Dysphagia

(4) Anatomophysiologic bases of function and dysfunction associated with speech-language disorders. Mastication and swallowing problems, their causes, assessments, and management. Prerequisite: SPHSC 501 or permission of instructor. Offered: Sp.

SPHSC 535 Assessment and Treatment of Voice Disorders (2)

Martin Nevdahl Examines the nature, assessment and management of voice production and voice disorders. Introduces perceptual and instrumental methods of measuring voice that are used to help identify voice disorders. Introduces various approaches to treating voice disorders and reviews the evidentiary basis for these treatments. Prerequisite: SPHSC 501. Offered: W.

SPHSC 536 Assessment and Treatment of School-Age Communication Disorders (4)

Sara T Kover Examines the principles and procedures used in the assessment and treatment of school-aged speech-and-language disorders. Offered: Sp.

SPHSC 537 Fluency Disorders (4)

L. MAX Characteristics of fluent speech and the nature and treatment of stuttering in children and adults are studied in relation to normal speech production processes, human learning, principal explanations of stuttering, and treatment systems. Offered: A.

SPHSC 538 Assessment and Treatment of Cognitive-Communication Disorders (3)

K. SPENCER Studies right brain injury, dementia, and traumatic brain injury for understanding of the underlying neuropathologies, techniques for assessment, and evidence-based interventions. Offered: A.

SPHSC 539 Assessment and Treatment of Speech Sound Disorders (3)

Julie A Dunlap Examines the nature, assessment, and treatment of articulation and phonological disorders across the lifespan. Addresses normal and disordered patterns of speech sounds and phonological development, including characteristics of special populations. Offered: A.

SPHSC 540 Augmentative and Alternative Communication Foundations (4)

Patricia A. Dowden Overview of evaluation and intervention for children and adults with severe congenital speech and language impairments, with primary emphasis on individuals with congenital impairments. Overview

of the features of multi-modal strategies, including output, selection set, access, and rate enhancement. Prerequisite: graduate SPHSC, REHAB, or EDSPE students, or permission of instructor. Offered: S.

SPHSC 541 Augmentative and Alternative Communication in the Medical Setting (2)

P. DOWDEN Evaluation and intervention for severe acquired speech/language impairments. Covers decision-making and treatment for individuals who sustained a CVI, traumatic brain injury, or have degenerative diseases. Solutions include multi-modal strategies, from books to voice output systems. Prerequisite: SPHSC 540 or permission of instructor. Offered: Sp.

SPHSC 542 Counseling and Interactive Skills for Speech-Language Pathologists and Audiologists (3)

Lisa Illich Introduction to counseling theory and practice in speech-language pathology, audiology, and related fields. Provides opportunities for learning and practicing counseling skills. Addresses key counseling issues, including professional boundaries, intense emotions, and counselor's feelings and reactions. Prerequisite: graduate standing in SPHSC or permission of instructor. Offered: S.

SPHSC 543 Assessment and Treatment of Pediatric Dysphagia (2)

J. DUNLAP Examines principles and procedure used in the assessment and treatment of pediatric swallowing and feeding disorders. Covers clinical and instrumental assessment techniques and evidenced-based intervention strategies applicable to the infant/child across different pediatric practice settings. Prerequisite: SPHSC 501; SPHSC 534; or permission of instructor. Offered: W.

SPHSC 545 Assessment and Treatment of Voice Disorders in Medical Settings (2)

T. EADIE, M. NEVDAHL Examines the principles and procedures used in assessment and treatment of voice disorders typically seen in medical settings, with a focus on instrumentation such as use of interpretation of laryngeal imaging, acoustics, and perceptual measures. Prerequisite: SPHSC 535. Offered: A.

SPHSC 546 Advanced Neurological Language Disorders (2) *D. KENDALL* Advanced study in the nature, assessment, and treatment of acquired language and cognitive-communication disorders.

Prerequisite: SPHSC 501; SPSHC 532; or permission of instructor. Offered: W.

SPHSC 548 Traumatic Brain Injury Seminar (2) K. *SPENCER* Advanced study in the nature, assessment, and management of individuals with traumatic brain injury across the lifespan. Prerequisite: SPHSC 501; SPHSC 538, or permission of instructor. Offered: Sp.

SPHSC 549 Clinical Forum in Speech-Language Pathology (2, max. 50) Study and application of pertinent clinical issues and trends related to the practice of speech-language pathology. Prerequisite: successful completion of all required didactic and clinical practica coursework in the first two years of the medical speech-language pathology graduate program. Credit/no-credit only. Offered: Sp.

SPHSC 550 Public School Speech-Language Pathology and Audiology (3) *Kate Krings* Explores administrative, legal, ethical, and clinical issues encountered in implementing programs to remediate communication disorders in the school-aged population in the public school setting. Open to non-matriculated students with permission of instructor. Prerequisite: graduate student status in speech and hearing sciences or permission of instructor. Offered: W.

SPHSC 551 Advanced Practicum in Speech Pathology Evaluation (1-10, max. 50) Laboratory experience in the evaluation of speech and language disorders. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 552 Advanced Practicum in Speech Pathology Management (1-10, max. 50) Laboratory experience in the management of speech and language disorders. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 553 Practicum in Speech-Language Pathology (2-4, max. 50) Practicum experience in speech-language pathology, including areas such as speech sound production, voice and resonance, fluency and fluency disorders, receptive and expressive language, social aspects of communication, cognitive aspects of communication, augmentative and alternative communication modalities, swallowing/feeding, and hearing. Offered: AWSpS.

SPHSC 554 Advanced Practicum in Speech-Language Pathology (2-12, max. 50) *Kelsey A Leighton, Kate Krings* Advanced practicum experience in speech-language pathology, occurring at both University of Washington and community-based settings. Includes areas such as speech sound production, voice and resonance, fluency and fluency disorders, receptive and expressive language, social aspects of communication, cognitive aspects of communication, augmentative and alternative communication modalities, swallowing/feeding, and hearing. Prerequisite: SPHSC 553. Credit/no-credit only. Offered: AWSpS.

SPHSC 555 Pre-Internship in Speech and Hearing Sciences (1-10, max. 50) Practicum in speech pathology or audiology designed to teach the clinical regimen of a participating professional center prior to assuming a full internship assignment. Credit/no-credit only. Offered: AWSpS.

SPHSC 556 Advanced Aural Rehabilitation (4, max. 8) *K. TREMBLAY* Advanced study of auditory rehabilitation and training, including psychosocial issues of individuals with hearing loss. Merges research theories with clinical practice and provides experience with applied auditory training in a community setting. Credit/no-credit only. Offered: A.

SPHSC 559 Special Topics in Speech, Language, and Hearing (1-5, max. 30) Guided opportunity for study and advanced discussions in specific areas of speech, language, and hearing science research, theory, and clinical practice. Offered: AWSpS.

SPHSC 560 Studies in Speech Science and Disorders (3) Examines contemporary models and research paradigms in speech science and disorders. Topics include respiratory physiology, laryngeal physiology, aerodynamics of speech production, articulatory dynamics, speech acoustics, and speech perception. Offered: W, odd years.

SPHSC 561 Studies in Hearing Sciences and Disorders (3) Examines contemporary models and research paradigms in the area of hearing science and disorders. Topics include psychoacoustics; amplification; electrophysiological evaluation; physiological acoustics; and perceptual consequences of hearing loss. Offered: A, even years.

SPHSC 562 Studies in Language Science and Disorders (3) Examines research in the area of language science and disorders including word recognition and production; storage of retrieval of word form and meaning; comprehension and production of sentences and discourse; and language in social context. Topics examined relative to development, language impairments, and normal language processing. Offered: Sp, odd years.

SPHSC 563 Instructional Development Forum (1, max. 50) Emphasizes instructional techniques and issues as they relate to teaching in the discipline of communication sciences and its disorders. Topics include course development, grading, student-faculty relations, teaching methods, and diversity. Prerequisite: graduate standing in Speech and Hearing Sciences. Credit/no-credit only. Offered: AW.

SPHSC 564 Teaching Practicum (1-5, max. 50) Provides experience in preparing and giving lectures, leading discussions, preparing and grading assignments and tests, and working directly with undergraduate and graduate students. Prerequisite: doctoral student standing in SPHSC and permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 565 Speech-Language Pathology Professional Seminar (1-3, max. 50) *Kelsey A Leighton, Michael I Burns* Contemporary professional issues including scope of practice, work settings, standards of ethical conduct, certification, licensure and other related credentialing, policy and regulatory considerations. Credit/no-credit only. Offered: AWSpS.

SPHSC 567 Research Seminar in Speech and Hearing Sciences (1, max. 50) A platform for the presentation and exchange of scientific information (research data, new hardware and hardware development, scientific papers) resulting from ongoing research projects by graduate students and faculty within the Speech and Hearing Sciences Department. Credit/no-credit only. Offered: AWSpS.

SPHSC 568 Grant Writing in Hearing, Language, and Speech Science (3) *L. WERNER* Design and writing of grant proposals in speech, language, and hearing sciences and disorders. Explanation of the funding process at various agencies, particularly the National Institutes of Health. Students prepare a proposal and review the proposals of their peers. Prerequisite:

Enrollment in PhD degree program and permission of instructor. Credit/no-credit only. Offered: W.

SPHSC 570 Assessment of Auditory Dysfunction I (4-) Strategies and procedures in the auditory evaluation of hearing-impaired adults. Use of diagnostic tests in the evaluation of auditory pathologies. Laboratory required. Prerequisite: SPHSC 471 or equivalent. Offered: A.

SPHSC 571 Assessment of Auditory Dysfunction II (-4) Strategies and procedures in the auditory evaluation of hearing-impaired adults. Use of diagnostic tests in the evaluation of auditory pathologies. Laboratory required. Prerequisite: SPHSC 570. Offered: W.

SPHSC 572 Pediatric Audiology (4) *L. MANCL* Assessment of auditory disorders in infants and young children. Emphasis on behavioral and electrophysiologic techniques and on the role of the audiologist in the clinical management of the young hearing-impaired child. Prerequisite: SPHSC 570 or equivalent. Offered: W.

SPHSC 574 Assessment of Balance Function (4) Examines normal anatomy and physiology of the peripheral and central vestibular system. Reviews peripheral and central vestibular disorders and treatment protocols. Major focus of assessment on electronystagmography with associated lab. Provides overview of rotational and posturography measures of balance function. Prerequisite: SPHSC 571 or permission of instructor. Offered: S.

SPHSC 575 Medical Backgrounds in Audiology (3) Diseases and injuries of the ear resulting in reduced audition. Prerequisite: SPHSC 571 or permission of instructor. Offered: S.

SPHSC 576 Otoacoustic Emissions (2) *R. FOLSOM* Consideration of otoacoustic emissions and the physiologic techniques used to record them. Includes interpretation of responses in both the normal and disordered auditory system as well as clinical application of emissions in both adult and infant populations. Laboratory required. Prerequisite: SPHSC 571, SPHSC 572, and SPHSC 592, or permission of instructor. Offered: A.

SPHSC 577 Industrial and Community Hearing Conservation (2) Psychophysiological effects of

environmental noise on man. Techniques of noise measurement and attenuation, including the planning of hearing conservation programs in industry and in the community. Prerequisite: SPHSC 571 or permission of instructor. Offered: S, odd years.

SPHSC 578 Hearing Screening (2) Consideration of hearing screening programs and the statistical techniques used to evaluate them. Includes history, rationale, and technical aspects of hearing screening as well as current models for developing neonatal, school-age, and adult hearing screening programs. Prerequisite: SPHSC 572, SPHSC 576, and SPHSC 592, or permission of instructor. Offered: S, even years.

SPHSC 579 Geriatric Audiology (2) *S. ANDERSON* Examines the biological, psychological, and social aspects of the aging process. Emphasizes the identification and diagnosis of hearing problems associated with the aging process and its rehabilitation. Prerequisite: SPHSC 571. Offered: Sp.

SPHSC 580 Rehabilitative Audiology (3) *L. ILLICH* Explores technology to enhance communication effectiveness of hearing impaired persons. Selection and training in the use of assistive systems and cochlear implants. Advanced perception assessment and training methodology. Discussion and application of aural rehabilitation in different settings. Explores the Americans with Disabilities Act and assistive listening devices. Prerequisite: SPHSC 571 and SPHSC 583. Offered: W.

SPHSC 581 Management of Hearing-Impaired Children (3) *J. SULLIVAN* Studies pediatric habilitation available for children with hearing impairment and the impact of new technologies on therapy, education, and audiological treatment. Offered: Sp.

SPHSC 582 Hearing Aid Amplification (4) *C. MILLER* Acoustic amplification and methods of determining electroacoustic characteristics. Includes earmold technology. Prerequisite: SPHSC 471 and SPHSC 570 or permission of instructor. Offered: W.

SPHSC 583 Hearing Aid Selection (4) *C. MILLER* Consideration of strategies utilized in selecting and fitting acoustic amplification for the hearing impaired, including review of pertinent research

literature. Prerequisite: SPHSC 582 or permission of instructor. Offered: Sp.

SPHSC 584 Advanced Amplification (3) *C. MILLER* Current topics in hearing aids and amplification technology; review of pertinent research articles. Prerequisite: SPHSC 582; SPHSC 583. Offered: A, even years.

SPHSC 585 Pediatric Hearing Technology and Habilitation (4) *L. Mancl* Examines the selection, verification, and validation of hearing technology for infants and children. Studies habilitation available to children with hearing loss, including factors that influence outcomes. Prerequisite: SPHSC 582 or permission of instructor. Offered: A.

SPHSC 586 Cochlear Implants (5) *J. BIERER* Covers the history, function, and application of cochlear implants as a clinical tool to enhance or restore human hearing, including fitting procedures, outcomes, and rehabilitation for children and adults. Prerequisite: permission of instructor. Offered: Sp.

SPHSC 587 Ethics (3) Analysis and discussion of ethical considerations in the clinic, and in research, for speech and hearing professionals. Covers codes of professional organizations.

SPHSC 588 Audiology Proseminar (1-3, max. 9) *M. HARNEY* Consideration of professional issues, practice management, and externship preparation. Credit/no-credit only. Offered: AWSp.

SPHSC 591 Advanced Practicum in Audiology (1-10, max. 75) Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 592 Electrophysiologic Assessment I (4) *R. FOLSOM, K. TREMBLAY* Consideration of physiologic techniques that may be used to evaluate the normal and disordered auditory system. Outside laboratory required. Prerequisite: SPHSC 461 or equivalent, SPHSC 571. Offered: Sp.

SPHSC 593 Electrophysiologic Assessment II (3) *R. FOLSOM, K. TREMBLAY* Examines event-related potentials including recording techniques, neurophysiological mechanisms, and applications to clinical populations. Prerequisite: SPHSC 592. Offered: W, odd years.

SPHSC 594 Capturing Brain Dynamics: A Combined Neuroscience and Engineering Approach (4) A. LEE

Introduces methods for capturing brain dynamics using an emerging neuroimaging technique known as magnetoencephalography (MEG). Uses techniques to examine perception and cognitive processes and their implications for future brain-computer-interface (BCI) design. Prepare students for interdisciplinary research in neuroscience and engineering. Offered: jointly with LING 582; W.

SPHSC 596 Clinical Education in Audiology (1-10, max. 50) M. HARNEY

Laboratory experience in audiology. Credit/no-credit only. Offered: AWSpS.

SPHSC 599 Research Practicum (*, max. 50)

Supervised laboratory experience in experimental approach to problems in speech and hearing sciences. Prerequisite: permission of instructor. Offered: AWSpS.

SPHSC 600 Independent Study or Research (*-)

Prerequisite: permission of instructor. Offered: AWSpS.

SPHSC 601 Internship ([1-10]-, max. 50)

Supervised field experiences in settings other than public schools. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 602 Internship in the Schools ([3-10]-, max. 50)

Supervised field experience in a public school setting. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

SPHSC 700 Master's Thesis (*-) Offered: AWSpS.**SPHSC 800 Doctoral Dissertation (*-) Offered: AWSpS.****SPHSC 801 Practice Doctorate Project/Capstone ([1-12]-, max. 50)**

Supervised research experience in the field of audiology that culminates in a final research paper and oral defense. Offered: AWSpS.

STATISTICS

STAT 100 Numbers and Reason (5) QSR Surveys the standard ways in which "arithmetic turns into understanding" across examples from the natural and the social sciences. Main concepts include

abduction (inference to the best explanation), consilience (numerical agreement across multiple measurement levels), bell curves, linear models, and the likelihood of hypothesis. Offered: A.

STAT 111 Lectures in Applied Statistics (1) NW

Weekly lectures illustrating the importance of statisticians in a variety of fields, including medicine and the biological, physical, and social sciences. Credit/no-credit only. Offered: jointly with BIOST 111; Sp.

STAT 180 Introduction to Data Science (4) QSR

Survey course introducing the essential elements of data science: data collection, management, curation, and cleaning; summarizing and visualizing data; basic ideas of statistical inference, machine learning. Students will gain hands-on experience through computing labs. Offered: AWSpS.

STAT 220 Statistical Reasoning (5) NW, QSR

Introduces statistical reasoning. Focuses primarily on the what and why rather than the how. Helps students gain an understanding of the rationale behind many statistical methods, as well as an appreciation of the use and misuse of statistics. Encourages and requires critical thinking. May only receive credit for one of STAT 220, or STAT 221/CS&SS 221/SOC 221, or STAT 290. Offered: AWSpS.

STAT 221 Statistical Concepts and Methods for the Social Sciences (5) NW, QSR

Develops statistical literacy. Examines objectives & pitfalls of statistical studies; study designs, data analysis, inference; graphical & numerical summaries of numerical & categorical data; correlation and regression; estimation, confidence intervals, & significance tests. Emphasizes social science examples and cases. May only receive credit for one of STAT 220, STAT 221/CS&SS 221/SOC 221, or STAT 290. Offered: jointly with CS&SS 221/SOC 221; AWSpS.

STAT 290 Advanced Placement (AP) Statistics (5)

NW, QSR Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

STAT 302 Statistical Software and Its Applications

(3) Introduction to data structures and basics of implementing procedures in statistical computing packages, selected from but not limited to R, SAS,

STATA, MATLAB, SPSS, and Minitab. Provides a foundation in computation components of data analysis. Prerequisite: either STAT 311/ECON 311 or STAT 390/MATH 390. Offered: W.

STAT 311 Elements of Statistical Methods (5) NW, QSR Elements of good study design. Descriptive statistics including correlation and regression. Introductory concepts of probability and sampling; binomial and normal distributions. Basic concepts of hypothesis testing, estimation, and confidence intervals; t-tests and chi-square tests. Experience with computer software. Prerequisite: either STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 290, MATH 120, MATH 124, MATH 125, MATH 126, MATH 134, MATH 135, MATH 136, Q SCI 190, or QMETH 201. Offered: AWSpS.

STAT 316 Design of Experiments (4) NW Introduction to the analysis of data from planned experiments. Analysis of variance for multiple factors and applications of orthogonal arrays and linear graphs for fractional factorial designs to product and process design optimization. Regression analysis with applications in engineering. Prerequisite: IND E 315. Offered: jointly with IND E 316; W.

STAT 320 Evaluating Social Science Evidence (5) I&S, QSR A critical introduction to the methods used to collect data in social science: surveys, archival research, experiments, and participant observation. Evaluates "facts and findings" by understanding the strengths and weaknesses of the methods that produce them. Case based. Offered: jointly with CS&SS 320/SOC 320.

STAT 321 Data Science and Statistics for Social Sciences I (5) I&S, QSR Introduction to applied data analysis for social scientists. Focuses on using programming to prepare, explore, analyze, and present data that arise in social science research. Data science topics include loading, cleaning, and exploring data, basic visualization, reproducible research practices. Statistical topics include measurement, probability, modeling, assessment of statistical evidence. Lectures intermixed with programming and lab sessions. Offered: jointly with CS&SS 321/SOC 321; W.

STAT 322 Case-Based Social Statistics II (5) I&S, QSR Continuation of CS&SS 321/SOC 321/STAT 321. Progresses to questions of assessing the weight of

evidence and more sophisticated models including regression-based methods. Built around cases investigating the nature and content of statistical principles and practice. Hands-on approach: weekly data analysis laboratory. Prerequisite: CS&SS 321/SOC 321/STAT 321, or permission of instructor. Offered: jointly with CS&SS 322/SOC 322.

STAT 340 Introduction to Probability and Mathematical Statistics I (4) QSR Covers the fundamentals of probability and mathematical statistics; axioms of probability, conditional and joint probability, random variables, univariate and multivariate distributions and densities, and moments; binomial, negative binomial, geometric, Poisson, normal, exponential distributions, and central limit theorem; and basic estimation and hypothesis testing theory. Prerequisite: either STAT 311/ECON 311 or STAT 390/MATH 390; either a minimum grade of 2.5 in MATH 327 or MATH 136. Offered: A.

STAT 341 Introduction to Probability and Mathematical Statistics II (4) NW Brief review of: sample spaces, random variables, probability. Distribution: binomial, normal, Poisson, geometric. Followed by: expectation, variance, central limit theorem. Basic concepts of estimation, testing, and confidence intervals. Maximum likelihood estimators and likelihood ratio tests, efficiency. Introduction to regression. Prerequisite: either STAT 340 or STAT/MATH 394 and STAT/MATH 395; either STAT/ECON 311 or STAT/MATH 390; either a minimum grade of 2.5 in MATH 136 or MATH 327. Offered: W.

STAT 342 Introduction to Probability and Mathematical Statistics III (4) NW Brief review of: sample spaces, random variables, probability. Distribution: binomial, normal, Poisson, geometric. Followed by: expectation, variance, central limit theorem. Basic concepts of estimation, testing, and confidence intervals. Maximum likelihood estimators and likelihood ratio tests, efficiency. Introduction to regression. Prerequisite: STAT 341. Offered: Sp.

STAT 390 Statistical Methods in Engineering and Science (4) NW Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions. Descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum

likelihood. Exploratory data analysis and interactive computing. Cannot be taken for credit if credit received for STAT509/CS&SS 509/ECON 580. Prerequisite: either MATH 126 or MATH 136. Offered: AWSpS.

STAT 391 Quantitative Introductory Statistics for Data Science (4) The basic concepts of statistics, machine learning and data science, as well as their computational aspects. Statistical models, likelihood, maximum likelihood and Bayesian estimation, regression, classification, clustering, principal component analysis, model validation, statistical testing. Practical implementation and visualization in data analysis. Assumes knowledge of basic probability, mathematical maturity, and ability to program. Prerequisite: either CSE 312, or STAT 394/MATH 394 and STAT 395/MATH 395. Offered: Sp.

STAT 394 Probability I (3) NW Axiomatic definitions of probability; random variables; conditional probability and Bayes' theorem; expectations and variance; named distributions: binomial, geometric, Poisson, uniform (discrete and continuous), normal and exponential; normal and Poisson approximations to binomial. Transformations of a single random variable. Markov and Chebyshev's inequality. Weak law of large numbers for finite variance. Prerequisite: either a minimum grade of 2.0 in MATH 126, or a minimum grade of 2.0 in MATH 136. Offered: jointly with MATH 394; AWS.

STAT 395 Probability II (3) NW Jointly distributed random variables; conditional distributions and densities; conditional expectations and variance; covariance, correlation, and Cauchy-Schwarz inequality; bivariate normal distribution; multivariate transformations; moment generating functions; sums of independent random variables; Central Limit Theorem; Chernoff's inequality; Jensen's inequality. Prerequisite: either a minimum grade of 2.0 in MATH 394/STAT 394, or a minimum grade of 2.0 in STAT 340. Offered: jointly with MATH 395; WSpS.

STAT 396 Finite Markov Chains and Monte-Carlo Methods (3) NW Finite Markov chains; stationary distributions; time reversals; classification of states; classical Markov chains; convergence in total variation distance and L2; spectral analysis; relaxation time; Monte Carlo techniques: rejection

sampling, Metropolis-Hastings, Gibbs sampler, Glauber dynamics, hill climb and simulated annealing; harmonic functions and martingales for Markov chains. Prerequisite: a minimum grade of 2.0 in MATH 308; and either a minimum grade of 2.0 in MATH 394/STAT 394 and STAT 395/MATH 395, or a minimum grade of 2.0 in STAT 340 and STAT 341, or a minimum grade of 2.0 in STAT 340 and STAT 395/MATH 395. Offered: jointly with MATH 396; Sp.

STAT 403 Introduction to Resampling Inference (4) NW Introduction to computer-intensive data analysis for experimental and observational studies in empirical sciences. Students design, program, carry out, and report applications of bootstrap resampling, rerandomization, and subsampling of cases. Experience programming in R is beneficial. Credit allowed for STAT 403 or STAT 503 but not both. Prerequisite: either STAT 311/ECON 311, STAT 341, STAT 390/MATH 390, STAT 481/ECON 481, or Q SCI 381 and Q SCI 482. Offered: jointly with Q SCI 403; Sp.

STAT 406 Research Design and Statistics for HIHIM (3) Explores healthcare and research statistics. Addresses hospital statistics, used to calculate usage levels of healthcare resources and outcomes of clinical operations, and research statistics, used to summarize and describe significant characteristics of a data set, and to make inferences about a population based on data collected from a sample. In addition, principles of research are described, including the Institutional Review Board process. Offered: jointly with BIOST 406/HIHIM 425.

STAT 416 Introduction to Machine Learning (4) NW Provides practical introduction to machine learning. Modules include regression, classification, clustering, retrieval, recommender systems, and deep learning, with a focus on an intuitive understanding grounded in real-world applications. Intelligent applications are designed and used to make predictions on large, complex datasets. Prerequisite: either CSE 143, CSE 160, or CSE 163; and either STAT 311, STAT 390, STAT 391, or IND E 315. Offered: jointly with CSE 416.

STAT 421 Applied Statistics and Experimental Design (4) NW Experimental designs, including completely randomized, blocked, Latin Square, factorial, 2 to the k, fractional, nested, and split-plot; fixed effects and random effects models;

confounding and aliasing. Analyses of real data, to illustrate concepts. Prerequisite: either STAT 342 or STAT 481/ECON 481. Offered: A.

STAT 423 Applied Regression and Analysis of Variance (4) NW Least squares; Simple/multiple linear regression including interpretation; Variable selection; Analysis of covariance; Assumptions and diagnostics/remedies; Weighting and generalized least squares; Hypothesis testing. Analyses of real data to illustrate concepts. Prerequisite: either STAT 342, STAT 421, or STAT 481/ECON 481. Offered: W.

STAT 425 Introduction to Nonparametric Statistics (3) NW Overview of nonparametric methods, such as rank tests, goodness of fit tests, 2 x 2 tables, nonparametric estimation. Useful for students with only a statistical methods course background. Prerequisite: Either STAT 311 and STAT 340, STAT 390, or STAT 391. Offered: jointly with BIOST 425.

STAT 427 Introduction to Analysis of Categorical Data (4) NW Techniques for analysis of count data. Log-linear models, logistic regression, and analysis of ordered response categories. Illustrations from the behavioral and biological sciences. Computational procedures. Prerequisite: either STAT 342, STAT 362, or STAT 421.

STAT 428 Multivariate Analysis for the Social Sciences (4) NW Multivariate techniques commonly used in the social and behavioral sciences. Linear models for dependence analysis (multivariate regression, MANOVA, and discriminant analysis) and for interdependence analysis (principal components and factor analysis). Techniques applied to social science data using computer statistical packages. Prerequisite: either STAT 342, STAT 362, or STAT 421.

STAT 435 Introduction to Statistical Machine Learning (4) Introduces the theory and application of statistical machine learning. Topics may include supervised versus unsupervised learning; cross-validation; the bias-variance trade-off; regression and classification; regularization and shrinkage approaches; non-linear approaches; tree-based methods; and support vector machines. Includes applications in R. Prerequisite: either STAT 341, STAT 390/MATH 390, or STAT 391; recommended: MATH 308. Offered: Sp.

STAT 441 Multivariate Statistical Methods (4) QSR Introduces statistical methods for analysis of multidimensional data. Methods include tools for exploratory analysis of high-dimensional data, statistical modeling approaches to parameter estimation and hypothesis testing, and nonparametric methods for classification and clustering. Includes applications in R. Prerequisite: MATH 308 and one of STAT 341, STAT/MATH 390, or STAT 391. Offered: W.

STAT 480 Sampling Theory for Biologists (3) NW J. Skalski Theory and applications of sampling finite populations including: simple random sampling, stratified random sampling, ratio estimates, regression estimates, systematic sampling, cluster sampling, sample size determinations, applications in fisheries and forestry. Other topics include sampling plant and animal populations, sampling distributions, estimation of parameters and statistical treatment of data. Prerequisite: Q SCI 482. Offered: jointly with Q SCI 480; W, odd years.

STAT 486 Experimental Design (4) NW Emphasizes data modeling using structured means resulting from choice of experimental and treatment design. Examines experimental designs, including crossed, nested designs; block; split-plot designs; and covariance analysis. Also covers multiple comparisons, efficiency, power, sample size, and pseudo-replication. Prerequisite: Q SCI 482. Offered: jointly with Q SCI 486; W, even years.

STAT 491 Introduction to Stochastic Processes (3) NW Random walks, Markov chains, branching processes, Poisson process, point processes, birth and death processes, queuing theory, stationary processes. Prerequisite: minimum grade of 2.0 in MATH 394/STAT 394 and MATH 395/STAT 395, or minimum grade of 2.0 in STAT 340 and STAT 341 and MATH 396/STAT 396. Offered: jointly with MATH 491; A.

STAT 492 Stochastic Calculus for Option Pricing (3) NW Introductory stochastic calculus mathematical foundation for pricing options and derivatives. Basic stochastic analysis tools, including stochastic integrals, stochastic differential equations, Ito's formula, theorems of Girsanov and Feynman-Kac, Black-Scholes option pricing, American and exotic options, bond options. Prerequisite: minimum grade of 2.0 in either STAT 395/MATH 395, or a minimum

grade of 2.0 in STAT 340 and STAT 341. Offered: jointly with MATH 492.

STAT 495 Service Learning: K-12 Tutoring Experience (1-5, max. 5) Tutoring mathematics in local K-12 schools. Offered: AWSp.

STAT 498 Special Topics (1-5, max. 15) NW Reading and lecture course intended for special needs of students.

STAT 499 Undergraduate Research (1-5, max. 15) Offered: AWSpS.

STAT 502 Design and Analysis of Experiments (4) Design of experiments covering concepts such as randomization, blocking, and confounding. Analysis of experiments using randomization tests, analysis of variance, and analysis of covariance. Prerequisite: either STAT 342, MATH 390/STAT 390, ECON 481/STAT 481, STAT 509/CS&SS 509/ECON 580 or equivalent; MATH 308 or equivalent. Offered: A.

STAT 503 Practical Methods for Data Analysis (4) Basic exploratory data analysis with business examples. Data summaries, multivariate data, time series, multiway tables. Techniques include graphical display, transformation, outlier identification, cluster analysis, smoothing, regression, robustness. Departmental credit allowed for only one of 403 and 503. Prerequisite: B A 500 or QMETH 500 or equivalent or permission of instructor. Offered: jointly with QMETH 503.

STAT 504 Applied Regression (4) Least squares estimation. Hypothesis testing. Interpretation of regression coefficients. Categorical independent variables. Interactions. Assumption violations: outliers, residuals, robust regression; nonlinearity, transformations, ACE, CART; nonconstant variance. Variable selection and model averaging. Prerequisite: either STAT 342, STAT 390/MATH 390, STAT 421, STAT 481/ECON 481, STAT 509/CS&SS 509/ECON 580, or SOC 425. Offered: jointly with CS&SS 504.

STAT 506 Applied Probability and Statistics (4) Discrete and continuous random variables, independence and conditional probability, central limit theorem, elementary statistical estimation and inference, linear regression. Emphasis on physical

applications. Prerequisite: some advanced calculus and linear algebra.

STAT 509 Econometrics I: Introduction to Mathematical Statistics (4) Examines methods, tools, and theory of mathematical statistics. Covers, probability densities, transformations, moment generating functions, conditional expectation. Bayesian analysis with conjugate priors, hypothesis tests, the Neyman-Pearson Lemma. Likelihood ratio tests, confidence intervals, maximum likelihood estimation, Central limit theorem, Slutsky Theorems, and the delta-method. Prerequisite: STAT 311/ECON 311; either MATH 136 or MATH 126 with either MATH 308 or MATH 309. (Credit allowed for only one of STAT 390, STAT 481, and ECON 580.) Offered: jointly with CS&SS 509/ECON 580.

STAT 512 Statistical Inference (4) Review of random variables; transformations, conditional expectation, moment generating functions, convergence, limit theorems, estimation; Cramer-Rao lower bound, maximum likelihood estimation, sufficiency, ancillarity, completeness. Rao-Blackwell theorem. Hypothesis testing: Neyman-Pearson lemma, monotone likelihood ratio, likelihood-ratio tests, large-sample theory. Contingency tables, confidence intervals, invariance. Decision theory. Prerequisite: STAT 395 and STAT 421, STAT 423, STAT 504, or BIOST 512 (concurrent registration permitted for these three) . Offered: A.

STAT 513 Statistical Inference (4) Review of random variables; transformations, conditional expectation, moment generating functions, convergence, limit theorems, estimation; Cramer-Rao lower bound, maximum likelihood estimation, sufficiency, ancillarity, completeness. Rao-Blackwell theorem. Hypothesis testing: Neyman-Pearson lemma, monotone likelihood ratio, likelihood-ratio tests, large-sample theory. Contingency tables, confidence intervals, invariance. Decision theory. Prerequisite: STAT 512. Offered: W.

STAT 516 Stochastic Modeling of Scientific Data (3-) Covers discrete-time Markov chain theory; inference for discrete-time Markov chains; Monte Carlo methods; missing data; hidden Markov models; and Gaussian Markov random fields. Prerequisite: either STAT 342 or STAT 396. Offered: A.

STAT 517 Stochastic Modeling of Scientific Data (-3)

Covers Markov random fields; continuous-time Markov chains; birth-death and branching processes; and point processes and cluster models. Procedures for inference for these stochastic processes, including Likelihood methods and estimating equations. Prerequisite: STAT 516. Offered: W.

STAT 518 Stochastic Modeling Project (3)

Student in-depth analyses, oral presentations, and discussion of selected research articles focusing on stochastic modeling of, and inference for, scientific data. Prerequisite: STAT 517 and permission of instructor. Offered: Sp.

STAT 519 Time Series Analysis (3)

Descriptive techniques. Stationary and nonstationary processes, including ARIMA processes. Estimation of process mean and autocovariance function. Fitting ARIMA models to data. Statistical tests for white noise. Forecasting. State space models and the Kalman filter. Robust time series analysis. Regression analysis with correlated errors. Statistical properties of long memory processes. Prerequisite: STAT 513.

STAT 520 Spectral Analysis of Time Series (4)

Estimation of spectral densities for single and multiple time series. Nonparametric estimation of spectral density, cross-spectral density, and coherency for stationary time series, real and complex spectrum techniques. Bispectrum. Digital filtering techniques. Aliasing, prewhitening. Choice of lag windows and data windows. Use of the fast Fourier transform. Prerequisite: one of STAT 342, STAT 390, STAT 481, STAT 509/CS&SS 509/ECON 580, or IND E 315. Offered: jointly with E E 520.

STAT 521 Advanced Probability (3)

Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 521; A.

STAT 522 Advanced Probability (3)

Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 522; W.

STAT 523 Advanced Probability (3)

Measure theory and integration, independence, laws of large numbers. Fourier analysis of distributions, central limit problem and infinitely divisible laws, conditional expectations, martingales. Prerequisite: either MATH 426 or MATH 576. Offered: jointly with MATH 523; Sp.

STAT 524 Design of Medical Studies (3)

Design of medical studies, with emphasis on randomized controlled clinical trials. Bias elimination, controls, treatment assignment and randomization, precision, replication, power and sample size calculations, stratification, and ethics. Suitable for graduate students in biostatistics and for research-oriented graduate students in other scientific fields. Prerequisite: BIOST 511 or equivalent, and one of BIOST 513, BIOST 518, STAT 421, STAT 423, STAT 512, or EPI 512; or permission of instructor. Offered: jointly with BIOST 524; Sp.

STAT 527 Nonparametric Regression and

Classification (3) Covers techniques for smoothing and classification including spline models, kernel methods, generalized additive models, and the averaging of multiple models. Describes measures of predictive performance, along with methods for balancing bias and variance. Prerequisite: either STAT 502 and STAT 504 or BIOST 514 and BIOST 515. Offered: jointly with BIOST 527; Sp.

STAT 528 Applied Statistics Capstone (3)

Covers technical and non-technical aspects of applied statistics work, building on methods taught in prerequisite courses. Key elements include: study design, determining the aim of the analysis, choosing an appropriate method, and report writing. Prerequisite: STAT 502; STAT 504; STAT 536; STAT 570. Offered: W.

STAT 529 Sample Survey Techniques (3)

Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BIOST 511, or BIOST 517, or equivalent; or permission of instructor. Offered: jointly with BIOST 529/CS&SS 529.

STAT 530 Wavelets: Data Analysis, Algorithms, and Theory (3)

Review of spectral analysis. Theory of continuous and discrete wavelets. Multiresolution analysis. Computation of discrete wavelet transform. Time-scale analysis. Wavelet packets. Statistical properties of wavelet signal extraction and smoothers. Estimation of wavelet variance. Prerequisite: some Fourier theory and linear algebra; MATH 390/STAT 390, ECON 481 or STAT 481, STAT 509/CS&SS 509/ECON 580, STAT 513, or IND E 315. Offered: jointly with E E 530; Sp.

STAT 533 Theory of Linear Models (3) Examines model structure; least squares estimation; Gauss-Markov theorem; central limit theorems for linear regression; weighted and generalized least squares; fixed and random effects; analysis of variance; blocking and stratification; and applications in experimental design. Prerequisite: STAT 421 or STAT 423 or BIOST 515; and STAT 513; and a course in matrix algebra. Offered: jointly with BIOST 533; Sp.

STAT 534 Statistical Computing (3) Introduction to scientific computing. Includes programming tools, modern programming methodologies, (modularization, object oriented design), design of data structures and algorithms, numerical computing and graphics. Uses C++ for several substantial scientific programming projects. Prerequisite: experience with programming in a high level language. Offered: jointly with BIOST 534; Sp.

STAT 535 Statistical Learning: Modeling, Prediction, and Computing (3) Covers statistical learning over discrete multivariate domains, exemplified by graphical probability models. Emphasizes the algorithmic and computational aspects of these models. Includes additional topics in probability and statistics of discrete structures, general purpose discrete optimization algorithms like dynamic programming and minimum spanning tree, and applications to data analysis. Prerequisite: experience with programming in a high level language. Offered: A.

STAT 536 Analysis of Categorical and Count Data (3) Analysis of categorical data in the social sciences. Binary, ordered, and multinomial outcomes, event counts, and contingency tables. Focuses on maximum likelihood estimations and interpretations of results. Prerequisite: SOC 504, SOC 505, SOC 506,

or equivalent. Offered: jointly with CS&SS 536/SOC 536.

STAT 538 Statistical Learning: Modeling, Prediction, and Computing (3) Reviews optimization and convex optimization in its relation to statistics. Covers the basics of unconstrained and constrained convex optimization, basics of clustering and classification, entropy, KL divergence and exponential family models, duality, modern learning algorithms like boosting, support vector machines, and variational approximations in inference. Prerequisite: experience with programming in a high level language. Offered: W.

STAT 539 Statistical Learning: Modeling, Prediction and Computing (3) Supervised, applied project in statistical modeling, prediction, and computing. Prerequisite: STAT 535; STAT 538; computer programming at intermediate level. Offered: Sp.

STAT 542 Multivariate Analysis (3) Multivariate normal distribution; partial and multiple correlation; Hotelling's T^2 ; Bartlett's decomposition; various likelihood ratio tests; discriminant analysis; principal components; graphical Markov models. Prerequisite: STAT 582 or permission of instructor.

STAT 544 Bayesian Statistical Methods (3) Statistical methods based on the idea of a probability distribution over the parameter space. Coherence and utility. Subjective probability. Likelihood principle. Conjugate families. Structure of Bayesian inference. Limit theory for posterior distributions. Sequential experiments. Exchangeability. Bayesian nonparametrics. Empirical Bayes methods. Prerequisite: STAT 513 or permission of instructor.

STAT 547 Options and Derivatives (4) Covers theory, computation, and statistics of options and derivatives pricing, including options on stocks, stock indices, futures, currencies, and interest rate derivatives. Prerequisite: STAT 506 or permission of instructor.

STAT 548 Machine Learning for Big Data (4) Covers machine learning and statistical techniques for analyzing datasets of massive size and dimensionality. Representations include regularized linear models, graphical models, matrix factorization, sparsity, clustering, and latent factor models. Algorithms include sketching, random

projections, hashing, fast nearest-neighbors, large-scale online learning, and parallel learning (Map-Reduce, GraphLab) . Prerequisite: either STAT 535 or CSE 546. Instructors: Fox, Guestrin Offered: jointly with CSE 547; W.

STAT 549 Statistical Methods for Portfolios (4)

Covers the fundamentals of modern statistical portfolio construction and risk measurement, including theoretical foundations, statistical methodology, and computational methods using modern object-oriented software for data analysis, statistical modeling, and numerical portfolio optimization. Prerequisite: ECON 424 or equivalent, or permission of instructor.

STAT 550 Statistical Genetics I: Mendelian Traits (3)

Mendelian genetic traits. Population genetics; Hardy-Weinberg, allelic variation, subdivision. Likelihood inference, information and power; latent variables and EM algorithm. Pedigree relationships and gene identity. Meiosis and recombination. Linkage detection. Multipoint linkage analysis. Prerequisite: STAT 390 and STAT 394, or permission of instructor. Offered: jointly with BIOST 550; Sp.

STAT 551 Statistical Genetics II: Quantitative Traits (3)

Statistical basis for describing variation in quantitative traits. Decomposition of trait variation into components representing genes, environment and gene-environment interaction. Methods of mapping and characterizing quantitative trait loci. Prerequisite: STAT/BIOST 550; STAT 423 or BIOST 515; or permission of instructor. Offered: jointly with BIOST 551; A.

STAT 552 Statistical Genetics III: Design and Analysis (3)

Overview of probability models, inheritance models, penetrance. Association and linkage. The lod score method. Affected sib method. Fitting complex inheritance models. Design mapping studies; multipoint, disequilibrium, and fine-scale mapping. Ascertainment. Prerequisite: STAT/BIOST 551; GENOME 371; or permission of instructor. Offered: jointly with BIOST 552; W.

STAT 554 Statistical Methods for Spatial Data (3)

Motivates the need for, and describes methods for, the analysis of spatial data. Topics: Clustering, cluster detection, spatial regression, modeling neighborhood effects, geographical information systems. Point and aggregated data considered and

data from complex surveys. Offered: jointly with CS&SS 554/SOC 534; W.

STAT 556 Introduction to Statistics and Probability (5)

Overview of probability; conditional probability and independence; Bayes Theorem; discrete and continuous random variables including jointly distributed; key distributions including the normal and its spin offs; properties of expectation and variance; conditional expectation; covariance and correlation; Central Limit Theorem; law of large numbers; Parameter Estimation. Offered: jointly with BIOST 556/DATA 556; A.

STAT 557 Applied Statistics and Experimental Design (5)

Inferential statistical methods for discrete and continuous random variables including tests for difference in means and proportions; linear and logistic regression; causation versus correlation; confounding; resampling methods; study design. Prerequisite: STAT/BIOST/DATA 556 or instructor's permission. Offered: jointly with BIOST 557/DATA 557; W.

STAT 558 Statistical Machine Learning for Data Scientists (5)

Bias-variance trade-off; training versus test error; overfitting; cross-validation; subset selection methods; regularized approaches for linear/logistic regression: ridge and lasso; non-parametric regression: trees, bagging, random forests; local regression and splines; generalized additive models; support vector machines; k-means and hierarchical clustering; principal components analysis. Prerequisite: STAT/BIOST/DATA 557, or permission of instructor. Offered: jointly with BIOST 558/DATA 558; Sp.

STAT 559 Measure Theory (3)

Measures: Caratheodory Extension Theorem. Measurable functions: Riesz Theorem, Slutsky Theorem. Integration: Fatou's lemma, MCT, DCT; Helly-Bray, Mann-Wald and Skorokhod theorems. Derivatives via signed measures. Measures and processes on products. Distribution and quantile functions. Independence and conditional distributions. Prerequisite: either MATH 424 and MATH 425, or MATH 574 and MATH 575. Offered: Sp.

STAT 560 Hierarchical Modeling for the Social Sciences (4)

Explores ways in which data are hierarchically organized, such as voters nested within electoral districts that are in turn nested

within states. Provides a basic theoretical understanding and practical knowledge of models for clustered data and a set of tools to help make accurate inferences. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with CS&SS 560/SOC 560.

STAT 561 Special Topics in Applied Statistics (1-5, max. 15) Data analysis, spectral analysis or robust estimation. Prerequisite: permission of instructor.

STAT 562 Special Topics in Applied Statistics (1-5, max. 15) Data analysis, spectral analysis or robust estimation. Prerequisite: permission of instructor.

STAT 563 Statistical Demography (4) A. Raftery Statistical methods and models for estimating and forecasting population quantities. Topic: Demographic rates; Population projection; Leslie matrix; modeling age-specific patterns; probabilistic population projections and Bayesian hierarchical models; estimating past and present fertility, mortality, migration and population; big data in demography. Prerequisite: Either STAT 509/CS&SS 509/ECON 509, STAT 513, or permission from the instructor. Offered: jointly with CS&SS 563/SOC 563; Sp.

STAT 564 Bayesian Statistics for the Social Sciences (4) Statistical methods based on the idea of probability as a measure of uncertainty. Topics covered include subjective notion of probability, Bayes' Theorem, prior and posterior distributions, and data analysis techniques for statistical models. Prerequisite: SOC 504, SOC 505, SOC 506 or equivalent. Offered: jointly with CS&SS 564.

STAT 566 Causal Modeling (4) Construction of causal hypotheses. Theories of causation, counterfactuals, intervention vs. passive observation. Contexts for causal inference: randomized experiments; sequential randomization; partial compliance; natural experiments, passive observation. Path diagrams, conditional independence, and d-separation. Model equivalence and causal under-determination. Prerequisite: course in statistics, SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with CS&SS 566.

STAT 567 Statistical Analysis of Social Networks (4) Statistical and mathematical descriptions of social networks. Topics include graphical and matrix

representations of social networks, sampling methods, statistical analysis of network data, and applications. Prerequisite: SOC 504, SOC 505, SOC 506, or equivalent. Offered: jointly with CS&SS 567.

STAT 570 Advanced Regression Methods for Independent Data (3) Covers linear models, generalized linear and non-linear regression, and models. Includes interpretation of parameters, including collapsibility and non-collapsibility, estimating equations; likelihood; sandwich estimations; the bootstrap; Bayesian inference: prior specification, hypothesis testing, and computation; comparison of approaches; and diagnostics. Prerequisite: STAT 512 and STAT 513; BIOST/STAT 533 or STAT 421/STAT 502 and STAT 423/STAT 504; a course in matrix algebra. Offered: jointly with BIOST 570; A.

STAT 571 Advanced Regression Methods for Dependent Data (3) Covers longitudinal data models, generalized linear and non-linear mixed models; marginal versus conditional models; generalized estimating equations, likelihood-based inference, REML, BLUP, and computation of integrals; Bayesian inference: Markov chain Monte Carlo; covariance models, including models for split plot designs; comparison of approaches; and diagnostics. Prerequisite: BIOST570/STAT 570. Offered: jointly with BIOST 571; W.

STAT 572 Advanced Regression Methods: Project (3) Student presentations and discussion on selected methodological research articles focusing on regression modeling. Prerequisite: STAT 571. Offered: jointly with BIOST 572; Sp.

STAT 576 Statistical Methods for Survival Data (3) Statistical methods for censored survival data arising from follow-up studies on human or animal populations. Parametric and nonparametric methods, Kaplan-Meier survival curve estimator, comparison of survival curves, log-rank test, regression models including the Cox proportional hazards model, competing risks. Prerequisite: STAT 581 and either BIOST 515, STAT 473, or equivalent. Offered: jointly with BIOST 576.

STAT 578 Special Topics in Advanced Biostatistics (*, max. 30) Advanced-level topics in biostatistics offered by regular and visiting faculty. Prerequisite:

permission of instructor. Offered: jointly with BIOST 578; AWSpS.

STAT 579 Data Analysis and Reporting (2/3, max.

12) Analysis of real data to answer scientific questions. Common data-analytic problems. Sensible approaches to complex data. Graphical and tabular presentation of results. Writing reports for scientific journals, research collaborators, consulting clients. Graduate standing in statistics or biostatistics. Credit/no-credit only. Offered: jointly with BIOST 579; SpS.

STAT 581 Advanced Theory of Statistical Inference

(3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife) ; robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 513; either MATH 426 or MATH 576. Offered: A.

STAT 582 Advanced Theory of Statistical Inference

(3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife) ; robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 581. Offered: W.

STAT 583 Advanced Theory of Statistical Inference

(3) Limit theorems, asymptotic methods, asymptotic efficiency and efficiency bounds for estimation, maximum likelihood estimation, Bayes methods, asymptotics via derivatives of functionals, sample-based estimates of variability: (bootstrap and jackknife) ; robustness; estimation for dependent data, nonparametric estimation and testing. Prerequisite: STAT 582. Offered: Sp.

STAT 590 Statistics Seminar (*, max. 15)

Prerequisite: permission of graduate program coordinator. Credit/no-credit only. Offered: AWSpS.

STAT 591 Special Topics in Statistics (1-5, max. 15)

Distribution-free inference, game and decision theory, advanced theory of estimation (including

sequential estimation) , robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: A.

STAT 592 Special Topics in Statistics (1-5, max. 15)

Distribution-free inference, game and decision theory, advanced theory of estimation (including sequential estimation) , robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: W.

STAT 593 Special Topics in Statistics (1-5, max. 15)

Distribution-free inference, game and decision theory, advanced theory of estimation (including sequential estimation) , robustness, advanced probability theory, stochastic processes or empirical processes. Prerequisite: permission of instructor. Offered: Sp.

STAT 598 Techniques of Statistical Consulting (1)

Seminar series covering technical and non-technical aspects of statistical consulting, including skills for effective communication with clients, report writing, statistical tips and rules of thumb, issues in survey sampling, and issues in working as a statistical consultant in academic, industrial, and private-practice settings. Prerequisite: entry code. Offered: jointly with BIOST 598; ASp.

STAT 599 Statistical Consulting (*, max. 12)

Consulting experience in data analysis, applied statistics. Student required to provide consulting services to students and faculty three hours per week. Prerequisite: permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

STAT 600 Independent Study or Research (*-)

Prerequisite: permission of Graduate Program Coordinator. Offered: AWSpS.

STAT 700 Master's Thesis (*-) Prerequisite:

permission of Graduate Program Coordinator. Offered: AWSpS.

STAT 800 Doctoral Dissertation (*-) Prerequisite:

permission of Graduate Program Coordinator. Offered: AWSpS.

COLLEGE OF BUILT ENVIRONMENTS

ARCHITECTURE

ARCH 100 Introduction to Architecture Study (8)

VLPA Introduces design studio instruction to students contemplating architecture as a field of study or career. Studio projects, informed by workshops, lectures, readings, field trips, and in-studio critiques introduce the history, theory, and practice of architecture. Includes instruction in basic design drawing and model making. Offered: S.

ARCH 101 Introduction to Architectural Studies (1)

Provides an exposure to topics and methods of architectural education; explores educational and career opportunities; and outlines available student support resources. Credit/no-credit only.

ARCH 150 Appreciation of Architecture I (3) VLPA

Historical survey of global architecture and built environments with reference to environmental, technological, and socio-cultural contexts, from prehistory to 1400. For nonmajors.

ARCH 151 Appreciation of Architecture II (3) VLPA

Historical survey of global architecture and built environments with reference to environmental, technological, and socio-cultural contexts, from 1400 to the present. For nonmajors.

ARCH 200 Architectural Design and Representation I (5) VLPA

Introduces architectural representation as fundamental medium for investigation, analysis, and documentation of objects, processes, and architectural space. Consists of a series of investigative projects that introduce orthographic projection, axonometric, and perspective drawing, through which students develop comprehensive skills in hand-drawing and digital media. Offered: A.

ARCH 201 Architectural Design and Representation II (5) VLPA

Introduces the fundamentals of architectural design. Consists of a series of investigative projects that introduce principles of architectural design as well as concepts and skills in architectural and digital representation. Prerequisite: ARCH 200. Offered: W.

ARCH 231 Making and Craft (5) VLPA Introduces the cultures and practical realities of "making" through study of the nature of tools, techniques, and the development of built culture over time. Examines the relationships of "making" to available materials, sources of energy and the development of infrastructure. Also covers qualities and characteristics of materials.

ARCH 251 World Architecture Non-Western

Cultures (5) VLPA/I&S Prakash Introduction to historical and contemporary built environments of non-Judeo-Christian civilizations, primarily Hindu, Buddhist, Islamic, and Meso-American, as manifestations of cultural history and as responses to environmental determinants.

ARCH 300 Introduction to Architectural Design I (6)

Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 201. Offered: A.

ARCH 301 Introduction to Architectural Design II (6)

Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 300. Offered: W.

ARCH 302 Introduction to Architectural Design III

(6) Studio problems to develop awareness, knowledge, and basic skills needed in the synthesis of building form. Prerequisite: ARCH 301. Offered: Sp.

ARCH 303 Introduction to Design Studio I (6)

Studio problems to develop initial awareness, knowledge, and basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with baccalaureate degrees in other fields. Offered: A.

ARCH 304 Introduction to Design Studio II (6)

Studio problems to develop initial awareness, knowledge, and basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with

baccalaureate degrees in other fields. Prerequisite: ARCH 303. Offered: W.

ARCH 305 Introduction to Design Studio III (6)

Studio problems to develop initial awareness, knowledge, and basic skills needed in synthesis of building form and integrative aspects of architectural design with emphasis on the dwelling place. Limited to students entering the graduate program in architecture with baccalaureate degrees in other fields. Prerequisite: ARCH 304. Offered: Sp.

ARCH 310 Architectural Design Drawing I (3)

Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 303 studio to integrate drawing in all phases of the design process. Offered: A.

ARCH 311 Architectural Design Drawing II (3)

Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 304 studio to integrate drawing in all phases of the design process. Offered: W.

ARCH 312 Architectural Design Drawing III (3)

Lectures, demonstrations, and exercises to develop skill in graphic visualization and representation as used in architecture. Concepts, conventions, and techniques of both freehand and technical drawing are used as a vital means to imagine, develop, and represent design ideas. Course material coordinated with ARCH 305 studio to integrate drawing in all phases of the design process. Offered: Sp.

ARCH 315 Design Drawing (2) Projects, lectures, demonstrations, and exercises coordinated with studio projects to integrate drawing in all phases of the design process. Lessons in diagramming of design concepts and planning and presenting design solutions. Prerequisite: ARCH 200; corequisite: ARCH 300.

ARCH 320 Introduction to Structures I (3) Static - Force analysis; the study of external forces and force

systems and their analytical solutions as applied to bodies at rest (equilibrium). Topic areas include beams, trusses, determinate frames, and load tracing. Offered: A.

ARCH 321 Introduction to Structures II (3) Strength of materials; the study of the properties of materials and cross-sectional shapes of structural elements with respect to their effectiveness in resisting stresses. Topic areas include stress and strain, section properties, analysis and design of beams and columns. Prerequisite: ARCH 320. Offered: W.

ARCH 322 Introduction to Structures III (3)

Elementary structural design; synthesis of the previous structures coursework with applications to design of determinate timber and steel structures. Examination of forces on buildings: snow, live loads, wind, and earthquake. An introduction to concept of continuity. Prerequisite: ARCH 321. Offered: Sp.

ARCH 323 Structures I (3) *K. SIMONEN* Covers the design of building structures utilizing the fundamental principles of statics and mechanics of materials. Includes the behavior of beams, trusses, arches, and frames; the structural performance of wood, steel, and concrete; and designing for gravity and lateral loads. First of a two-course sequence. Offered: W.

ARCH 324 Structures II (3) *K. SIMONEN* Covers the design of building structures utilizing the fundamental principles of statics and mechanics of materials. Includes the behavior of beams, trusses, arches, and frames; the structural performance of wood, steel, and concrete; and designing for gravity and lateral loads. Second of a two-course sequence. Prerequisite: ARCH 323. Offered: Sp.

ARCH 331 Energy and Building (3-5) NW Describes principles and applications of climate, energy use, and comfort as determinants of architectural form; architectural methods for climate adaptation using non-mechanical means of ventilating, cooling, heating, and lighting; and design and performance predictions for passive approaches to solar heating, heat transfer mechanisms, and strategies for climate-responsive design. Offered: Sp.

ARCH 332 Making and Materials (3-5) VLPA

Introduces the cultures and realities of making and materials through the study of how tools, materials,

and cultures interact to produce our built environment at all scales. Includes substantial hands-on physical interactions with real tools and materials.

ARCH 350 Architecture of the Ancient World (3/5)
VLPA Architectural history in the Western world from beginnings to AD 550. Offered: A.

ARCH 351 Architecture of the Medieval and Early Modern World (3/5) I&S/VLPA Surveys episodes in the history of world architecture during the period from about 700 to 1750. Offered: W.

ARCH 352 History of Modern Architecture (3/5)
VLPA *Ochsner* Architectural history in the Western world from 1750 to the present. Offered: Sp.

ARCH 360 Introduction to Architectural Theory (3)
Function of architectural theory in comprehending and ordering various human purposes in architecture, types of architectural purpose, and types of theories. Current concerns. Offered: W.

ARCH 361 Architecture Colloquium (5) Introduces a wide range of perspectives on architecture, with an emphasis on history and theory, making and materials, and sustainable technologies. Emphasizes the skills of reading, analysis, communication, and writing in the discipline of architecture. Offered: A.

ARCH 362 Architecture and Theory (3-5) Introduces a wide range of modern and contemporary theoretical movements in architecture. Emphasizes the basic skills of reading, critical inquiry, and communication. Offered: W.

ARCH 380 Computers in Architecture (3)
Laboratories, lecture, and demonstrations to introduce computing in environmental design and planning. Offered: ASp.

ARCH 400 Architectural Design IV (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 302. Offered: A.

ARCH 401 Architectural Design V (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas

and technologies of architecture. Prerequisite: ARCH 400. Offered: W.

ARCH 402 Architectural Design VI (6) Offers studio problems in non-residential building design to advance the student's understanding of the ideas and technologies of architecture. Prerequisite: ARCH 401. Offered: Sp.

ARCH 403 Architectural Problems (6) Offered: S.

ARCH 404 Integrated Design/Build Studio (6) C.
DOSSICK Study of the design/build process with emphasis on the synthesis of design and construction considerations. Focuses on developing design and construction concepts to meet program requirements specified in case studies. Offered: jointly with CM 404; W.

ARCH 410 Introduction to Architectural Photography (3/5) VLPA Basic elements and processes of architectural photography to include camera controls, exposure technique, photo processing, and fundamental principles of photographing architecture. Student must provide own 35 mm (or larger) camera with manual operating controls.

ARCH 413 Architectural Photography Projects (3)
Students develop in-depth photo essays relating to architecture, the urban movement, or landscape design. Lectures, seminar, and discussion. Prerequisite: ARCH 410.

ARCH 415 Architectural Sketching (3) Exercises in freehand representational drawing using charcoal, graphite, and conte crayon with emphasis on line, proportion, values, and composition. Studies progress from geometric to nongeometric forms.

ARCH 418 Watercolor Drawing (3) Introduction to the principles and practice of using transparent watercolor for the naturalistic representation of objects, people, and interior and exterior space.

ARCH 425 Life Cycle Assessment and Architecture (3) Explores use of life cycle assessment data and methods within design and construction practices to understand and reduce the environmental impact of buildings.

ARCH 426 Structural Unit Masonry (3) Structural behavior and design of reinforced brick, tile, and unit concrete masonry structures. Prerequisite: CEE 377. Instructors: Tawresey Offered: jointly with CEE 455.

ARCH 430 Materials and Processes (3) Lectures, field trips, and laboratory sessions directed toward the nature, potentials, and limitations of a variety of materials (wood, metal, plastics, inorganic cementing materials, minerals, rocks, and clay) and the processes involved with their production, fabrication, and system compatibility.

ARCH 431 Environmental Control Principles (3) Daylighting of buildings, reducing noise and enhancing sound for communication, and regulating heat transfer for occupant thermal comfort; description of passive means for environmental control, including presentation of scientific explanations and design guidelines for utilizing these means; design guidelines are intended for use in the preliminary schematic design phase. Offered: AW.

ARCH 434 Color and Light (3) Lectures, demonstrations, exercises, and projects focusing on the use of color applied to the three-dimensional architectural context. Explores color theory with the multiple effects of changing light.

ARCH 435 Principles and Practices of Environmental Lighting (3) Perception-based approach to principles of natural and artificial lighting. Practical considerations of lighting involving environmental evaluations, calculations, and the use of lamps and fixtures. Sketch and model studies for applications. Impact of lighting design on energy conservation. Relation of lighting design process to architectural design concepts. Prerequisite: either ARCH 331 or ARCH 431.

ARCH 436 Building Acoustics (3) NW Description of principles and practices for manipulating and enhancing sound in buildings. Information about sound behavior and the organization of architectural elements (deployment of design features, including various geometries and materials) for the control of sound in enclosed spaces and between adjacent spaces.

ARCH 439 Architectural Lighting Design (3) Concentrates on the use of electric lighting and its effective integration in architecture and the built

environment. Includes site visits, demonstrations, lectures, and projects. Prerequisite: ARCH 435.

ARCH 441 Visions of the Japanese House (3) Oshima Explores the origins, derivations, and permutations of the "Japanese house." Outlines underlying principles and paradigms of Japanese domesticity through history and traces its evolution through aspects ranging from the house's expression in media to its constructional materiality. Offered: A.

ARCH 442 Africa and Middle East Seminar (3) VLPA McLaren Advanced introduction to colonial and postcolonial architecture in Africa and the Middle East, beginning with the initial European colonization in the mid-nineteenth century. Provides a historical understanding of the formation of distinctive regional and/or national identities in the architecture of these regions. Offered: Sp.

ARCH 445 South Asian Architecture I (3) VLPA Prakash Advanced introduction to precolonial architecture and urbanism of South Asia. Using methodologies of culture studies, examines select Hindu, Buddhist, and Islamic case studies on a comparative genealogy.

ARCH 446 South Asian Architecture II (3) VLPA Prakash Advanced introduction to colonial and postcolonial architecture and urbanism of South Asia. Using methodologies of culture studies, covers 1800 to present, emphasizing the years since India's independence in 1947.

ARCH 452 History of Architecture in Seattle and Environs (3) I&S Ochsner Historical development of architecture in Seattle and surrounding areas from the nineteenth century to the present, also touching on issues of urban design and historic preservation.

ARCH 453 Japanese Architecture (3) VLPA Survey of Japanese architecture from its origins to modern times. Although Shinto architecture, tea houses, gardens, and modern developments are discussed, the primary focus is on the development of Japanese Buddhist architecture. Offered: jointly with ART H 419.

ARCH 455 American Architecture (3) American architecture from indigenous Native American traditions to the present. Offered: jointly with ART H 488.

ARCH 457 Twentieth-Century Architecture (3) VLPA

Architecture in the twentieth century, mainly in Europe and the United States. Traces roots of Modernism in Europe in the 1920s, its demise (largely in the United States) in the 1960s, and recent trends such as Post-Modernism and Deconstructivism. Offered: jointly with ART H 491.

ARCH 458 Paris: Architecture and Urbanism (3/5)

VLPA/I&S Spans the architectural history of Paris, from its Gallic, pre-Roman origins in the second century BCE through the work of twenty-first century architects. Focuses on changing patterns of the physical fabric of the city and its buildings, as seen within the context of the broader political, social, economic, and cultural history. Offered: jointly with ART H 494/JSIS A 433.

ARCH 459 Architecture Since 1945 (3) VLPA

Theories and forms in architecture from the end of World War II to present. Includes new wave Japanese architects, recent Native American developments, and non-Western as well as Western trends. Offered: jointly with ART H 493.

ARCH 460 Design Theory and Analysis (3) VLPA/I&S

Problematical nature of philosophies of architecture; interaction of philosophical concepts and architectural form and expression. Fundamentals of architectural criticism.

ARCH 462 Spatial Composition in Architecture (3)

Advanced introduction to compositional strategies in architecture. Drawing on a historical survey of the development of Western architecture, the seminar investigates different compositional strategies and their relationship to cultural values and systems of meaning. Intended as complement to the design studio.

ARCH 466 Gender and Architecture (3) I&S/VLPA

Examines gender in the experience, practice, and theory of architecture and urban space with a focus on modern typologies: skyscraper, home, convent, bachelor pad, street, and closet. Draws from architectural and art history, social studies, design practice and theory, comparative literature, film studies, and queer theory. Offered: jointly with GWSS 466.

ARCH 468 Architecture Capstone Preparation (3)

Preparation for the Architecture major capstone project. Offered: W.

ARCH 469 Architecture Capstone (6)

Development of the capstone project for the Architecture major. Offered: Sp.

ARCH 475 Residential Architectural Practice (3)

Lectures and exercises focused on the operation of a professional architectural practice specializing in residential and smaller-scale projects. Topics include: clients and program development, design strategies and space planning, site considerations, regulatory constraints, consultants, contractors, specialized construction methodology, and issues, ethics, and liability specific to residential project delivery.

ARCH 478 CAD and Working Drawings (4)

Intensive introduction to computer-aided design systems for developing construction documentation (working drawings). Lectures and exercises focus on learning the methodology for using CAD to efficiently prepare working drawings, as well as discussions regarding industry-recognized standards and current technology used in the preparation of documentation. Prerequisite: ARCH 380; CM 313. Offered: ASpS.

ARCH 481 3D Modeling and Rendering (3)

Lectures and weekly exercises focus on understanding and applying the underlying principles of 3D computer graphics and rendering software. Topics include user-interface, data creation and modeling, lighting models, smoothing, texture mapping, ray tracing, radiosity, animation, and solid modeling. Prerequisite: ARCH 380.

ARCH 482 Web Weaving (3) VLPA B. Johnson

Examines the function, limitations, and uses of primary web technologies and fundamental website design and implementation. Participants develop hands-on design/build expertise for website design, implementation, and maintenance, using readily available tools and techniques. Looks beyond today and explores emerging Internet technologies. Offered: A.

ARCH 483 Design of Virtual Environments (3)

Explores through a blend of technical exercises constructing computational artifacts, readings, and discussions of relevant literature, the possibilities of

online virtual environments. Incorporates a term project or paper based on exercises and readings. Offered: W.

ARCH 484 Design Computing Seminar (3) Weekly colloquium and discussion forum. Discusses design computing research and report on ongoing project progress, with demonstrations and guest speakers. Explores design computing, design thinking and design process, and inventing new computer-aided tools for design. Offered: W.

ARCH 486 Algorithmic Geometry in Architectural Design (3) Introduction to design and implementation of parametric modeling of algorithmically generated geometries using computational elements and real-time computation. Introduces concepts related to computer programming, computational geometry, and 3D modeling with weekly exercises using 2D and 3D computer modeling frameworks, plus a term project. Requires significant amount of hands-on work.

ARCH 487 Fundamentals of Building Information Modeling (3) Introduces students to building information modeling and associated software tools. Students learn the fundamentals of working with BIM software by developing a project using both 3D parametric modeling and the 2D documentation skills essential to communicating ideas effectively in professional practice.

ARCH 489 Simulation Based Design (3) Focuses on computational simulation tools and techniques to evaluate the performance of a design or design alternatives, starting at earliest conceptual design phases to help architects make informed design decisions. Topics include solar, lighting, thermal, and acoustical analysis techniques and their applications.

ARCH 490 Architectural Studies Abroad - Special Topics (*, max. 24) Department-approved, systematic study offered as part of architectural study abroad programs.

ARCH 491 Architectural Studies Abroad - Representation (1-6, max. 12) VLPA Architectural sketching, drawing, modeling, and other presentation techniques in contexts outside the United States.

ARCH 494 Architectural Studies Abroad - Culture (1-6, max. 12) VLPA Studies of language, art, food, music, and other activities that influence architectural and urban form in contexts outside the United States.

ARCH 495 Architectural Studies Abroad - History and Theory (1-6, max. 12) VLPA/I&S Examines history and theory of architecture in study abroad programs.

ARCH 496 Architectural Studies Abroad - Urban Fieldwork (1-6, max. 12) Analysis and interpretation of urban form and architectural contexts through direct observation in locations outside the United States.

ARCH 497 Architectural Studies Abroad - International Practice (1-6, max. 12) Observation and evaluation of architectural practices in contexts outside the United States through firm visits and guest presentations.

ARCH 498 Special Projects (1-12, max. 18) Instructor-initiated and department-approved systematic study and offering of specialized subject matter. Topics vary and are announced in preceding quarter.

ARCH 499 Undergraduate Research (1-6, max. 6)

ARCH 500 Architectural Foundation Studio I (6) The first of a two-quarter sequence structured as a series of design exercises that will expose students to a diversity of methods, scales and program types. Studio problems will balance the acquisition of basic design and representation skills with the exploration of broad themes of space, dwelling, site and place. The studio work is closely coordinated with parallel Representation, Design Technology and History and Theory classes. Credit/no-credit only. Offered: A.

ARCH 501 Architectural Foundation Studio II (6) The second of a two-quarter sequence structured as a series of design exercises that will expose students to a diversity of methods, scales and program types. Studio problems will balance the acquisition of basic design and representation skills with the exploration of broad themes of space, dwelling, site and place. The studio work is closely coordinated with parallel Representation, Design Technology and History and

Theory classes. Prerequisite: ARCH 500 Credit/no-credit only. Offered: W.

ARCH 502 Architectural Integration Studio I (6) The studio is structured as a first integrated design studio experience. It builds upon the first two quarters through integrating structural systems, building assemblies and environmental responses with broader design concerns. Through exploring a project in an urban context, the studio focuses on themes of community and society. The studio work is closely coordinated with parallel Design Technology and Materials and Assemblies classes. Prerequisite: ARCH 501 Credit/no-credit only. Offered: Sp.

ARCH 503 Architectural Integration Studio II (6) The first of a two-quarter sequence structured for the development of integrative design skills. Studio problems explore the relationship between building, the public realm and place-making in an urban context and develop a building design as part of larger urban systems related to energy, ecology and mobility. The fall studio work is closely coordinated with parallel Design Technology, Urban Issues and Contemporary Theory classes. Prerequisite: ARCH 502 Credit/no-credit only. Offered: A.

ARCH 504 Architectural Integration Studio III (6) The second of a two-quarter sequence structured for the development of integrative design skills. Studio problems explore the relationship between building, the public realm and place-making in an urban context and develop a building design as part of larger urban systems related to energy, ecology and mobility. The winter studio work is closely coordinated with parallel Design Technology, Site Ecology and Materials and Assemblies classes. Prerequisite: ARCH 503 Credit/no-credit only. Offered: W.

ARCH 505 Architectural Exploration Studio I (6, max. 12) The first of two advanced architectural design studios offers a variety of studio experiences on specialized topics. The studio builds upon technical knowledge and integrative design skills while placing a greater emphasis on experimentation and collaboration as well as design methodology. The studio combined with required Research Methods class will prepare students for either their final Research Studios or Independent Thesis.

Prerequisite: ARCH 504. Credit/no-credit only. Offered: Sp.

ARCH 506 Architectural Exploration Studio II (6, max. 12) The second of two advanced architectural design studios offers a variety of studio experiences on specialized topics. The studio builds upon technical knowledge and integrative design skills while placing a greater emphasis on experimentation and collaboration as well as design methodology. The studio combined with required Research Methods class will prepare students for either their final Research Studios or Independent Thesis. Prerequisite: ARCH 504. Credit/no-credit only. Offered: A.

ARCH 507 Architectural Research Studio I (6, max. 12) The first of two architectural research studios structured for the integration of rigorous design-related research with a comprehensive project. Studios explore faculty generated topics on current interdisciplinary issues in the built environment in support of degree options in History, Theory and Criticism; Materials and Fabrication; and Sustainable Systems and Design. The studio is directly tied to a required Research Seminar class. Prerequisite: ARCH 506 and ARCH 592. Credit/no-credit only. Offered: W.

ARCH 508 Architectural Research Studio II (6, max. 12) The second of two architectural research studios structured for the integration of rigorous design-related research with a comprehensive project. Studios explore faculty generated topics on current interdisciplinary issues in the built environment in support of degree options in History, Theory and Criticism; Materials and Fabrication; and Sustainable Systems and Design. The studio is directly tied to a required Research Seminar class. Prerequisite: ARCH 506 and ARCH 592. Credit/no-credit only. Offered: Sp.

ARCH 510 Representation I (3) *A. Anderson* The first of a two-quarter sequence introduces representation techniques used in architectural design with an emphasis on hand-drawing fundamentals, two- and three-dimensional digital techniques, and architectural presentation strategies. It examines architectural representation as a medium for the investigation, documentation analysis and communication of architectural space.

Assignments closely coordinated with parallel Foundation Studio. Offered: A.

ARCH 511 Representation II (3) The second of a two-quarter sequence introduces representation techniques used in architectural design with an emphasis on hand-drawing fundamentals, two- and three-dimensional digital techniques, and architectural presentation strategies. It examines architectural representation as a medium for the investigation, documentation analysis and communication of architectural space. Assignments closely coordinated with parallel Foundation Studio. Prerequisite: ARCH 510 Offered: W.

ARCH 512 Advanced Representation (3) Designed to take tools of architectural representation and introduce stylistic workflows and techniques to build visual narratives. Workshops focus on advanced 3D modeling, digital post processing, and hybrid techniques to blend digital and hand-drawing conventions. Illustrates how these tools can be efficiently used both for architectural representation and as an aid to design. Prerequisite: ARCH 511 or equivalent. Offered: Sp.

ARCH 520 Design Technology I (3) *J. Griggs, R. Pena* Explores the way climate, place, materials, and tools shape buildings and affect both how to build and how to conceive of building human inhabitations. Examines relationships between technology and materials. Looks to both nature and traditional architecture for principles of climate adaptation, as well as tools and methods of building. Subjects developed through hands-on exercises in the fabrication lab. Offered: A.

ARCH 521 Design Technology II (3) *R. Pena, T. Sprague* Establishes the fundamental relationships between forces of gravity, wind or earthquake loading and structural form; also influence of sun, wind, and light on architectural form. Drawing from first principles of statics, mechanics of materials, and heat transfer, explores force systems and their analytical solutions as applied to bodies at rest (statics), and to steady-state heat transfer. Prerequisite: ARCH 520 Offered: W.

ARCH 522 Design Technology III (3) *T. Sprague* Relationships between forces of gravity, wind, or earthquake loading and structural form. Focuses on structural behavior of beams, trusses, arches and

frames; structural performance of wood, steel and concrete; and design for gravity and lateral loads. Prerequisite: ARCH 521 Offered: Sp.

ARCH 523 Design Technology IV (3) *Kate Simonen, Rob Pena* Integration of structure, environmental systems, spatial organization and architectural form is the focus of this course. Lectures and workshops develop an understanding of structural material, element and system performance, architectural and mechanical systems for delivering fresh air, illumination, and thermal comfort, and an ability to integrate systems for efficient and elegant design. Offered: A.

ARCH 524 Design Technology V (3) Focuses on computational simulation tools and techniques to evaluate the performance of an environmental system's design or design alternatives, starting at earliest conceptual design phases to help architects make informed design decisions. Prerequisite: ARCH 523. Offered: W.

ARCH 525 Life Cycle Assessment and Architecture (3) Explores use of life cycle assessment data and methods within design and construction practices to understand and reduce the environmental impact of buildings.

ARCH 526 Topics in High Performance Buildings (3) Addresses key dimensions to the design of high performance buildings including: energy efficiency; health and comfort; structures and materials; economic performance; and renewable energy systems. Includes faculty-led discussions and presentations by experts in the field. Students explore and refine research topics in high performance buildings.

ARCH 527 Introduction to Digital Design and Fabrication (3) Offers an introduction to digital design and manufacturing technologies, with an emphasis on developing appropriate strategies for their use in design and architecture. Students learn to use digital design software and digitally enhanced fabrication tools to support their design strategies. Offered: AW.

ARCH 528 Digital Design for Fabrication and Construction (3) Explores the rapid integration of fabrication, construction, and performance criteria early in the architectural design process, through the

use of powerful digital tools. Students test advanced digital tools in architectural production and develop awareness and skills in integrated digital design, analysis, and prototyping. Offered: W.

ARCH 529 Advanced Digital Projects (3) Advanced topics for students who have completed one or more design computing courses and wish to develop a project further. Prerequisite: either ARCH 527 or ARCH 528.

ARCH 530 Integrated Building Systems (3) *Miller*
Discusses strategies for ordering separate and discreet building systems into integrated architectural schemes. Focuses on systems that affect architectural expression and resolution in buildings including: structural, environmental control, materials, and assembly with an emphasis on sustainable building design. Concurrent with ARCH 502. Offered: Sp.

ARCH 531 Active Control Systems for Building Operation (3) *NW* Electrical, mechanical (HVAC), plumbing, and fire safety systems for buildings. Descriptions of what these systems do, where they are used, how they are integrated into the overall building design; rules of thumb, design strategies, and short cuts for anticipating system design and use. Prerequisite: either ARCH 331 or ARCH 431. Instructors: Heerwagen Offered: WSp.

ARCH 532 Construction Materials and Assemblies II (3) Lectures and readings pertaining to a survey of materials, assemblies, and techniques of assembly of concrete and steel frame, commercial exterior envelope, and interior partitioning building construction systems. Prerequisite: either ARCH 332 or CM 313. Offered: A.

ARCH 533 Advanced Environmental Systems (3)
Focuses on computational simulation tools and techniques to evaluate the performance of a design or design alternatives, starting at earliest conceptual design phases to help architects make informed design decisions. Topics include solar, lighting, thermal, and acoustical analysis techniques and their applications. Offered: WSp.

ARCH 534 Green Technology (3) *Heerwagen*
Examination and application of various resource-conserving building technologies, particularly within the context of the LEED Rating System. Principles

and practices associated with the inclusion of these technologies in buildings.

ARCH 535 Daylighting Design Seminar (3) Focuses on theoretical and applied daylighting principles in conjunction with physical and digital analytical tools. Includes field assessment of constructed buildings and individual projects involving research and design for lighting and daylighting.

ARCH 536 Designing with Living Systems (3)
Investigates an integrated approach to urban agriculture and building systems; looks at cyclical ecosystems intrinsically interconnected with buildings, urban infrastructure, and the constructed environment; establishes a thorough understanding of these productive, living systems, which are indispensable for architects and landscape architects in their pursuit of more sustainable design practices.

ARCH 537 Traditional Building Methods: New Adaptations (3) Explores recent developments in traditional building techniques, a resurgence of interest in handmade buildings, and the use of local materials in building construction. Also examines why these materials and methods are becoming critical to communities around the world, and how they can be optimized to meet twenty-first century requirements.

ARCH 538 Building Reuse Seminar: Investigating the Value of Existing Buildings (3) Investigates the repurposing of buildings as a resource and energy conservation strategy and as an alternative to demolition of existing buildings; discusses case study strategies for sustainable retrofits. Students critically observe, record, and analyze structures and discuss building reuse design in the context of sustainable environments.

ARCH 541 Visions of the Japanese House (3)
Explores the origins, derivations, and permutations of the "Japanese House." Outlines underlying principles and paradigms of Japanese domesticity through history and traces its evolution through aspects ranging from the house's expression in media to its constructional materiality.

ARCH 550 History and Theory of Architecture I (3)
First half of a two course sequence that introduces architectural history and theory in coordination with design studio and design technology courses. This

course explores geographically and chronologically diverse cultures and their built works in terms of social, technological, and environmental factors while linking aspects of human making and meaning. Offered: A.

ARCH 551 History and Theory of Architecture II (3)

L. Iarocci Second half of a two course sequence that introduces architectural history and theory in coordination with design studio and design technology courses. Starting from the Age of Discovery and continuing to the present day, this course intends to gain a deeper understanding of architecture as a product and producer of the environment, society and technology. Prerequisite: ARCH 550 Offered: W.

ARCH 556 The Arts and Crafts Movement and Its Legacies (3) *Ochsner* Historical development of the arts and crafts movement focusing primarily on its influence on American architecture from 1870 to the present.

ARCH 557 History and Theory of Historic Preservation (3) *Jeffrey Karl Ochsner* National and international historic preservation, primarily from the late nineteenth century to the present. Fosters a critical understanding of preservation through consideration of texts from preservation, architecture, landscape architecture, anthropology, planning, and other fields. Offered: Sp.

ARCH 558 Seminar in Twentieth-Century Architecture (3/5) Specific focus changes from quarter to quarter. Prerequisite: graduate standing with background in art history, architecture, architectural history, or permission of instructor. Offered: jointly with ART H 591.

ARCH 559 American Utilitarian Architecture (3) Significant American environmental design efforts arising from utilitarian needs, e.g., factories, bridges, skyscrapers, and associated technical building innovations.

ARCH 560 Seminar on Architectural Theories (3) Recent developments in architectural theory, urban design theory, criticism, and the methodology of criticism.

ARCH 561 Urban Design Theory (3) Study of development of nineteenth- and twentieth-century

urban design theories and parallel developments in architecture and urban planning. Theoretical premises are related to current practices of urban design in various sociopolitical contexts, European as well as American. Evolutionary nature of theory emphasized. Prerequisite: URBDP 479 or permission of instructor.

ARCH 562 Contemporary Architectural Theory (3)

The course is structured as an advanced introduction to contemporary architectural theory, engaging topics that will prepare students for the challenges of today's global built environment. The intention is to foster a critical understanding of design practice through examining areas of contemporary theoretical focus in architecture and the built environment. It also prepares students for the subsequent Research Methods class. Offered: A.

ARCH 563 Seminar in Architecture and Cultural Theory (3) Study of contemporary cultural studies and postcolonial writings in terms of their impact on architectural theory and practice. Topical seminar based on reading and individual research.

ARCH 564 Environmental Design and Well-Being (3)

Analyzes how environmental design can promote well-being in natural systems and human life worlds. Explores current knowledge about climate change and organism-environment dynamics, theories of health and complexity, ideological barriers and the power of images, new materials, and "high-tech"/"low-tech" alternatives for ecological design and planning.

ARCH 567 Qualitative Research Methods (3)

Qualitative research methods covering both the theoretical foundations and practical methodologies of traditional and innovative approaches, including cognitive mapping, open-ended interviews, ethnographic observation, hermeneutics, phenomenology, critical theory, communicative action, grass-roots empowerment, post-structuralism, and self organization. Offered: jointly with URBDP 519.

ARCH 570 Design Development (3) *Miller* Lectures and case studies emphasizing the design development phase of architectural practice. Concurrent with ARCH 501.

ARCH 571 Professional Practice (3-4) Introduces the business and ethics of architectural design and building construction, while helping students explore their professional identities and make intentional choices about their career paths. Compares fundamentals of architectural practice against historical evolution of the field and speculation about its future.

ARCH 573 Sustainable Design Case Studies: Methodologies in Seattle's Professional Design Firms (3) *Heather Burpee* Studies sustainable design methodologies in Seattle professional design firms. Office visits and interviews of architecture and engineering practitioners highlight how high performance ideas and sustainable practices are implemented across various professional settings. Offered: Sp.

ARCH 574 Design and Construction Law (3) Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasis on Washington State law. Offered: jointly with CM 500; A.

ARCH 578 Case Studies in Contemporary Architectural Practice (3) Presentations and discussions by local architectural firms examining the issues that influence building design and project delivery in contemporary architectural practice. Focuses on understanding the issues as opportunities rather than impediments to good design. Class visits a different architectural firm each week for an in-depth review of current projects.

ARCH 579 Technical Issues in Preservation Design (3) Issues, practices, and procedures involved in preservation and reuse of old and historic buildings. Technical and esthetic means by which practicing professionals approach the analysis, interpretation, and resolution of problems such work raises. Emphasis on recent and local projects and related experiences.

ARCH 581 Advanced Rendering (3) Provides an in-depth discussion and hands-on experience with technical and qualitative features of computer rendering. Students learn to generate digital images

that can mimic the physical world and predict the final appearance of a design.

ARCH 582 Computational Lighting Design (3) Addresses the recent developments in lighting simulation, visualization, and per-pixel measurement techniques. Provides an understanding of the theoretical aspects of computer applications in lighting design; and the practical knowledge of tools that enhance the integration of the lighting analysis into architectural design processes.

ARCH 587 Theory of Design Computing (3) Examines the relationship between theory of design and computational tools for practice. Explores how the emergence of computers as a mainstream tool in design has already changed architectural practice. Discusses how, as with other technologies that revolutionized the practice of architecture, information technologies carry hidden implications about design process and products. Offered: A.

ARCH 588 Research Practice (3) Provides the opportunity for a guided preliminary exploration and refinement of a research topic, prior to thesis proposal. Weekly seminar meetings focus on student work with regular presentations and discussions. Offered: W.

ARCH 590 Urban and Preservation Issues in Design (3) Introduction to recent theory and practice in the fields of urban design and historic preservation primarily in North American urban contexts, including examples of recent projects presented by practicing professionals. Concurrent with ARCH 500.

ARCH 591 Architecture and Landscape (3) Advanced introduction to the relationships between buildings and places in the landscape with an emphasis on Western concepts of nature. A taxonomy of place as nature is developed. Explores ways in which the architect can design places that landscape taxonomy. Concurrent with ARCH 502.

ARCH 592 Research Methods (3) *Louisa M Iarocci, Mehlika Inanici* Role and practice of research methods in architecture related to themes of product, process, and performance. Explores the idea of research as a practice unique to architecture in order to discover how innovative approaches and/or outcomes emerge from generating, reinterpreting, and/or rediscovering information

from a critical and creative perspective. Prerequisite: ARCH 562. Offered: ASp.

ARCH 593 Architectural Research Seminar I (3, max. 6) The first of two seminars structured to directly support the research studios. Investigation of a research area integrated into the research studio's design work. Focus on research methods, analysis, interpretation, and representation of research findings. Tied to a section of Architectural Research Studio I. Prerequisite: ARCH 592. Credit/no-credit only. Offered: W.

ARCH 594 Architectural Research Seminar II (3, max. 6) The second of two seminars structured to directly support the research studios. Investigation of a research area integrated into the research studio's design work. Focus on research methods, analysis, interpretation, and representation of research findings. Tied to a section of Architectural Research Studio II. Prerequisite: ARCH 592. Credit/no-credit only. Offered: Sp.

ARCH 595 Thesis Research and Preparation (4) Develops skills for conducting master's thesis research, including writing a major portion of the thesis document. Engages students as a community of peers sharing ideas and resources for completing thesis work. Required for admission to the master's thesis design studio. Credit/no-credit only. Offered: Sp.

ARCH 596 Fieldwork in Professional Practice (*, max. 9) On-location study under the supervision of a practicing professional involved in an aspect of environmental design.

ARCH 597 Research Practicum (5) *Johnson, McLaren* Provides a mentored research opportunity where students apply their research and writing skills and knowledge of methods and theory to an advanced research topic. Offered: Sp.

ARCH 598 Special Topics for Graduate Students (1-6, max. 18) Systematic study and offering of specialized subject matter. Topics vary and are announced in the preceding quarter and published in the course syllabus.

ARCH 599 Independent Thesis Research and Preparation (3/4) Participants identify a master's thesis research area, articulate a specific question

within the research area, find relevant literature and prepare an annotated bibliography, establish a research method and timetable, pursue preparatory research and analysis for the thesis project, and write, present, and defend a thesis proposal. Credit/no-credit only. Offered: AWSp.

ARCH 600 Independent Study or Research (*-)

ARCH 700 Master's Thesis (*-)

BUILT ENVIRONMENT

B E 200 Introduction to Built Environments (3) VLPA/I&S Introduction to critical issues related to the planning, design, construction, and use of our built environments and the roles of the various disciplines contained within the College of Built Environments. Offered: A.

B E 210 A Global History of the Built Environment I (5) VLPA/I&S V. PRAKASH This course critically examines built environments over time using a global perspective beginning with First Societies through 1st millennium CE. The global perspective encourages thinking about history in a transnational and transgeographical manner. The course is broadly structured around the concept of "time cuts" that allow for comparisons across regions and cultural formations. Prerequisite: There are no prerequisites; recommended: None are required. Offered: W.

B E 211 A Global History of the Built Environments II (5) VLPA/I&S V. PRAKASH This course critically examines built environments over time using a global perspective beginning 1st millennium CE to the present. The global perspective encourages thinking about history in a transnational and transgeographical manner. The course is broadly structured around the concept of "time cuts" that allow for comparisons and connections across regions and cultural formations. Prerequisite: There are no prerequisites; recommended: None are required. Offered: Sp.

B E 220 Cities, Health, and Well-being (3) I&S This course analyzes the ways urban built environments bear on physical and mental health and well-being (material-economic resources, security, social relations, open choices). It focuses on how the practices and knowledge of built environment

professions and disciplines interact with public health, engineering, and the sciences to understand and change cities. Offered: W.

B E 230 Living with Disasters: Design for Resilience (5) NW/I&S D. Abramson Studies types of environmental hazards (e.g., earthquakes, flooding, climate change) and the ways people can build more resilient communities. Pre-major introduction to BE disciplines: architecture, landscape architecture, urban planning, construction management. Students apply concepts in a Seattle-based scenario project. Offered: Sp.

B E 405 Built Environments Studio (6, max. 18) An intense learning experience in which students are assigned to interdisciplinary, collaborative teams to develop specific approaches to addressing complex issues related to built environments. Focus and format vary with the interdisciplinary team of instructors.

B E 498 Special Projects (1-12, max. 12)

B E 505 Built Environments Studio (6, max. 18) Provides an intense learning experience in which students are assigned to interdisciplinary, collaborative teams to develop specific approaches to addressing complex issues related to built environments. Focus and format vary with the interdisciplinary team of instructors.

B E 550 Colloquium-Practicum on Research-Practice and Teaching-Learning (1, max. 6) A synthetic and interdisciplinary forum for the presentation and peer critique of faculty and student research and practice projects, and a venue for pedagogical issues and skills for effective teaching and learning.

B E 551 The Contemporary Built Environment (3) Covers major or landmark cases of complex built environment projects, emphasizing the multiple dimensions involved and their interconnections.

B E 552 Theories of Knowledge and the Built Environment (3) Systematic examination of alternative epistemological frameworks applicable to studying the built environment; examinations of their differences and similarities and of the possibility of a comprehensive, pluralistic approach.

B E 553 Ethics in Practice, Research, and Teaching (3) Preparation for ethical challenges facing professional practice, research, and teaching in the built environment. Coverage of general and professional ethics, and examination of principles and rules and application through case studies.

B E 597 Directed Readings (*, max. 30) Intensive reading in the literature of the built environment, directed by members of doctoral Supervisory Committee. Credit/no-credit only. Offered: AWSpS.

B E 598 Special Topics (1-6, max. 15) Systematic study of specialized subject matter. Topics vary depending on current interest and needs, and are announced in the preceding quarter.

B E 600 Independent Study or Research (*) Offered: AWSpS.

B E 800 Doctoral Dissertation (*-) Offered: AWSpS.

CONSTRUCTION MANAGEMENT

CM 250 Construction and Culture (5) I&S A. HOLM Evolution of modern building construction with emphasis on the relationship between the projects built over time and the people who built them. Focuses on the development of building technology, equipment, and materials used by Western civilizations. Offered: W.

CM 260 Digital Tools (3) W. Bender Use construction and design related software to perform project administration. Students will be able to apply Excel to organize construction costs, Revit to visualize construction in 3-D, Computer Aided Design to draw construction plans, SketchUp to visualize construction activities, and Bluebeam for plan reading and collaboration. Offered: AWSpS.

CM 301 Construction Communications (3) Applies business writing to the construction industry. Focuses on planning, writing, and editing documents most critical to a construction manager's professional success. Offered: AW.

CM 310 Introduction to the Construction Industry (3) G. MIGLIACCIO Introduction to the construction process, including general overview of organization, relationships, practices, terminology, project types,

procurement methods, industry standards, contract documents, and career opportunities. Offered: A.

CM 311 Construction Documents (2) Introduction to construction plans and specifications with emphasis on reading and interpreting them. Focuses on architectural/engineering drawings and associated specifications used in building construction. Offered: A.

CM 312 Construction Accounting (3) Introduction to accounting for the contractor, placing emphasis on the analysis and use of financial statements and a job cost accounting system. Offered: A.

CM 313 Construction Methods and Materials I (4) Introduction to basic building materials, with emphasis on techniques for assembly and utilization in residential and light construction, including materials such as concrete, brick, and wood. Offered: AS.

CM 320 Construction Contract Documents (3) Introduction to working drawings, specifications, and other documents designed to enable the student to read and interpret complete set of contract documents for residential and light commercial projects. Emphasis on the organization and uses of architectural/engineering drawings and specifications in the construction process. Offered: S.

CM 321 Mechanical Systems in Buildings (3) Introduction to building heating, cooling, plumbing, and fire protection systems including aspects of design, construction, estimating, and problem solving. Offered: W.

CM 322 Electrical Systems in Buildings (3) Introduction to electrical construction including electrical distribution from generation to consumption, terminology, equipment and applications, electrical contract documents and estimating, and electrical project management theory and practice. Offered: W.

CM 323 Construction Methods and Materials II (5) Analysis of building methods for structural, non-structural, and design and use of temporary structures including method selection, sequencing, and coordination of specialty trades in commercial and industrial construction. Offered: W.

CM 330 Construction Estimating Lab (1) Apply software to perform material take off and apply cost when estimating construction projects.

CM 331 Construction Estimating I (3) Introduction to the principles and techniques of estimating construction costs, with emphasis on quantity take-off and pricing elements of work. Offered: Sp.

CM 332 Construction Equipment Management (3)
G. MIGLIACCIO Study of the basic principles, practices, and techniques used in the construction industry for selecting and managing construction equipment. Focuses on understanding the time value of money, estimating equipment ownership and operating costs, selecting the proper equipment for specific construction tasks, and estimating equipment production. Offered: Sp.

CM 333 Construction Safety (3) *K. LIN* Explanation of requirements of the Occupational Safety and Health Act and other related federal and state legislation as applied to the building construction industry. Standards for accident prevention, hazard identification, and responsibility for compliance emphasized. Offered: A.

CM 334 Construction Surveying (2) *D. JACOBSON* Introduction to construction surveying including layout of construction features, distance and elevation measurement, and use and care of surveying equipment. Offered: Sp.

CM 335 Sustainable Construction (3) *K. NEMATI* Studies issues associated with planning and constructing sustainable projects including development of LEED documentation and evaluation of financial, social, and environmental impacts of construction operations. Offered: Sp.

CM 340 Sustainable Building Design and Construction Practices (3) Examines sustainable standards for design and construction of commercial and institutional buildings focusing on environmental, economic, and social benefits of sustainable buildings. Offered: W.

CM 404 Integrated Design/Build Studio (6) *C. DOSSICK* Study of the design/build process with emphasis on the synthesis of design and construction considerations. Focuses on developing design and construction concepts to meet program

requirements specified in case studies. Offered: jointly with ARCH 404; W.

CM 410 Construction Estimating II (4) Principles and techniques for estimating commercial construction projects including a mock bid day exercise on a commercial construction project. Prerequisite: CM 331; CM 332. Offered: A.

CM 411 Project Planning and Control (4) *A. Abdel Aziz* Introduction to the basic principles, techniques, and practices used as tools by contractors to plan, schedule, and control costs on building construction projects. Prerequisite: CM 331. Offered: A.

CM 412 Construction Practice (2) *J. SHAIMAN* Introduction to challenges of managing a construction organization. Focuses on ethical behavior, organizational behavior, human resources management, marketing, financial management, and risk management. Prerequisite: CM 417 or CM 421. Offered: Sp.

CM 413 Competitive Business Presentations (1) *C. DOSSICK* Study and development of skills needed to develop and deliver professional construction management presentations. Includes a series of workshops and practical exercises in construction presentation skills, teamwork, and leadership. Offered: A.

CM 414 Virtual Construction (3) *C. DOSSICK* Examines the use of building information models for managing the construction process and facilitating collaboration among project participants. Offered: A.

CM 415 Heavy Construction Practices (3) *J. SCHAUFELBERGER* Introduction to heavy construction with emphasis on highway and bridge construction. Topics include: contract analysis, work breakdown, equipment selection, unit-price cost estimating, site logistics planning, and project scheduling. Prerequisite: CM 332. Offered: A.

CM 416 Residential Project Development (3) Studies the financial, technical, and managerial activities as well as the environmental impact regulations and studies associated with the development of residential projects, including the business and construction practices and marketing strategies needed for a successful project. Offered: A.

CM 417 Residential Project Management (3) *J. SHAIMAN* Introduction to the organization, management, control and administrative functions on residential construction projects. A residential case study will be utilized to provide hands on learning opportunities. Introduction to Cost control, Value Engineering, and Site Logistics. Prerequisite: CM 410; CM 411. Offered: W.

CM 420 Temporary Structures (3) *S. DANIALI* Study of temporary structures used to support construction operations such as concrete formwork, scaffolding systems, shoring systems, cofferdams, underpinning, slurry walls, and construction dewatering systems. Prerequisite: ARCH 321. Offered: Sp.

CM 421 Project Management I (3) Introduction to the organization, management, and administrative functions on construction projects including a hands-on and extensive case study of a commercial construction project, cost control, and introduction to the concepts of Value Engineering, partnering, and Total Quality Management. Prerequisite: CM 410; CM 411. Offered: W.

CM 422 Computer Applications in Construction (2) *A. ABDEL AZIZ* Introduction to the use of automated programs for planning, scheduling, and controlling construction projects. Focuses on the use of Primavera Project Planner software. Prerequisite: CM 411. Offered: W.

CM 423 Construction Law (3) *A. TRAMOUNTANAS* Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasizes Washington state law. Prerequisite: CM 417 or CM 421. Offered: Sp.

CM 425 Concrete Technology (3) *K. NEMATI* Introduction to the properties and behavior of concrete. Focuses on uses of concrete as a building material and new techniques for concrete construction. Offered: W.

CM 426 Preconstruction Techniques (3) *C. Dossick* Studies the preconstruction phase of a building construction project by focusing on conceptual cost

estimating, schedule analysis, and constructability reviews during the development of the design for the project. Offered: W.

CM 428 Heavy Construction Techniques (3) K. *NEMATI* Studies the materials, methods, and techniques used in site work, highway, utility, and other heavy construction projects. Addresses concrete as a construction material, foundations, rigid and flexible pavements, bridges, dams, and tunnels. Offered: A.

CM 429 Construction Superintendent (3) T. *CHAMBERS* Study of the role and responsibilities of the Project Superintendent, analytical and technical skill sets used in managing field operations. Special emphasis on logistics, work flow planning, productivity tracking and development and management of a project schedule's critical path. Prerequisite: Offered: W.

CM 430 Building Code and Environmental Regulations (3) Introduction to the permit process, life-safety requirements, and environmental regulations for designs and construction of buildings as established by the national and local jurisdictions. Prerequisite: ARCH 322. Offered: Sp.

CM 431 Project Management II (5) Capstone project using case studies to apply skills, knowledge, techniques, and concepts developed in prior courses. Emphasis on the concept of integrated project management, including cost estimating and bidding, scheduling, cost control, safety, project organization, and documentation. Prerequisite: CM 417 or CM 421. Offered: Sp.

CM 432 Soils and Foundations (3) S. *DANIALI* Origin, classification, and physical properties of soil as used in engineering and construction applications, together with loads and stresses of soil on, and from, the more common types of engineering structures. Prerequisite: CM 323. Offered: W.

CM 433 Construction Labor Relations (2) E. *KOMMERS* Introduction to construction labor topics, including labor-management organization, legislation, and regulation, collective bargaining, and job site administration. Offered: W.

CM 434 Lean Project Planning (3) Y. *KIM* Studies lean construction principles and examines how those

principles can be applied in a construction context to improve project quality and shorten duration while reducing cost. Offered: Sp.

CM 449 Construction Plan Reading and Estimating (3) Bill Bender Reading and interpreting a complete set of working drawings for residential and commercial construction projects. Principles and techniques of estimating construction, with emphasis on quantity take-off. Offered: A.

CM 450 Construction Project Management (5) A. *ABDEL AZIZ* Examines management of construction projects focusing on construction contracting, cost estimating, project scheduling, and resource management. Offered: S.

CM 481 Facility Life Cycle 1: Planning (3) Introduction to facility management. First in sequence of three built around the principle of the facility life cycle. Defines key terms. Examines topics such as ethics, business context, budgets, cost analysis, and strategic planning. Students work in online teams to develop a course-final project.

CM 482 Facility Life Cycle 2: Design and Construction (5) Second in sequence of three built around the principle of the facility life cycle. Covers design basics, cost estimates, building materials, project management, and construction administration. Students establish a mentor relationship with a professional facility manager and interview three guest speakers, experts in their fields. Offered: A.

CM 483 Facility Life Cycle 3: Relocation and Operational Issues (4) Final in sequence of three built around the principle of the facility life cycle. Provides an overview of issues related to facility operations and maintenance, including occupancy and start up, inventory and staff management, relocation, disaster planning, emergency preparedness, and security. Offered: W.

CM 498 Special Topics (1-10, max. 20)

CM 499 Undergraduate Research (*, max. 12) Individual or small-group studies. Students may select topics with approval of faculty sponsor and department.

CM 500 Design and Construction Law (3) Legal issues arising from design and construction services, focusing on risk management and liability awareness. Topical areas include basic legal doctrines, the design professional/client relationship, contractor selection, the construction process, and professional practice problems. Emphasis on Washington State law. Offered: jointly with ARCH 574; A.

CM 510 Advanced Construction Techniques (3) *K. NEMATI* Study of techniques and practices used in complex construction projects, including industrial and high-rise structures, building renovation, and tenant improvements. Offered: A.

CM 512 Preconstruction Facilitation (3) *C. Dossick* Studies the preconstruction phase of a building construction project by facilitating the work of a multi-disciplinary team focusing on developing the conceptual design for a construction project. Offered: W.

CM 515 Virtual Construction Management (3) *Carrie Sturts Dossick* Examination of innovative techniques for planning and managing construction projects including use of time-phased, three-dimensional Building Information Models; sustainable construction techniques; and web-based project management tools. Offered: Sp.

CM 518 Lean Construction (3) *Y. KIM* Examines the application of lean production management concepts to the management of construction projects. Offered: Sp.

CM 520 Construction Procurement Systems (3) Study of the different methods used in the procurement and delivery of projects in the construction industry including lump sum, unit price, cost-plus, design-build, and construction management contracts. Offered: A.

CM 525 Cost Analysis and Management (3) *Y. KIM* Study of cost management procedures applicable to the building process from the conceptual phase through owner operations, including conceptual estimating, project cost analysis and control, and value engineering and life-cycle costing. Offered: W.

CM 527 Management of Scope and Risks for Construction Projects (3) *G. MIGLIACCIO* This course

introduces students to the process of evaluating scope definition and risks in a project's life cycle. Using industry literature and reviewing case studies, students will learn project scoping and risk management best practices and apply them to a team project. Offered: W.

CM 528 Advanced Cost Management in Construction (3) *Y. KIM* Studies the three primary aspects of project cost control: overhead cost control, direct construction cost control, and life-cycle cost analysis. Addresses techniques in activity-based costing, earned value analysis, and life-cycle cost analysis. Offered: S.

CM 530 Project Economics and Risk Analysis (3) *A. ABDEL AZIZ* Studies the process for delivery of public-private infrastructure projects and risk analysis techniques used in economic/financial project studies. Focuses on understanding public-private project delivery systems, feasibility studies, project financial and economic modeling, and quantitative risk analysis techniques. Offered: Sp.

CM 535 Research Methods in Construction (3) *K. LIN* Examination of research methods used in construction studies. Includes an overview of the research process, planning of a successful research endeavor, literature review, qualitative and quantitative research, ethics in research and publishing, and various research methodologies. Offered: W.

CM 540 Sustainable Construction (3) *W. BENDER* Study of sustainable construction techniques and best practices. Focuses on use of U.S. Green Building Council's Leadership in Energy and Environmental Design standards to evaluate alternatives and select techniques for constructing sustainable projects. Offered: W.

CM 545 Real Estate Development (3) *A. HOLM* A study of the technical issues involved in developing real-estate projects. Tracks project development from initial conception through closing of the sale. Emphasizes the steps and processes involved in pursuing, analyzing, and closing a real-estate purchase. Offered: S.

CM 550 Residential Project Development (3) Study of the financial, technical, and management activities and environmental impact regulations and

studies associated with the development of residential projects, including business and construction practices and marketing strategies for continued profitable operation of a residential construction firm. Offered: S.

CM 555 Construction Firm Management (3)

Management of construction company including organization, corporate structure, operation procedures, marketing, and human resources management. Emphasis on safety and loss prevention management, insurance and risk management, financing, accounting, marketing construction services, and bonding requirements for construction company. Other topics include individual and corporate planning and process of strategic planning. Offered: W.

CM 560 Design-Build Project Management (3)

Examines the design-build process used for the delivery of construction projects. Involves analysis of project owner requirements and development of a written proposal for design and construction. Offered: Sp.

CM 565 Managing International Projects (3) K. LIN

Study of processes involved in the selection, acquisition, and management of international construction projects. Emphasis is placed on examining common problems associated with managing construction projects outside the United States, identifying risks involved, and discussing possible solutions. Offered: S.

CM 570 Facilities Management (3)

Major issues involved in facilities management: facilities planning, financial planning, real estate management, interior space planning and management, facilities operation and maintenance, and emergency preparedness. Offered: Sp.

CM 575 Leadership in Construction (3) A. HOLM

Studies leadership principles applicable to the construction industry. Addresses both organizational leadership and leadership of construction processes. Offered: A.

CM 580 Temporary Structures (3) K. NEMATI

Study of materials, methods, and techniques associated with temporary structures used in various construction operations, such as concrete formwork, scaffolding, underpinning, cofferdams, slurry

trenches, earth-retaining structures, and dewatering systems. Offered: Sp.

CM 582 Heavy Construction Estimating (3) A. ABDEL

AZIZ Study of the principles used in developing cost estimates for heavy construction projects. Includes interpretation of contract documents, quantity take-off, pricing, and preparation of unit-price bid documents. Emphasizes developing cost estimates for highway projects. Offered: S.

CM 584 Marine Construction (3) S. DANIALI

Study of the materials, methods and techniques associated with construction of projects in marine environments, including the impact of site conditions on the selection of appropriate construction techniques. Emphasizes equipment and crew selection, productivity and cost estimation, and construction sequencing. Offered: A.

CM 586 Utility Systems Construction (3) W. BENDER

Study of the materials, methods, and techniques associated with construction of major utility systems, such as water, sewer, communications, electrical or natural gas. Includes construction of central utility plants as well as major distribution and collection systems. Offered: Sp.

CM 588 Construction Operations and Productivity

(3) Study of heavy construction operations with emphasis on productivity enhancement focusing on an integrated approach to planning, modeling, analysis, and design of construction operations, and the use of simulation models and other analytical tools. Offered: W.

CM 590 Research Methods in Construction

Engineering (2) J. SCHAUFELBERGER Study of the academic research process. Includes development of a research proposal, review of relevant literature, selection of research methodology, collection of data, data analysis, and preparation of research report. Offered: W.

CM 598 Special Topics (1-6, max. 6)

Systematic study and offering of specialized subject matter. Offered: AWSpS.

CM 600 Independent Study or Research (*-)

An in-depth independent investigation of some facet of construction management. Offered: AWSpS.

CM 700 Master's Thesis (*-) Offered: AWSpS.

LANDSCAPE ARCHITECTURE

L ARCH 200 Landscape Architecture Field Trips (2) I&S/VLPA Five field trips introduce typical landscape architecture projects and demonstrate scope of the landscape architecture field. Visits to major projects in the Puget Sound region include city and county parks, river parks, harbors, downtown redevelopments, streetscapes, campus headquarters, and others. Open to nonmajors.

L ARCH 212 Designing the Future (5) VLPA/I&S I. Robertson Ecological/environmental instability and resulting social/cultural disruptions make the world in which spatial designers work increasingly uncertain. Lectures and guest speakers explore diverse ways in which design may create more sustainable futures. Course activities, including in-class design exercises, internet research, group discussions, take home projects, etc. encourage synthetic/integrative thinking. Offered: A.

L ARCH 300 Introductory Landscape Architecture Design Studio (6) VLPA Introduction to history and environmental influences in field while developing design and graphic skills. Site analyses and drawing to convey design concepts. Relationship of visual perception to drawing, role of values in design, verbal communication, and behavioral analysis of design process. Required for admission to Bachelor of Landscape Architecture program.

L ARCH 310 Landscape Architecture Field Sketching (2) Introductory level sketching of landscape subjects: natural and urban sites, plants, animals, architectural elements. Emphasis on perspective. Various media, including pencil, charcoal, markers, ink wash, water color.

L ARCH 311 Introduction to Design Graphics (2) Introduction to communication techniques for various phases of the design process. Many techniques are introduced and their suitability and appropriateness for different purposes explored.

L ARCH 322 Introduction to Planting Design (3) VLPA Traditional ways plants are used in landscape design. Composition and design characteristics of plant materials. Technical considerations for

selection, climate, cultural suitability, availability, costs, and maintenance. Open to nonmajors.

L ARCH 323 Topics in Planting Design I (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Identifies and describes native and ornamental trees and shrubs on the UW campus and vicinity. Utilizes tree canopy layers, shrub masses, and ground plane layers as space forms in studio project designs. Concurrent with L ARCH 301.

L ARCH 324 Topics in Planting Design II (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Utilizes trees, shrubs, and herbaceous plants as space forms in urban contexts. Utilizes plant characteristics of color, texture, and form in studio project design. Considers design principles of unity/diversity, complexity/simplicity, and pattern in studio project design. Concurrent with L ARCH 302.

L ARCH 325 Topics in Planting Design III (1) Explores planting design topics that relate specifically to site, program, and design issues addressed in concurrent studio projects. Considers trees, shrubs, and herbaceous plants of natural and ecosystems human-made plant communities. Considers plant community dynamics and changes over time. Concurrent with L ARCH 303.

L ARCH 341 Site Design and Planning (3) VLPA Introduces urban ecological design issues for good site-planning processes, principles, and methods. Linked with L ARCH 301. Addresses planning for people, natural systems in place-making, design for movement with carried land uses. Includes readings, discussions, presentations, campus walks, case studies, graphic and written assignments.

L ARCH 352 History of Landscape Architecture (5) VLPA/I&S Survey of the development of landscape architecture as an art form from Mesopotamia to the present. Relationships to physical landscape, climate, culture, religion, and other arts. Open to non-majors. Offered: A.

L ARCH 353 History of Modern Landscape Architecture (5) VLPA/I&S Development of profession and art of landscape architecture in the United States, Europe, South America, and Japan in

relation to prevailing social, economic, political, and cultural factors. Relationships with other professions, especially architecture and urban planning, and other arts, such as painting and sculpture. Open to non-majors. Offered: W.

L ARCH 361 The Human Experience of Place (3) I&S/VLPA, DIV Interdisciplinary approaches to exploring the reciprocal relationship between people and the landscapes of everyday life. Through readings, discussion, in-class activities and mini-projects, students study place attachment, relationships to nature, environmental attitudes and perception, personal space, territoriality, urban public space, diversity, participation, and the politics of space. Open to nonmajors.

L ARCH 362 Design of Cities (3) VLPA/I&S Introduction to the discourses and debates in the contemporary design of cities. Provides an overview of design theories and examples of historic and contemporary work. Includes discussion of the contesting urban processes: visions and paradigms of city; discourses of nature and the city; contemporary urban changes; public and community process; and everyday place making.

L ARCH 363 Ecological Design and Planning (3) NW Introduction to landscape ecological theory applied to urban environments. Comparison of different vocabularies used to describe landscape structure and function, from the fields of landscape design, urban design, and biology. Discussion of design theories that have sought to re-center landscape planning and design around the goal of achieving ecological sustainability.

L ARCH 401 Design Foundations Studio (6) Introduces site planning and design process, principles, and skills through experiential learning. Examines and applies landscape elements used to design, including plants. Activities foster skill in design process, shaping landscape form and space, creativity, communication, group dynamics, and organization. Includes required fieldtrips. Majors only. Offered: A.

L ARCH 402 Urban Sites Studio (6) Explores application of design ideas and principles to urban sites. Applies theory and research informing the design of human environments and lessons from urban and ecological design precedents to the

design of urban places. Includes design across scales to detailed site design studies, including planting design. Majors only. Offered: W.

L ARCH 403 Ecological Systems Studio (6) Project design studies related to ecological systems. Emphasizes the innovative use of ecological processes and patterns in design development to improve designed landscape's performance. Both biophysical and social criteria are used to define performance. Introduces computer-mapping applications. Majors only. Offered: Sp.

L ARCH 404 Advanced Studio I (1-6, max. 12) The advanced studio series employ a design as research approach to examine contemporary issues in landscape architecture that are culturally diverse, multi-scalar, and collaborative. The projects for each studio are distinct, however they all advance student's skills in design thinking, critical assessment, analysis, collaboration, and communication.

L ARCH 405 Advanced Studio II (1-6, max. 12) Studies of the landscape at various scales and in diversified contexts. Offers better understanding of visual components of landscapes, designer's capacity to evaluate and change these components, and resultant interaction with, and effect on, landscape user.

L ARCH 406 Individual Design Studio (6) Senior projects in landscape architecture; projects vary according to the student's particular emphasis and needs.

L ARCH 407 Advanced Studio III (1-6, max. 18) The advanced studio series employ a design as research approach to examine contemporary issues in landscape architecture that are culturally diverse, multi-scalar and collaborative. Each studio is geared toward advancing student's skills in design thinking, critical assessment, analysis, collaboration and communication.

L ARCH 411 Landscape Representation I (3) Introduces fundamental graphic and representation conventions, hand-drawing techniques, and media used in landscape architecture and environmental design. Emphasizes drawing and media skills that support design ability development. Includes lectures, demonstrations, display of examples,

drawing from slides, and in-class workshops.
Credit/no-credit only.

L ARCH 412 Landscape Representation II (1-3, max. 6) Development of advanced skills of visual representation to communicate students' visions for urban ecological design including techniques used during the design process and for presentation.

L ARCH 423 Plant Identification & Management (3) Plants and the soil in which they grow are the living materials that form the foundational palette from which landscape architects work to design and manage landscapes. Learn to identify plants, their ecology and understand their maintenance requirements. Provides students with the opportunity to gain insight into the field of botany, biological complexity of plants and their structural contributions to urban ecology.

L ARCH 424 Planting Design Seminar (3) Introduces and investigates the ecological and social functions behind planting design. Introduces conceptual methods to planting design using various 'lenses'. Discusses the relationship between planting plan graphics and their actual three-dimensional applications. Focuses on combining plants into a cohesive, artistic, and ecologically responsible design that responds appropriately to site conditions.

L ARCH 425 Advanced Planting Design Studio (1-6, max. 6) Advanced seminar/studio in planting design. Provides opportunity to explore ecological, technical, and esthetic principles for selecting plants to meet specific site conditions. Project types include historical sites, multifamily housing projects, plazas, landfills, and reclamation sites.

L ARCH 431 Landform Grading and Drainage (3) Introduces the concepts and methods behind grading and drainage and how they are used as design and problem-solving tools. Covers the relationship between grading and drainage plan graphics and their actual three-dimensional applications. Presents basic design principles. Considers the ecological and artistic approaches to grading and drainage. Majors only.

L ARCH 432 Materials, Craft, and Construction (3) Materials and material assemblies in landscape architecture. Material fundamentals, design,

detailing and construction techniques. Site-based material analysis and hands-on fabrication.

L ARCH 433 Design Implementation (3) Provides an understanding of essential considerations of design implementation and construction documentation in landscape architecture. Emphasizes the landscape architect's skill in preparing drawings and specifications and their role during bidding and construction. Includes production of a construction drawing set.

L ARCH 434 Urban Soils and Hydrology (3) Develops basic understanding and skills related to soil properties and their specification for use in horticulture and hydrological performance, and knowledge and skills needed by landscape architects to implement design solutions that manipulate urban hydrological conditions. Majors only. Prerequisite: L ARCH 331.

L ARCH 440 Digital Media I in Landscape (1-3, max. 3) Introduces digital applications and methodologies useful in landscape architectures' interpretive, iterative design, production, and presentation processes. Focuses on skills in 2D CAD, 3D visualization, graphic representation, and the integration of manual and digital techniques.

L ARCH 441 Digital Media II in Landscape (3) Explores Computer Aided Design as a powerful tool in landscape design, analysis, and visualization. Consists of four core units: 2D CAD drafting; digital terrain modeling; 3D solids and surface modeling; and visualization. Prerequisite: L ARCH 440

L ARCH 450 History of Environmental Design in the Pacific Northwest (3) VLPA Development of landscape architecture, architecture, and urban planning in the Pacific Northwest from nineteenth century to the present, with major emphasis on twentieth century. Open to nonmajors.

L ARCH 451 History of Environmental Design on the West Coast (3) VLPA Development of the environmental arts of landscape architecture, architecture, and urban planning from the eighteenth century to the present, with major emphasis on the twentieth century. Open to nonmajors.

L ARCH 454 History of Urban Landscapes and Environments (5) Explores the history and historiography of urban landscapes and the design of cities with an emphasis on North America in the context of the broader study of cities in China, Japan, and in the Western world from the pre-classical through twentieth centuries in Europe. Offered: S.

L ARCH 463 Urban Recreational Design (3) VLPA/I&S Special recreational studies in metropolitan, urban, and neighborhood areas; the design, policies, and behavioral studies of existing parks, playgrounds, public places, and commercial areas. Design projects dealing with the play environment for all ages. Open to nonmajors.

L ARCH 470 Landscape Architecture Tutorial (2, max. 6) Various aspects of project organization, programming, scheduling of workloads, graphic and verbal communication problems, data collection methods and interpretation, methodologies for landscape planting and design.

L ARCH 473 Professional Practice (3) Professional practice in private office, academic institutions, and public agencies. Evolution of landscape architecture as a profession, possible scenarios for future, variety of practice types and their relationships, ethical and legal/contractual responsibilities of a professional.

L ARCH 474 Design Build Studio I (1-6, max. 6) Detailed design studies of small-to-medium-scale projects. General focus on public landscape areas and social/psychological uses of site. Specific focus on design development and professional office presentation. Offered: W.

L ARCH 475 Design Build Studio II (1-6, max. 6) *Winterbottom* Students design and construct a community based project, synthesizing prior course instruction by going through the design process from concept to schematic design, creating construction documents, and implementing what they have designed. Offered: Sp.

L ARCH 476 Internship (1-6, max. 9) Working experiences at various levels of professional endeavor. Student apprenticeship in selected private offices and public agencies. Credit/no-credit only.

L ARCH 477 Landscape Architecture Consultancy Studio (3-6, max. 6) Simulation of the professional

relationship of the landscape architect as a consultant to University students in other design planning and management disciplines. Focus on site analysis, master planning, schematic designs and detailed design, working drawings, and planting plans associated with student projects.

L ARCH 481 Planning Urban Green Infrastructure Networks for Healthy Cities (5) Explores the planning of green infrastructures to maximize ecosystems services and support more compact and livable communities. Credit/no-credit only.

L ARCH 482 Designing High Performance Landscapes (5) Looks at ways to design 'high performance landscapes' that integrate ecological realities and urban infrastructural needs while expressing an aesthetic of performance. From site analysis to final design, provides hands-on experience in creating green infrastructure assets in the urban environment. Credit/no-credit only.

L ARCH 495 Landscape Architectural Studies Abroad (1-10, max. 30) Studies conducted under faculty supervision in various locations outside the United States.

L ARCH 498 Special Projects (1-10, max. 30) Special projects as arranged. Open to nonmajors.

L ARCH 499 Undergraduate Research (1-9, max. 9) Individual or small-group studies pertaining to special problems, theories, or issues of landscape architecture and environmental issues.

L ARCH 501 Advanced Studio IV (1-6, max. 18) The advanced studio series employ a design as research approach to examine contemporary issues in landscape architecture that are culturally diverse, multi-scalar, and collaborative. Each studio is geared toward advancing student's skills in design thinking, critical assessment, analysis, collaboration and communication. Credit/no-credit only.

L ARCH 503 Advanced Studio VI (1-6, max. 18) The advanced studio series employ a design as research approach to examine contemporary issues in landscape architecture that are culturally diverse, multi-scalar, and collaborative. Each studio is geared toward advancing student's skills in design thinking, critical assessment, analysis, collaboration, and communication. Credit/no-credit only.

L ARCH 504 Advanced Studio VII (1-6, max. 18) The advanced studio series employ a design as research approach to examine contemporary issues in landscape architecture that are culturally diverse, multi-scalar, and collaborative. Each studio is geared toward advancing student's skills in design thinking, critical assessment, analysis, collaboration, and communication. Credit/no-credit only.

L ARCH 505 Landscape Planning Studio (1-6, max. 6) *Yocom* Examines the theory and techniques of landscape planning across a wide range of spatial scales and contexts in the design process. Explores the application of planning techniques and technologies by a specific design or planning project. Offered: A.

L ARCH 506 Landscape Visual Resources (1-6, max. 6) Survey of existing theory/techniques and the generation of new methods to analyze, evaluate, plan, design, and manage the visual resources of the landscape.

L ARCH 507 Art and Landscape Studio (1-6, max. 6) Public art placed in, or developed for, specific landscape settings. Various aspects and benefits of public art, including materials, technologies, philosophies of landscape imagery and meaning. General planning criteria for location for maximum public benefit and identification of objectives for a specific site and artwork.

L ARCH 511 Visual Learning (3) Seminar/laboratory to develop visual learning processes and skills for applying these processes to landscape architecture. Related visualization concepts.

L ARCH 523 Landscape Technology (1-6, max. 6) Studio on rehabilitation of stressed urban landscapes. Focus varies but often deals with an analysis of the potentials in urban watershed and the study of alternative site designs for enhancing a range of landscape functions related to water quality. Taught by an interdisciplinary team.

L ARCH 552 History of Landscape Architecture (5) Surveys the development of landscape architecture as an art form and a practice across diverse cultures and places in the context of developing historiographical approaches and frameworks.

L ARCH 553 History of Modern Landscape Architecture (5) Focuses on building an historic and critical overview of modernism and modernist designs in the practice and discipline of landscape architecture. Focuses on critical readings of historical narratives to explore the emergence of theory in practice.

L ARCH 561 The Human Experience of Place (3) *Manzo* Uses interdisciplinary approaches to explore the reciprocal relationship between people and the landscapes of everyday life. Studies place attachment, relationships to nature, environmental attitudes and perception, personal space, territoriality, urban public space, diversity, participation, and the politics of space. Offered: A.

L ARCH 562 Landscape Art (2) Process of developing and placing artwork in specific landscape settings. Types of artwork and landscape settings; ways for artist and site designer to interpret, alter, and incorporate factors of landscape; viewer's perception and experience; examples of public and private support.

L ARCH 563 Ecological Design and Planning (3) *Yocom* Explores the contemporary theory supporting the practice of ecological design and planning. Examines the potential relationships between ecological theory and design applications, particularly in urban environments. Topics are supported by a diverse collection of examples and case studies. Offered: Sp.

L ARCH 564 Sustainable Urban Landscapes (2) *Rottle* Introduces contemporary literature on urban sustainability and provides a forum for discussion about theories, applications, and practices towards the planning and design of sustainable and ecological urban environments. Offered: A.

L ARCH 570 Landscape Architecture Theory and Scholarship (3) Covers the nature of scholarship and theory building in landscape architecture. Investigates scholarship related to the design process, design critique, research, and practice. Includes consideration of capstone project topics. Offered: W.

L ARCH 571 Landscape Architecture Research Methods (3) Introduction to and exploration of selected research methods employed in landscape

architecture research. Emphasizes how to apply research methods to a research question or problem. Includes exploration of data analysis and interpretation of research results.

L ARCH 572 Research Methods in Landscape Architecture (3) Introduction to and exploration of selected research methods employed in landscape architecture research. Emphasizes how to apply research methods to a research question or problem. Includes exploration of data analysis and interpretation of research results.

L ARCH 590 Seminar in Landscape Architecture (1-3, max. 12) Advanced topics in landscape architecture with focus on unpublished areas of research.

L ARCH 598 Special Topics (1-6, max. 30) Systematic study of specialized regional landscape subject matter, including history, technology, implementation, and other topics depending on current interest/needs. Topics vary and are announced in the preceding quarter.

L ARCH 600 Independent Study or Research (*-)

L ARCH 601 Internship (1-6, max. 9)

L ARCH 700 Master's Thesis (*-)

L ARCH 701 Thesis Studio (1-6, max. 12) Studio designed to support students' independent thesis research and design process by providing a structured framework for regular meetings, studio reviews, peer/committee/guest critiques, and process reflections. Credit/no-credit only.

L ARCH 702 Capstone Project Studio (1-6, max. 12) Way Capstone group project studio. Credit/no-credit only.

L ARCH 703 Group Project (1-6, max. 12) Credit/no-credit only. Offered: AWSp.

REAL ESTATE

R E 250 Introduction to Real Estate (3) *Matthew Disston* Introduction to the real estate profession focusing on the participants and processes as well as

real estate decision making by buyers and sellers. Offered: AWSp.

R E 361 Property Transactions (3) I&S Introduction to real estate transactions, standard contractual documents, the role of title insurance, and the closing process. Prerequisite: R E 250. Offered: Sp.

R E 363 Real Estate Development Process (3) I&S *Matthew Disston* Real estate development sits at the heart of the built environment, interacting with urban planners, landscape architects, architects, financiers, construction managers and end users. An understanding of the key decision making that underpins development is a vital part in understanding what is developed, where and when. Prerequisite: R E 250. Offered: W.

R E 400 Accounting for Real Estate (3) Basics of real estate taxation, accounting, and profitability measures. Prerequisite: R E 250. Offered: W.

R E 401 Housing Markets and Policy (3/5, max. 8) I&S Aims to provide students with the tools to assess housing problems. Studies housing markets in a dynamic context, with emphasis placed on demand and supply drivers. Examines the justifications for and the basis of public sector involvement in the housing market and describe and evaluate the main policy mechanisms used such as regulation of private renting or the provision of affordable housing. Offered: A.

R E 411 Real Estate Valuation and Appraisal (3) I&S Every property is unique, therefore the appraisal of real estate presents many challenges and has a strong influence on the financial viability of both existing buildings and the development process. General models for valuing commercial property, industrial property, and land will be introduced. The role of appraisals and different concepts of value will be examined. Prerequisite: R E 250. Offered: ASp.

R E 413 Real Estate Finance and Investment (4) QSR Introductory class to real estate finance. Considers the financing of developments, investment in commercial properties as well as the residential mortgage market. Considers how real estate differs from other assets and how to analyze the attractiveness of investment opportunities. Prerequisite: R E 250. Offered: AW.

R E 416 Real Estate Economics and Market Analysis

(4) Introduces students to basic elements of real estate markets studies for different uses. Includes basic steps regardless of real estate use, followed by analysis of data sources, public policy issues affecting cities and their economy, and resources available to analyze different market patterns. Prerequisite: R E 250. Offered: W.

R E 431 Real Estate Portfolio Management (3) QSR

Focuses on the development and implementation of active and passive portfolio management strategies for institutional quality real estate investment portfolios. Modern portfolio theory and other tools are used to establish real estate allocation in a mixed-asset context; and to manage real estate portfolios among investment and financial structures spanning private/public, equity/debt, property type and geographic/economic regions. Prerequisite: R E 250; recommended: R E 465 or general finance course. Offered: ASp.

R E 459 Risk and Reward in Sustainable Development (3) I&S

Focuses on the intersection of green, high performing buildings and the law. Students learn to identify and understand the risks and challenges presented by high performing buildings, and analyze frameworks and strategies to manage and overcome these challenges. Prerequisite: R E 250. Offered: Sp.

R E 464 Affordable Housing (4) I&S, DIV *Rebecca J. Walter*

Introduction to the field of affordable housing. Addresses issues inherent in planning, finance, design, construction, and management of affordable housing in the United States. Examines the role of federal, state, local, non-profit, and private sector agencies and participants. Prerequisite: R E 250. Offered: W.

R E 465 Introduction to Real Estate Finance (3) QSR

Introductory class to real estate finance. Considers the financing of developments, investment in commercial properties as well as the residential mortgage market. Considers how real estate differs from other assets and how to analyze the attractiveness of investment opportunities. Offered: AW.

R E 466 Advanced Housing Studies (4) I&S,

DIV *Gregg Colburn* Advanced survey of housing. Students select a housing-related topic that serves

as the basis of a quarter-long project. Also, students read key texts and articles on a range of housing-related topics and participate in seminar discussions on these readings. Prerequisite: R E 250; R E 401; and R E 464. Offered: W.

R E 480 Professional Development Seminar (2, max. 4)

Prepares students to become real estate professionals by exposing them to a range of career options and accompanying them in developing their professional project as they apply for internships and jobs. Offered: AWSp.

R E 490 Independent Study (1-3, max. 3)

Arranged between the student and a real estate faculty member of their choosing with a mutually agreed real estate topic. Prerequisite: R E 250. Offered: AWSp.

R E 497 Real Estate Data Modeling (4) I&S

Covers a variety of different issues that arise when analyzing and modeling land, residential, and commercial real estate markets. Uses GIS and teaches students how to collect, clean, use, manage, and model a variety of data sets to make real-world decisions. Suitability and exploratory spatial data analyses will be covered in the course. Prerequisite: R E 250 and R E 416. Offered: ASp.

R E 506 Quantitative Methods in Real Estate (4)

Provides an overview of different data collection methods, basic statistical techniques and their appropriate application based on the size and type of various real estate and socioeconomic dataset. Students determine the appropriate method based on specific objectives and critically assess their findings. No previous knowledge of statistics is required, and all applications will be on Excel and open source software. Offered: A.

R E 507 Accounting for Real Estate (3)

Provides an overview of basic accounting concepts and emphasizes tax and accounting methodologies in relation to the development and management of real estate assets. Topics include: understanding balance sheets; income statements; annual reports; GAAP accounting and standards; and federal and real estate property taxation. Offered: A.

R E 508 Financial Modeling for Real Estate I - Excel

(2) *Gregg Colburn* Introduces students to commercial real estate modeling, use of Excel and

handheld financial calculators. Allows students to gain mastery and confidence in setting up and using pro-formas and models to analyze real estate investment, asset management, and development. Offered: A.

R E 509 Financial Modeling for Real Estate II (2) C.
Tu Introduces students to commercial real estate modeling, using advanced and sophisticated software utilized by real estate professionals. The students gain mastery and confidence in setting up and using pro-formas and models to analyze real estate investment, asset management, and development. Offered: W.

R E 510 Introduction to Real Estate (3) S. *DERMISI*
Provides a basic overview of the participants, processes, workings of different components of the real estate industry (including a variety of uses spanning from residential, office, retail and industrial to specialized) as well as the quantitative components of the real estate decision-making. Additionally, students are introduced to an overview of construction management, sustainability, corporate services, property law and ethics. Offered: jointly with URBDP 552; A.

R E 511 Real Estate Valuation and Appraisal (3)
Timothy E Overland Every property is unique, therefore the appraisal of real estate presents many challenges and has a strong influence on the financial viability of both existing buildings and the development process. General models for valuing commercial property, industrial property, and land will be introduced. The role of appraisals and different concepts of value will be examined. Offered: jointly with URBDP 555; A.

R E 512 Leadership in the Built Environment (3)
Focuses on leadership principles applicable to the real estate and the built environment and helps students conduct self-assessments to understand their strengths and ways they can apply them. Addresses both organizational leadership and leadership of construction processes. Offered: A.

R E 513 Real Estate Finance and Investment (4)
Simon A W Stevenson Introduces students to basic real estate finance and institutional analysis allowing them to quantify the financial implications of real estate decisions. Topics include: basic time value of money, financial leverage, discounted cash flow

analysis (properties and institutional portfolios), assessment of various real estate investment classes and distribution of proceeds to investors. Prerequisite: R E 552/URBDP 552. Offered: jointly with URBDP 554; W.

R E 514 Negotiations and Conflict Resolution in the Built Environment (3) P. *McCabe* Overview of negotiation theories, approaches and tactics. Application of deal making procedures for various aspects of real estate decision making processes and audiences (e.g. government, community groups, real estate organizations and partners). Analysis of conflict resolution techniques, mediation, arbitration, etc. Offered: W.

R E 515 Real Estate Law (3) J. *Fandel, S. Osborne*
Focuses on the legal principles and issues essential to understanding the workings of the real estate industry, including the fundamentals of real estate transactions and development projects. Offered: jointly with URBDP 557; W.

R E 516 Real Estate Economics and Market Analysis (4) Arthur Acolin Introduces students to real estate market studies for different uses. Covers five areas: basic economic concepts critical in the understanding of real estate markets; urban economy; land rent theory; locational analysis and decision making; and market analysis. Offered: jointly with URBDP 516; Sp.

R E 517 Real Estate Asset Management (3) P. *Stone*
Focuses on the fundamentals and structure of asset management from a value improvement perspective. Students are educated on the proactive manner asset managers need to respond to changing tenant needs and competitive market condition, while focusing on the asset appreciation throughout the ownership cycle (acquisition, leasing and disposition). Offered: jointly with URBDP 551; Sp.

R E 518 Best Practices in Sustainable Real Estate (3)
S. DERMISI Analyzes, at a macro level, the importance of sustainability in urban areas introducing best practices for various environmentally friendly and financially feasible interventions in the US and abroad. At a micro level focuses on adoption of environmentally friendly improvements at building level with various pay-

back periods but long-lasting economic benefits.
Offered: W.

R E 519 Real Estate Data Analytics and Visualization

(3) Covers techniques for visualizing data, creating data structures, and implementing performance metrics. Provides an overview of ways datasets can be visualized across various software. Prerequisite: R E 506, URBDP 520, or a basic R software course. Offered: A.

R E 530 Corporate Real Estate (3) Kelli E Leith

Emphasizes the understanding of ways real estate footprint can be a factor in attaining the vision/mission of a corporation. Analyzes principles of corporate real estate, key activities and internal relationships, customer motivation, drivers, client based strategic approaches as well as the industry evaluation process including reporting and client deliverables. Offered: A.

R E 531 Real Estate Portfolio Management (3)

Focuses on the development and implementation of active and passive portfolio management strategies for institutional quality real estate investment portfolios. Modern portfolio theory and other tools are used to establish real estate allocation in a mixed-asset context; and to manage real estate portfolios among investment and financial structures spanning private/public, equity/debt, property type and geographic/economic regions. Offered: A.

R E 532 Real Estate Project Management (3) S.

DERMISI Focuses on the on real estate and construction project management. Topics include: types of project managers, sources of conflicts, organizational structures, delivery methods, construction scheduling, SWOT analysis, ways to mitigate threats to their project. Includes hands on exercises and an introduction of MS Project software. Offered: A.

R E 540 Advanced Real Estate Finance and

Investments (3) Arthur Acolin Covers both private and public forms of investment, along with debt and equity positions. Introduces students to real estate investments and the risk/reward trade-offs associated with various deal structures and relationships with financial institutions. Also covers real estate indices and tools to assess transaction risks. Offered: Sp.

R E 541 Real Estate Capital Markets (3) S. Stevenson

Analyses capital flows (global and national) and emerging capital market trends that affect the industry. Pays special attention to securitized real estate, including Real Estate Investment Trusts, and Commercial Mortgage-Backed Securities. Offered: jointly with URBDP 579; A.

R E 542 Private - Public Project Finance (3) H. Oliver

Explores creative ways of project financing through public and private partnerships in the form of incentives (e.g. TIF, LIHTC, Brownfield development incentives, etc.) currently offered by different government levels throughout the USA. Prepares to identify the incentives for a project and structure a deal package based on a project's parameters. Offered: A.

R E 550 Real Estate Development (4) H. Oliver

Introduction and survey of processes and people involved in developing real estate, including issues of site control, public/private approvals, feasibility analysis, project financing, design/construction, marketing, and asset management. Prerequisite: R E 552/URBDP 552. Offered: jointly with URBDP 578.

R E 551 Real Estate Development Studio ([2-5]-,

max. 5) The Real Estate Development studio is a required for the MSRE option in RE Development. The focus of the course has been traditionally on competitions. The course will continue to focus in commercial real estate competitions (NAIOP) and projects in the autumn quarter, however a focus on affordable housing will be the emphasis while pursuing the Bank of America's affordable Housing Challenge in the winter and spring quarter. Offered: jointly with URBDP 513; AWSp.

R E 552 Real Estate Careers and Professional Development (3)

Prepares students for future careers in real estate. Helps students understand their core competencies, areas of real estate they could utilize them, and how to prepare and present themselves to future employers. Students practice effective communication tools to apply in real estate companies of various scales, and professional and cultural backgrounds. Offered: W.

R E 553 Urban Land Economics (4)

Introduces urban economics, land markets, and locational decision making; and examines urban spatial structure and the economic, political, social, technological, and

historical forces that shape land values and uses. Uses applied spatial analytical tools including geographic information systems and geogemographic software. Offered: jointly with URBDP 553; A.

R E 556 Real Estate Investment (4) Focuses on direct real estate investment based on the productive capacity of the total property, debt, and equity components and their impact on the cash returns in the form of positive returns to the property, tax savings potential, alternative leverage effects, and the gains at sale. Offered: jointly with URBDP 556; W.

R E 558 Real Estate Market Analysis (4) Prepares students to conduct and interpret market studies to cover a range of real estate decisions. Exposes students to the market analysis process and various tools and techniques that can be used to analyze and forecast supply, demand, and rental rates. Offered: jointly with URBDP 558; W.

R E 559 Risk and Reward in Sustainable Development (3) Focuses on the intersection of green, high performing buildings and the law. Students learn to identify and understand the risks and challenges presented by high-performing buildings, and analyze frameworks and strategies to manage and overcome these challenges. Offered: jointly with LAW E 534; Sp.

R E 560 Real Estate Feasibility (4) Applies critical thinking needed to understand the drivers of value of the major property types which covers the "user in search of a site" and "investor in search of involvement" feasibility questions. Applies a combination of qualitative and quantitative analysis to target markets. Offered: jointly with URBDP 568; Sp.

R E 563 Housing Markets and Policy (3/5, max. 8) *Arthur Acolin* Provides students with the tools to understand housing markets, the policies in place to support housing production and remaining frictions. Emphasizes the link between housing finance systems and housing market outcomes with a focus on the US mortgage system and products. Incorporates international components to analyze factors that underlay differences and similarities in housing markets in selected countries.

Recommended: introduction to microeconomics; introduction to finance. Offered: A.

R E 564 Affordable Housing (4) *Rebecca J. Walter* Introduction to the field of affordable housing. Addresses issues inherent in planning, finance, design, construction, and management of affordable housing in the United States. Examines the role of federal, state, local, non-profit, and private sector agencies and participants. Offered: W.

R E 565 Advanced Housing Studies (4) *Gregg Colburn* Advanced survey of housing. Students select a housing-related topic that serves as the basis of a quarter-long project. Also, students read key texts and articles on a range of housing-related topics and participate in seminar discussions on these readings. Offered: W.

R E 566 Real Estate Market Evolution and Disruption (3) Provides an overview of how the use of technology in real estate is disrupting the traditional way of doing business. Students explore how property technology, from Artificial Intelligence (AI) to the Internet of Things (IoT), are affecting real estate. Also covers how real estate decision making is changing based on the shared economy, financial technology, blockchain and real estate asset tokenization. Offered: A.

R E 569 Real Estate Portfolio Management (5) Students develop formal portfolio management strategies that draw on their in-depth understanding of real estate fundamentals, strategic planning and portfolio theory. Working in teams, students prepare cutting-edge portfolio strategies including the policies and procedures for implementation and portfolio management. Offered: jointly with URBDP 559; Sp.

R E 570 Real Estate Project Finance (3) Introduces financing real property projects developed by public, community, and private entities with a primary emphasis on interim (acquisition/development/construction) and take-out lending for new real estate projects. Offered: jointly with URBDP 577; Sp.

R E 590 Real Estate Forum I (1) Provides an opportunity for students to learn about the interdisciplinary nature of real estate from industry leaders. Discusses current issues and opportunities

in the industry as well as what it takes to develop a sustainable career path. Offered: jointly with URBDP 590; A.

R E 597 Real Estate Data Modeling (4) *Rebecca J. Walter* Covers a variety of different issues that arise when analyzing and modeling land, residential, and commercial real estate markets. Uses GIS and teaches students how to collect, clean, use, manage, and model a variety of data sets to make real-world decisions. Suitability and exploratory spatial data analyses will be covered in the course. Offered: AWSp.

R E 598 Real Estate Special Topics (1-4, max. 12) *A. Hurd* Systematic study of specialized subject matter. Prerequisite: permission of instructor. Offered: AWSpS.

R E 600 Independent Study or Research (1-3, max. 3) Arranged between the student and a real estate faculty member of their choosing with a mutually agreed real estate topic. Offered: AWSp.

URBAN DESIGN AND PLANNING

COMMUNITY, ENVIRONMENT, AND PLANNING

CEP 200 Introduction to Community and Environmental Planning (5) *I&S Campbell* Introduction to central themes of major. Opportunities to engage in community action and planning process, while developing ecological literacy. Lectures, discussions, and critical writing exercises combine to increase knowledge and interest in these fields. Emphasis on developing community of learners in and out of classroom setting. Offered: AW.

CEP 300 CEP Retreat (1, max. 4) Focuses on planning analysis assessment and development of the major. Opportunities for community building and all-major policy deliberation and decisions. Workshops for skill building in consensus, facilitation, and for major-specific activities such as developing individual study plans and study abroad experiences. Prerequisite: Majors only. Credit/no-credit only. Offered: ASp.

CEP 301 The Idea of Community (5) *I&S Campbell* Theories of community and communal rights and

responsibilities. Experience building a learning community within major. Explores struggles for community in every sector of life. Offered: A.

CEP 302 Environmental Response (5) *I&S/NW Miller* Explores issues of environmental crisis and societal responses. Readings and reflective analysis from broad selection of authoritative sources to develop grounded perspective in ecological literacy and consciousness. Concurrently, experiential education in challenges and practical responses to building sustainable society through participation in community-based environmental effort. Offered: W.

CEP 303 Social Structures and Processes (5) *I&S Abramson, Born, Curry* Investigates use of formal and informal social structures and processes within context of community and environment. Looks at patterns and institutions of social organization and relationships among different sectors. Issues of interrelatedness, citizenship, knowledge, and communication. Offered: Sp.

CEP 400 Governance Practicum (1, max. 6) *Campbell* Emphasizes personal and collective leadership, democratic decision making, and learning through direct action and reflection. Explores and develops students' personal skills as doers and leaders, while also learning how to form and function as effective groups. Credit/no-credit only. Offered: AWSp.

CEP 446 Internship (5, max. 10) *Ryan* Connects core and individual courses with field work. Group and individual readings develop understanding of how students' internships and field placements constitute particular element of community and environmental planning. Explores how what we do for a living is part of our lives as citizens and public service. Credit/no-credit only. Offered: AWSpS.

CEP 460 Planning in Context (5) *I&S D. ABRAMSON, B. BORN, M. CURRY, J. STERRETT* Examines theory against backdrop of practice for broad historical understanding of social, political, environmental planning. Critique from viewpoints, e.g., planning history, ethics, ecofeminism, environmental justice, class and capitalism, planning and global economy. Develop personalized history reflecting individual experience, professional experience, and philosophical heritage of planning profession. Offered: A.

CEP 461 Ethics and Identity (5) VLPA/I&S Purcell

Examination of personal, societal, vocational, environmental, planning ethics. Readings and discourse on ethical foundations for public life. Individual and group readings on values, human potential. Develops understanding of ecological context, moral responsibility, self-awareness. Constructs positive, diverse view of humanity, environment regardless of race, gender, ethnicity, beliefs. Offered: W.

CEP 462 Community and Environment (5)

I&S Campbell, Ryan Capstone quarter merges core seminars, disciplinary courses in major, community field experiences for mastery of personal knowledge and skills. Reflection and synthesis of themes in major; engagement with contemporary issues. Compares theoretical definitions of community and environment with individual philosophies and knowledge within thoughtful, applied context. Offered: Sp.

CEP 470 Tools for Sustainable Cities (4) Examines specific tools used for planning sustainable cities, including hands-on learning, speakers, case studies, and site tours to enrich students' knowledge and experience. Prerequisite: CEP 200 or URBDP 300. Instructors: Sterrett Offered: SpS.

CEP 473 Digital Design Practicum (5) I&S/VLPA Uses digital technologies for mapping, drafting, modeling, and communication. Includes real-world case study projects that focus on urban design and planning issues.

CEP 490 Senior Project Prep Seminar I: Research and Project Scoping (1-3) Supports the conceptualization and planning of senior project/capstone work. Focuses on selecting a project, beginning a literature review, finding a mentor, and developing a plan. Credit/no-credit only.

CEP 491 Senior Project Prep Seminar II: Methods and Actualization (1-3) Focuses on implementing the senior project/capstone, including revisions and updates as seen fit. Credit/no-credit only.

CEP 498 Special Topics (1-9, max. 15) I&S Systematic study of specialized subject matter.

CEP 499 Undergraduate Independent Study or Research (1-5, max. 10) Individual reading, research, fieldwork, other special project approved and supervised by faculty adviser most appropriate for the project proposed. Credit/no-credit only. Offered: AWSpS.

INFRASTRUCTURE PLANNING AND MANAGEMENT

IPM 500 Strategic Planning and Policy Analysis (3)

Provides a suite of analytic and group process tools for harnessing the energy and potential of an organization to implement selected policies. Provides a framework for examining vexing societal issues, developing alternative policies to address them, and analyzing their effects and costs.

IPM 501 Comprehensive Emergency Management (3)

Freitag Covers the principles and practices of risk reduction, presenting disasters as realized risk and benefits as realized opportunities. Provides the ability to use emergency management approaches and tools, along with insights into intergovernmental programs and relationship and their broader social context. Offered: S.

IPM 502 Introduction to Infrastructure Systems (3)

Introduces infrastructures; systems thinking; the history, basic concepts, legal frameworks, politics, processes, and techniques used in infrastructure systems courses; and climate change as emerging yet lasting phenomenon. Includes overview of IPM online learning environment.

IPM 503 Infrastructure Finance (3)

Covers how to pay for infrastructure, including planning, budgeting, and public/private partnerships. Examines the relationships between infrastructure finance, urban form, and sustainability; local government finance, budget accountability, and equity issues; and infrastructure investments in changing economic climates, forms of finance available for infrastructure, collective decision-making, and alternative forms of project delivery. Offered: S.

IPM 504 Applied Geo Spatial Analysis (3)

Provides the theoretical and practical skills needed to use a Geographic Information System (GIS) for analyzing spatial phenomena on the urban and regional scale. Focuses on principles and methods of spatial analysis

and their application to strategic planning, risk management, and hazard mitigation.

IPM 505 Climate Change and Infrastructure (3)

Sterrett Takes an in-depth look at climate change and examines each of the six major infrastructure systems in relationship to climate change phenomena. Includes climate change causes and effects; global, national, state, and local mitigation and adaptation strategies; and mitigation and adaptation strategies for infrastructure systems. Offered: Sp.

IPM 506 Energy Systems (3) *Markos, Swayne*

Explores energy systems as infrastructure critical to the national and global economies; provides an overview of energy resources, production, and delivery. Examines elements of energy infrastructure, how energy systems function, global energy consumption and environmental considerations, and the history and influence of energy sector regulation and adaptation to changing markets. Offered: A.

IPM 508 Risk Assessment and Business Continuity (3)

Provides an introduction into how organizations ensure they will survive disasters. Covers the concepts and tools organizations use to survive, and applies them to government and private systems, including energy, water, food, transportation, public health, and communications.

IPM 509 Communications and Cyber Infrastructure Systems (3) *Endicott-Popovsky*

Explores communications and cyber infrastructure systems, including a variety of systems that are interconnected through public networks. Provides insight into how natural and human-made stresses on infrastructure are amplified and exacerbated by the presence of networks that increase the interdependence of infrastructure. Offered: S.

IPM 510 Water Systems (3) *Roderick* Water and water supply as a system element. Water and especially freshwater, as an essential and limited resource. Looks at aging water infrastructure; user conflicts; changes in water distribution tied to climate changes; intergovernmental policy, programs, and relationship; management strategies and tools; and their effect on water and water supply. Offered: W.

IPM 511 Food Systems (3) *Born* Food systems as a part of infrastructure. Why they matter for planners and policy makers; current production models; global trade and localization responses, policy approaches to hunger alleviation and food access; emerging concerns around food and climate change; land use issues, food justice, and governmental responses to food system concerns. Offered: W.

IPM 512 Public Health Systems (3) Survey of issues surrounding private and public health-care systems in relation to emergency health-care services.

Includes health-care cultures, critical communication, government funding, emergency preparedness, and psychological recovery from major traumatic events.

IPM 513 Capstone A: Research Design (3)

Whittington First of two culminating courses to support students in the development of a capstone project that demonstrates the combination of skills and knowledge accrued in the MIPM program. Students select a topic, develop a research design, and begin conducting the research for their project. Offered: Sp.

IPM 514 Transportation Systems (3) Explores transportation systems that move both people and freight on land, water, and in the air and that are critical to keeping the economy of the United States functioning as infrastructure that will be notably impacted by global climate change. Discusses the relationship between the public and private sectors.

IPM 515 Capstone B: Implementation (3) Second of two culminating courses to support students in the development of a capstone project that demonstrates the combination of skills and knowledge accrued in the MIPM program. Students complete their research and the project, and present to faculty and peers. Prerequisite: IPM 513. Instructors: Whittington Offered: S.

IPM 516 Community Resilience (3) *Himanshu Grover, Robert Freitag* Applies a resilience lens to stressed communities. Students apply resilience concepts to real world communities and infrastructures impacted by real events, and gain practice in supporting policies, programs, and projects that enhance overall resilience. Offered: Sp.

IPM 517 Specialized Planning Laboratory (6) Studio and field projects related to a specialized planning problem associated with floodplain management. Offered: S.

IPM 518 Legal and Administrative Framework for Planning (3) Reviews political, legal, and administrative institutions closely related to the floodplain planning process. Examines issues related to devolution of authority and public representation and participation. Covers the legal basis for planning and associated regulation relevant to floodplain management. Offered: S.

IPM 520 Floodplain Management Seminar I (2) Focuses on floodplain management issues, providing context for those new to the field and offering experienced practitioners an opportunity to engage professional experts on emerging concerns. Addresses opportunities to use social media in managing floodplains as well as fundamental science/tools relevant to the field. Offered: S.

IPM 521 Floodplain Management Seminar II (2) Focuses on current floodplain management issues and examines the application of new approaches to the field. Offers experienced practitioners an opportunity to engage professional experts while also relating leadership and conflict resolution skills to the application of floodplain management approaches. Prerequisite: IPM 520. Offered: S.

IPM 522 Geomorphology in Floodplain Management and Landscape Design (3) Covers geologic and geomorphological processes of rivers, floodplains, and coastal areas in context of landscape planning. Lectures, laboratory exercises, and field trips emphasize understanding fundamental physical landscape process and its application to landscape planning with an emphasis on management of flood-prone areas. Offered: S.

IPM 523 Ecological Processes in Coastal and Floodplain Management (2) Examines hydrologic, biologic, and ecological concepts of rivers, floodplains, and coastal areas in the context of floodplain management and landscape planning. Lectures, laboratory exercises, and field trips emphasize understanding fundamental processes and methods and their application to planning and management. Offered: S.

IPM 528 Floodplain Management and Planning for River Population (3) Focuses on the systematic study of floodplain management processes and strategies for near river communities. Offered: S.

IPM 598 Special Topics (1-6, max. 12) Systematic study of specialized subject matter. Topics vary for each quarter, depending upon current interest and needs. Prerequisite: permission of instructor. Offered: AWSpS.

IPM 600 Independent Study or Research (*) Directed Study. Topics determined according to program needs. Offered: AWSpS.

URBAN PLANNING

URBDP 200 Introduction to Urbanization: Planning and Designing Alternative Urban Futures (5) I&S Introduces how cities work and explores alternative ways of planning and designing urban futures. Explores the economic, cultural, political, and social aspects of cities and how we might change them for the better. Also examines numerous case studies from the Global North and South.

URBDP 300 Introduction to Urban Planning (5) I&S Principles and theories of urban structure and institutions. Concepts and logic of planning as a community process and a professional activity. Evolution of planning ideas in response to changing social, economic, and environmental conditions within the American political framework. Complementary nature of public and private responsibilities. Major procedures used by planners.

URBDP 301 Database Management Fundamentals (3) Introduces the tasks and roles that contribute to the management of the design and security of database systems in an organizational context. Students gain a basic understanding of database management systems and administrative practices, as well as hands-on database experience. Credit/no-credit only.

URBDP 370 Reading the City (5) VLPA/I&S Comprehending cities as reflection of individual reader and social/cultural context. Skills for analyzing everyday, visible evidence of the city. Topics include self-identity with place, city, image and perception, visual design analysis; and place as

representation of culture. Extensive writing, multiple texts, collaborative work in groups and fieldwork.

URBDP 404 Introduction to Geographic Information Systems (3) Provides students with introductory practical knowledge of Geographical Information Systems and Science for current and future coursework in urban planning.

URBDP 405 The Urban Form (3) VLPA Elements, patterns, and evolution of urban form. The forces that shaped cities in history. Contemporary trends. Methods of urban morphological analysis as related to urban design and planning practices. Required for MUP graduate students.

URBDP 422 Urban and Regional Geospatial Analysis (5) Principles of GIS applied to problems in urban design and planning, landscape architecture, and environmental and resource studies. Practical problem-solving approaches using contemporary desktop mapping packages and vector and raster GIS systems. Siting, environmental evaluation and inventories, and modeling. Prerequisite: either GEOG 317, GEOG 360, GEOG 461, GEOG 462, GEOG 465, FISH 452, or OCEAN 452. Offered: W.

URBDP 423 Introduction to Urban Design (3) VLPA/I&S Definitions and examples of urban design; heritage of urban design; theories of city building; the role of urban design in the fields of architecture, landscape architecture, and urban planning. Offered: Sp.

URBDP 424 Site Planning: Issues and Techniques (3) Introduction to site planning; how it is regulated; why it is important to know; and how to carry out its key tasks, including residential subdivision and mixed-use development layout; basic topographical and hydrological analysis and manipulation; roadways, parking and hierarchies of circulation, and site design detail. Offered: Sp.

URBDP 446 Practical Experience (4, max. 8) Off-campus internship under academic supervision in situations useful to the education of planners, such as public/private planning and design offices, projects related to the environment, cross-cultural matters, and decision making. Assistance in identifying appropriate projects.

URBDP 450 Introduction to Land Use, Growth Management, and Environmental Planning (3)

Provides an understanding of contemporary land use issues (including sprawl, smart growth, new urbanism, transit-oriented development, and Washington's Growth Management Act) and examines their environmental impact and social welfare implications. Analyzes best-practice techniques of growth management.

URBDP 451 Housing (3) I&S Survey of housing and redevelopment problems, theories, standards, and practice. Development of public policies, finance, technological considerations, social factors, and priorities. Prerequisite: 3.0 in URBDP 300.

URBDP 457 Housing in Developing Countries (3)

Emphasis on role of the design and planning professional in housing delivery in developing countries. Exploration of issues of culture, political environment, social context, economic circumstances, and other factors which define and limit the manner in which the professional planner and designer can and should function.

URBDP 466 Infrastructure and Community Facilities (4)

Issues and methods associated with planning for parks, schools, drainage, sewerage, utilities, libraries, solid waste, and transportation. Covers their relationship to comprehensive plans, project permitting, and impact assessment. Financing, regulating, and relationships to social, environmental, and economic goals are discussed.

URBDP 467 Urban Planning Uses of Remote Sensing (3)

Using aerial photographs and satellite image data in urban planning. Urban change analysis, land-use and land cover classification, and environmental planning applications. Scale and resolution considerations. Development of proficiency through laboratory exercises and use of image-processing software.

URBDP 480 Planning as a Profession (1)

Provides students interested in the planning profession an opportunity to understand the different pathways and career choices within the profession. Introduces students to guest professionals in various planning careers and highlight key issues, skills used, and tips to entering the field. Focuses on professional practice rather than analytical methods or theory. Credit/no-credit only.

URBDP 481 Metropolitan Planning and Development in Developing Countries (3) I&S

Examination of the nature and causes of urban planning and management problems in developing countries and exploration of alternative approaches to solve some of these problems.

URBDP 498 Special Topics (1-9, max. 15) Systematic study of specialized subject matter. Topics for each quarter vary, depending upon current interest and needs, and are announced in the preceding quarter.

URBDP 499 Special Projects (1-12, max. 12)

Independent/tutorial study for undergraduates. Individual reading, research, fieldwork, or other special project, outlined in advance, approved by, and under the direction of, the faculty adviser most appropriate for the project proposed.

URBDP 500 Survey of Urban Planning (4)

Concepts and logic of planning as a professional activity. Evolution of guiding ideas in relation to changing social, economic, and environmental conditions within the American political framework. Major procedures used by planners. Critical appraisal. Open to graduate students in urban design and planning and to graduate students in architecture seeking the urban design certificate.

URBDP 501 Comprehensive Planning and Implementation (4)

Reviews the comprehensive planning process as a part of managing metropolitan growth. Examines federal/state statutes affecting local government comprehensive plans. Includes local government land use regulations and reviews development process. Concentrates on tools to shape land use and development patterns and their effectiveness in creating outcomes specified in comprehensive plans. Offered: W.

URBDP 502 Tools for Sustainable Cities (4)

Examines specific tools used for planning sustainable cities, including hands-on learning, speakers, case studies, and site tours to enrich students' knowledge and experience. Prerequisite: CEP 200 or URBDP 300. Offered: W.

URBDP 503 Communication and Analysis (3)

Development of communication skills understanding within the planning and design process. Presentation of communications as a design process with mental, visual, oral, written, and kinesthetic cognitive actions

combined to form communications thinking. Offered: W.

URBDP 504 Introduction to Geographic Information Systems (3)

Provides students with introductory practical knowledge of Geographical Information Systems and Science for current and future coursework in urban planning.

URBDP 505 The Urban Form (3)

Elements, patterns, and evolution of urban form. The forces that shaped cities in history. Contemporary trends. Methods of urban morphological analysis as related to urban design and planning practices. Required for MUP graduate students.

URBDP 506 Planning Studio Prep (3)

Introduces plan-making process, provides time for background research, issue identification, public involvement, and preliminary analysis.

URBDP 507 General Urban Planning Laboratory (5)

Studio/field project in applied professional planning of a comprehensive nature, utilizing a local study area to examine the realities of problem solving in situations of functional and normative conflict. Integration of analysis, programming, implementation, and presentation phases of the planning process.

URBDP 508 Specialized Planning Laboratory (5, max. 10)

Studio/field project on a specialized planning problem. Several options are offered each year, such as regional-environmental planning, housing, metropolitan planning, and urban design. Prerequisite: ARCH 500 and ARCH 507. Additional prerequisite for some sections: urban planning seminar or lecture courses.

URBDP 509 Resources for Urban Planning (1)

Provides an opportunity for students to explore and discuss issues of professional practice with practicing planners in an informal context. Questions posed by the participants usually emphasize practical aspects of working as planners. Credit/no-credit only.

URBDP 510 Theories and Methodologies of Planning I (4)

Survey of the philosophy, methods, and analytical techniques used in planning public actions and policies, with emphasis on the logic and assumptions upon which these are based. Various planning surveys and methods. Open to graduate

students in urban design and planning and to graduate students seeking the urban design certificate. Prerequisite: URBDP 500.

URBDP 512 Research Seminar (3) Planning, designing, and undertaking applied research in an urban setting. Framing, critically assessing, managing, and presenting research used in urban planning and design. Conceptual modeling of causal relationships, choice among experimental and quasi-experimental designs, and ethical and political implications of research undertakings. Exercises leading to a complete research design.

URBDP 513 Real Estate Development Studio ([2-5]-, max. 5) The Real Estate Development studio is a required for the MSRE option in RE Development. The focus of the course has been traditionally on competitions. The course will continue to focus in commercial real estate competitions (NAIOP) and projects in the autumn quarter, however a focus on affordable housing will be the emphasis while pursuing the Bank of America's affordable Housing Challenge in the winter and spring quarter. Offered: jointly with R E 551; AWSp.

URBDP 514 Race and Social Justice Seminar (1) This course will explore concepts of race, racism, class, social justice, and make explicit their connections between design and planning. It does so to build student understanding about how, and the degree to which, these disciplines have historically addressed these topics, and where they stand currently. This exploration will include progress made, challenges, and overt actions that have and may continue to work in racist and unjust ways. Credit/no-credit only. Offered: AWSp.

URBDP 516 Real Estate Economics and Market Analysis (4) *Arthur Acolin* Introduces students to real estate market studies for different uses. Covers five areas: basic economic concepts critical in the understanding of real estate markets; urban economy; land rent theory; locational analysis and decision making; and market analysis. Offered: jointly with R E 516; Sp.

URBDP 518 Qualitative Methods for Urban Design and Planning (3) Surveys use of qualitative methods in urban design and planning practice and research, especially in relationship to places and people.

Students develop methodological and analytical skills useful in research and in professional practice.

URBDP 519 Qualitative Research Methods (3)

Qualitative research methods covering both the theoretical foundations and practical methodologies of traditional and innovative approaches, including cognitive mapping, open-ended interviews, ethnographic observation, hermeneutics, phenomenology, critical theory, communicative action, grass-roots empowerment, post-structuralism, and self organization. Offered: jointly with ARCH 567.

URBDP 520 Quantitative Methods in Urban Design and Planning (5)

Methods of statistical and mathematical analysis in design and planning. Emphasizes the use of computer packages for analyzing urban data. Regression, matrix methods, cohort-survival populations models with examples solved on microcomputers. Prerequisite: coursework in arithmetic and basic algebra.

URBDP 522 Urban and Regional Geospatial Analysis

(5) Provides theoretical and practical skills for analyzing spatial patterns and phenomena in metropolitan areas. Students explore the functionality of GIS as an effective tool for analyzing and modeling complex spatial relationships within urban environments. Emphasis is given to data integration and modeling through both raster and vector systems.

URBDP 523 Introduction to Urban Design (3)

I&S/VLPA Definitions and examples of urban design; heritage of urban design; theories of city building; the role of urban design in the fields of architecture, landscape architecture, and urban planning.

URBDP 524 Site Planning: Issues and Techniques (3)

Introduction to site planning; how it is regulated; why it is important to know; and how to carry out its key tasks, including residential subdivision and mixed-use development layout; basic topographical and hydrological analysis and manipulation; roadways, parking and hierarchies of circulation, and site design detail. Offered: W.

URBDP 525 Evaluation in Urban Planning (3)

Methods and techniques for a priori assessment of physical improvement plans, program designs, public policies. Includes cost effectiveness and matrix or

goal achievement, as well as more conventional cost-benefit and cost-revenue forms of analysis. Emphasis on understanding the reasoning and issues in evaluation, and gaining a working competence in at least one of the methods treated.

URBDP 526 Floodplain Management and Planning for Coastal and River Communities (3) *R. FREITAG*

Focuses on ways to live with and cope with flooding. Examines coastal and riverine floodplain services, values and assets within the context of ecosystem services; determine risks and opportunities associated with flooding and floodplains; advance identified strategies and explore benefits and adverse impacts resulting from these strategies; and gain a better appreciation for coastal and riverine floodplains. Offered: A.

URBDP 532 Current Topics in Transportation Planning and Policy (4)

Provides an opportunity to advance the student's knowledge by examining selected topics in depth and gaining critical insights about the interconnectivity of various planning and policy approaches. Gives a broad exposure to urban transportation problems and introduces different ideas and practices aimed at addressing these problems, along with important concepts and analytical frameworks. Offered: W.

URBDP 536 Health Impact Assessment (2)

Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with ENV H 536.

URBDP 538 Public Health and the Built Environment (2)

Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with ENV H 538.

URBDP 547 Professional Project (1-9, max. 9)

Credit/no-credit only.

URBDP 549 Hazard Mitigation Planning (3) A survey of the field of planning for managing risks of natural hazards-earthquakes, floods, coastal/meteorological hazards, and human-caused technological hazards/terrorism. Covers pre-event mitigation through building and land-use controls; disaster preparedness; post-event response, recovery, and mitigation of future hazards. Emphasizes hazard mitigation as a long-term strategy for achieving sustainability of communities.

URBDP 550 Land Use, Growth Management and Environmental Planning (3)

Provides an understanding of contemporary land use issues (including sprawl, smart growth, new urbanism, transit-oriented development, and Washington's Growth Management Act) and examines their environmental and social welfare implications. Analyzes best practice techniques of growth management. Offered: A.

URBDP 551 Real Estate Asset Management (3) *P.*

Stone Focuses on the fundamentals and structure of asset management from a value improvement perspective. Students are educated on the proactive manner asset managers need to respond to changing tenant needs and competitive market condition, while focusing on the asset appreciation throughout the ownership cycle (acquisition, leasing and disposition) . Offered: jointly with R E 517; Sp.

URBDP 552 Introduction to Real Estate (3) *S.*

DERMISI Provides a basic overview of the participants, processes, workings of different components of the real estate industry (including a variety of uses spanning from residential, office, retail and industrial to specialized) as well as the quantitative components of the real estate decision-making. Additionally, students are introduced to an overview of construction management, sustainability, corporate services, property law and ethics. Offered: jointly with R E 510; A.

URBDP 553 Urban Land Economics (4)

Introduces urban economics, land markets, and locational decision making; and examines urban spatial structure and the economic, political, social, technological, and historical forces that shape land values and uses. Uses applied spatial analytical tools including geographic information systems and geogeo-graphic software. Offered: jointly with R E 553; A.

URBDP 554 Real Estate Finance and Investment (4)

Simon A W Stevenson Introduces students to basic real estate finance and institutional analysis allowing them to quantify the financial implications of real estate decisions. Topics include: basic time value of money, financial leverage, discounted cash flow analysis (properties and institutional portfolios), assessment of various real estate investment classes and distribution of proceeds to investors.

Prerequisite: R E 552/URBDP 552. Offered: jointly with R E 513; W.

URBDP 555 Real Estate Valuation and Appraisal (3)

Timothy E Overland Every property is unique, therefore the appraisal of real estate presents many challenges and has a strong influence on the financial viability of both existing buildings and the development process. General models for valuing commercial property, industrial property, and land will be introduced. The role of appraisals and different concepts of value will be examined.

Offered: jointly with R E 511; A.

URBDP 556 Real Estate Investment (4) Focuses on direct real estate investment based on the productive capacity of the total property, debt, and equity components and their impact on the cash returns in the form of positive returns to the property, tax savings potential, alternative leverage effects, and the gains at sale. Offered: jointly with R E 556; W.

URBDP 557 Real Estate Law (3) *J. Fandel, S. Osborne*

Focuses on the legal principles and issues essential to understanding the workings of the real estate industry, including the fundamentals of real estate transactions and development projects. Offered: jointly with R E 515; W.

URBDP 558 Real Estate Market Analysis (4)

Prepares students to conduct and interpret market studies to cover a range of real estate decisions. Exposes students to the market analysis process and various tools and techniques that can be used to analyze and forecast supply, demand, and rental rates. Offered: jointly with R E 558; W.

URBDP 559 Real Estate Portfolio Management (5)

Students develop formal portfolio management strategies that draw on their in-depth understanding of real estate fundamentals, strategic planning and portfolio theory. Working in teams, students prepare

cutting-edge portfolio strategies including the policies and procedures for implementation and portfolio management. Offered: jointly with R E 569; Sp.

URBDP 560 Inequality, Governance, and Policy in the Metropolitan Region (3/4)

Explores national/local urban policy concerning the major problems confronting cities and metropolitan regions today. Economic globalization, income inequality, and metropolitan decentralization shape the urban agenda, the context for urban policy, and the analytic focus of the course. A project allows the exploration of strategies for intervention. Offered: jointly with PUBPOL 560.

URBDP 561 Urban Economics and Public Policy (4)

Examines the rationale for and consequences of public intervention in urban land, housing, and transportation markets through land use regulations such as zoning and growth management, infrastructure investments, and fiscal policies to manage urban development and traffic.

Prerequisite: successful completion of an introductory microeconomics course or permission of the instructor. Offered: jointly with PUBPOL 561.

URBDP 562 Introduction to Neighborhood Planning and Community Development (3)

Provides introduction to basic practices in neighborhood planning and community development, including theoretical/historical bases; developing neighborhood plans/projects; indicators and evaluation of neighborhood quality; community participation; institutional framework, ethical dilemmas, and professional roles. Addresses current issues, including Seattle's experience, NIMBYism, security, neighborhood character, housing segregation, etc.

URBDP 564 Planning History, Theory, and Ethics (3)

Examines major historical landmarks since the Civil War (urban, suburban, and rural, physical and social-economic); theoretical alternatives (rationalism, pluralism-advocacy, critical theory, bio-regionalism, dissipative models); and ethical issues (such as distributive justice and principles of professional conduct).

URBDP 565 American Urban History (3)

Intensive lecture/seminar designed to provide students the opportunity for immersion in historical scholarship

that addresses social, economic, political, technological, and cultural forces that have shaped the development of American cities.

URBDP 566 Infrastructure and Community Facilities (4) Issues and methods associated with planning for parks, schools, drainage, sewerage, utilities, libraries, solid waste, and transportation. Covers their relationship to comprehensive plans, project permitting, and impact assessment. Financing, regulating, and relationships to social, environmental, and economic goals are discussed.

URBDP 567 Democracy, Citizenship, and Participation in the City (3) Graduate seminar on democracy in cities. Focuses on contemporary ideas, debates, and initiatives.

URBDP 568 Real Estate Feasibility (4) Applies critical thinking needed to understand the drivers of value of the major property types which covers the "user in search of a site" and "investor in search of involvement" feasibility questions. Applies a combination of qualitative and quantitative analysis to target markets. Offered: jointly with R E 560; Sp.

URBDP 573 Digital Design (4) Uses digital technologies for mapping, drafting, modeling, and communication. Includes real-world case study projects that focus on urban design and planning issues.

URBDP 576 Pedestrian Travel, Land Use, and Urban Form (3) Seminar concentrating on walking as a mode of transportation in cities and city-regions, including social, cognitive, and perceptual dimensions of pedestrian movement and behavior theory. Offered: jointly with CET 586.

URBDP 577 Real Estate Project Finance (3) Introduces financing real property projects developed by public, community, and private entities with a primary emphasis on interim (acquisition/development/construction) and take-out lending for new real estate projects. Offered: jointly with R E 570; Sp.

URBDP 578 Real Estate Development (4) *H. Oliver* Introduction and survey of processes and people involved in developing real estate, including issues of site control, public/private approvals, feasibility analysis, project financing, design/construction,

marketing, and asset management. Prerequisite: R E 552/URBDP 552. Offered: jointly with R E 550.

URBDP 579 Real Estate Capital Markets (3) *S. Stevenson* Analyses capital flows (global and national) and emerging capital market trends that affect the industry. Pays special attention to securitized real estate, including Real Estate Investment Trusts, and Commercial Mortgage-Backed Securities. Offered: jointly with R E 541; A.

URBDP 580 Legal and Administrative Framework for Planning (3) Political, legal, and administrative institutions closely related to the planning process. Issues of devolution of authority and public representation and participation. Legal basis for planning and associated regulation.

URBDP 585 Introduction to Historic Preservation Planning (3) Theories, methods, and practices associated with historic preservation planning. Overview of preservation planning programs at federal, state, and local levels. Introduction to tools and methods needed to identify, document, evaluate, and plan for protection of historic properties. Provides opportunity to learn fundamentals of preservation planning through practical experience.

URBDP 586 Implementation in Preservation Planning (4) Practical experience in identifying, documenting, evaluating and developing strategies for protection of historic resources, building on introductory theories, methods, and practices. Develops skills critical to preservation planning via research, fieldwork, and writing. Prerequisite: introductory course in preservation.

URBDP 587 Preservation and the Vernacular Environment (3) Exploration of theoretical, methodological, and practical issues related to the preservation of vernacular architecture and cultural landscapes in the United States.

URBDP 590 Real Estate Forum I (1) Provides an opportunity for students to learn about the interdisciplinary nature of real estate from industry leaders. Discusses current issues and opportunities in the industry as well as what it takes to develop a sustainable career path. Offered: jointly with R E 590; A.

URBDP 591 Doctoral Seminar I (4-) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 592 Doctoral Seminar II (-4-) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 593 Doctoral Seminar III (-4) Researchable issues and research methodology. Discussion and critique of selected pieces of recent research work. Presentation and critique of research proposed by members of the seminar. Prerequisite: master's degree or equivalent in a planning discipline.

URBDP 596 Community Resilience (3) *Robert Freitag, Himanshu Grover* Introduction to resilience thinking. Students apply resilience concepts to real world communities and infrastructures impacted by real events, and gain practice in supporting policies, programs, and projects that enhance overall resilience. Offered: Sp.

URBDP 598 Special Topics (1-6, max. 15) Systematic study of specialized subject matter. Topics vary for each quarter, depending upon current interest and needs, and are announced in the preceding quarter. Prerequisite: permission of instructor.

URBDP 600 Independent Study or Research (*-)

URBDP 700 Master's Thesis (*-)

URBDP 800 Doctoral Dissertation (*-)

FOSTER SCHOOL OF BUSINESS

ACCOUNTING

ACCTG 199 Accounting for Problem Solving (2, max. 4) Supplementary lectures, discussions, and problem-solving sessions in introductory accounting. Enrollment priority to EOP students and others by permission. Credit may not be applied to fulfill specific program requirements. Corequisite: ACCTG 215. Credit/no-credit only.

ACCTG 215 Introduction to Accounting and Financial Reporting (5) Nature and social setting of accounting; uses of accounting information; introduction of basic accounting concepts and procedures; interpretation of financial statements. May not be repeated.

ACCTG 219 Essentials of Accounting (4) Provides an introduction to basic accounting principles and procedures; use of accounting information to make decisions from the perspective of both external investors and internal managers. Cannot be taken for credit if ACCTG 225 has been completed for credit.

ACCTG 225 Fundamentals of Managerial Accounting (5) Analyses and evaluation of accounting information as part of the managerial process of planning, decision making, and control. Concentrates on information useful to enterprise managers. Prerequisite: ACCTG 215; ECON 200; may not be repeated.

ACCTG 275 Accounting and Finance Essentials (3) QSR Explores the economic foundations of accounting systems. Discusses the short-term and long-term implications of using accounting information to evaluate performance, create budgets, and analyze financial statements. Not open for credit to students pursuing a business degree.

ACCTG 301 Intermediate Accounting I (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: minimum grade of 2.0 in ACCTG 225; may not be repeated.

ACCTG 302 Intermediate Accounting II (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: a minimum grade of 2.0 in ACCTG 301; may not be repeated.

ACCTG 303 Intermediate Accounting III (4) Concepts and principles of financial accounting. Analysis of controversies and problems related to the measurement of enterprise income and asset and liability valuation. Prerequisite: minimum grade of 2.0 in ACCTG 302; may not be repeated.

ACCTG 311 Cost Accounting (4) Introduction to the theory of cost accounting; job order, process, and standard cost systems; overhead accounting; problems in accumulation and allocation of costs; decision making with cost data. Prerequisite: minimum grade of 2.0 in ACCTG 225; may not be repeated.

ACCTG 320 Accounting Systems and Analytics (4) Focuses on the analytical mindset and analytical skillset to help students use accounting systems to transform raw accounting data into business insight. Prerequisite: a minimum grade of 2.0 in ACCTG 225; may not be repeated. Offered: AW.

ACCTG 321 Tax Effects of Business Decisions (4) Issues in taxation, including tax considerations in business decision making, tax effects of business transactions, taxation of compensation, fringe benefits, capital gains, fixed asset transactions, disposition of business distribution from corporations. Prerequisite: minimum grade of 2.0 in ACCTG 301; may not be repeated.

ACCTG 411 Auditing Standards and Principles (4) Intensive introduction to the attest function in society today. The environment, the process, and the report of the public auditor are analyzed. Potential extensions of the attest function are examined. Prerequisite: minimum grade of 2.0 in ACCTG 303; 2.0 in ACCTG 320; may not be repeated.

ACCTG 440 Accounting and Financial Management Decisions (4) Business financial planning with an

emphasis of the role of accounting information in financial decisions. Topics include the accounting and finance aspects of business valuation, short and long term financing, short and long term investments, alternative types of debt and equity financing, and related topics. Prerequisite: minimum grade of 2.0 in ACCTG 303; 2.0 in ACCTG 311; 2.0 in ACCTG 321; FIN 350; may not be repeated.

ACCTG 450 Business Taxation (4) Issues of taxation for entities other than individuals, including corporations, subchapter S corporations, partnerships, estates, and trusts. Includes corporate distributions, liquidations, and reorganizations. Prerequisite: minimum grade of 2.0 in ACCTG 321; may not be repeated. Offered: WSp.

ACCTG 471 Forensics and Ethical Decision Making in Accounting (4) Provides a comprehensive introduction to the concepts and techniques of forensic accounting and ethical decision making in accounting. Prerequisite: ACCTG 225; MGMT 200; either QMETH 201, IND E 315, MATH 390/STAT 390, Q SCI 381, PSYCH 315, PSYCH 318, SOC/STAT/CS&SS 221, STAT 220, or STAT 311.

ACCTG 480 Accounting for Not-for-Profit Organizations (4) Fund and budgetary accounting as applied to public sector organizations, such as governments, foundations, hospitals, and colleges. Prerequisite: minimum grade of 2.0 in ACCTG 302; may not be repeated.

ACCTG 485 Advanced Financial Accounting (4) Accounting for partnerships, accounting for business combinations, parent-subsidiary and branch relationships, foreign exchange. Prerequisite: minimum grade of 2.0 in ACCTG 303; may not be repeated.

ACCTG 490 Special Topics in Accounting (1-6, max. 12) Special topics of current concern to faculty and students. Offered only when faculty is available and student interest is sufficient. Class is announced in advance of scheduled offerings.

ACCTG 495 Accounting Internship (1-4, max. 8) One quarter's internship with a certified public accounting firm, industrial organization, or government agency. Prerequisite: ACCTG 301. Credit/no-credit only.

ACCTG 499 Undergraduate Research (1-6, max. 9) Arranged and supervised by individual members of the faculty.

ACCTG 500 Financial Accounting (4) Introduction to concepts and procedures underlying determination and presentation of information for financial decisions by investors and other decision makers outside the business enterprise. Study of problems of valuation, income determination, and financial reporting.

ACCTG 501 Managerial Accounting (4) Study of the generation and the use of accounting information within the firm for purposes of planning and controlling operations. Topics covered include cost concepts, responsibility accounting systems, cost control, and the use of accounting information in short- and long-term management decision problems. Prerequisite: ACCTG 500.

ACCTG 502 Financial Reporting and Analysis (4) Provides students with an understanding of the numbers side of business. Students will learn how to use financial information in real-life management situations to impact business decisions. Offered: A.

ACCTG 503 Introduction to Accounting for Managers (4) Provides potential managers with a basic knowledge of financial and managerial accounting. Focuses on the use, not the preparation, of accounting information. Examples presented for a variety of for-profit and nonprofit organizations.

ACCTG 505 Intensive Analysis of Accounting Principles and Practices (26) Covers the subjects in the required core for undergraduate accounting majors: intermediate accounting, advanced accounting, cost accounting, auditing, and tax accounting. Credits do not count toward MBA degree. Prerequisite: ACCTG 215 and ACCTG 225 or equivalent, or permission of instructor.

ACCTG 506 Intensive Analysis of Accounting Principles and Practices I (8) First of an intensive three-course program. Emphasizes the practical application of accounting concepts in a business setting. Credits do not count toward MBA degree. Prerequisite: ACCTG 215; ACCTG 225 or equivalent, or permission of instructor. Offered: A.

ACCTG 507 Intensive Analysis of Accounting Principles and Practices II (10) Second of an intensive three-course program. Covers the third part of financial accounting, accrual-based financial statements, and cost accounting for decision-making. Credits do not count toward MBA degree. Prerequisite: ACCTG 506. Offered: W.

ACCTG 508 Intensive Analysis of Accounting Principles and Practices III (8)

ACCTG 510 Introduction to Financial Statement Analysis (4) Extension of the core financial accounting material, focusing on the use of financial statements to assess the financial position and prospects of companies. Examines the critical financial reporting issues that influence interpretation of financial statements. Prerequisite: either B A 500, ACCTG 500, or permission of instructor.

ACCTG 511 Advanced Financial Statement Analysis (4) Covers accounting issues related to firm valuation and use of financial statement information to assess the risks and rewards of various firm strategies. Prerequisite: ACCTG 510 or permission of instructor.

ACCTG 513 Tax Effects of Business Decisions (4) Importance of tax considerations in making business decisions. Covers regulatory and economic impacts of the U. S. tax system. Prerequisite: either B A 500, ACCTG 500, or permission of instructor.

ACCTG 515 Problems in Managerial and Cost Accounting (4) Extension of the core management accounting material. Uses cases and discussion to analyze costing techniques, use of accounting data in planning and evaluation of managerial performance, and use of accounting data in short-run and long-run decisions. Prerequisite: either B A 502, ACCTG 501, or permission of instructor.

ACCTG 520 Accounting, Audit and Assurance Regulation (4) Examines important regulatory issues in accounting, auditing, and assurance. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 521 Advanced Cases in Assurance Services (4) Advanced case studies for professional accountants focusing on current issues and the use of analytical tools with real-world applications in

audit and assurance settings. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 522 Data Analytics for Professional Accountants (4) Application of data analytics concepts and techniques for professional accountants, with real-world applications in audit, assurance, and advisory settings. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 523 Advanced Financial Statement Analysis (4) Advanced traditional and data-driven analysis of financial statements from a user perspective with real-world applications for professional accountants. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 524 Individual Taxation (4) Political, economic, and social forces influencing federal income taxation, role of taxation in personal decisions. Coverage of individual tax matters, including business and investment income, business and personal deductions, property transactions, and tax issues of employees.

ACCTG 525 Business and International Taxation (4) Issues of taxation for entities other than individuals, including corporations, subchapter S corporations, partnerships, estates, and trusts. Includes corporate distributions, liquidations, and reorganizations. International dimensions of business taxation introduced. Prerequisite: ACCTG 524.

ACCTG 526 Advanced Accounting Codification Research (4) Advanced research and application of the codification for complex accounting issues for public companies including tax, consolidation, and recent / or announced accounting standard changes. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 527 Communications in Professional Accounting (4) Development of communications skills for professional accountants, including effective written and oral skills with a focus on real-world settings in audit, assurance, and advisory services. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 528 Advanced Cases in Accounting Advisory

(4) Project-based learning involving real-world applications of contemporary problems in accounting advisory settings using innovative analytical tools and data-driven research techniques. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 529 Business Ethics and Law for Accountants

(4) Explores basic legal and ethical principles underlying the practice of accounting. Special attention devoted to identifying legal and ethical issues as they arise in commercial and professional accounting contexts. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 530 Tax Issues in Property Ownership (4)

Analysis of gain and loss realization, recognition, and characterization of such. Detailed exploration of statutory and case law regarding acquisition, ownership, and disposition of assets. Treatment of capital and ordinary gains and losses. Timing issues regarding deferral transactions and installment reporting are analyzed. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 531 Timing and Periods of Taxation (3)

Analysis of the cash and accrual methods of accounting, choice of taxable period and multi-period transaction analysis. Consideration of statute of limitations and mitigation thereof. Details of passive activity losses. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 532 Data Analytics for Tax Accountants (2)

Introduction to data analytics concepts and techniques for tax accountants. Emphasis on data visualization.

ACCTG 533 Procedural and Policy Issues (4)

Analysis of the procedures of federal taxation: assessment, collection, and refund claims. Detailed exploration of the rules governing the statute of limitations and the mitigation thereof. An introduction to tax policy considerations is given. Tax penalties are explored. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 534 Fundamentals of Corporate Taxation (4)

Detailed analysis of contribution of assets to corporations. Calculation of recognized gains and

basic effects of asset contributions. Treatment of income and deduction items of corporate operations. Analysis of distribution of assets to shareholders with respect to their stock. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 535 Advanced Issues in Corporate Taxation

(4) A continuation of ACCTG 534. Fundamentals of moving assets out of and within corporate solution. Basics of corporate reorganizations: acquisitive and divisive. The details of the election to obtain (or avoid) the Section 338 election are explored in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 534 or permission of instructor.

ACCTG 536 Tax Provisions (3)

Examines the components of corporate income tax provisions. Topics include the current and deferred provision, balance sheet and income statement impacts, rate reconciliations, and audit documentation and standards. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 535 or permission of instructor.

ACCTG 537 Income Taxation of Conduits I (3)

Tax consequences to owners and entity from formation, operation, distributions from, and liquidation of partnerships and S corporations. Study of taxable and tax-free formations, nature of "bottom line" income and separately stated items, changes to owners' tax basis, basics of non-liquidating and liquidating distributions. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 538 Income Taxation of Conduits II (3)

A continuation of ACCTG 537. Study of complex issues in partnership and S corporation taxation. Substantial portion involves resolving case studies to improve analytic skills and interrelate partnership and S corporation planning issues. Sections 751(b) and 736 examined in detail. Prerequisite: undergraduate accounting concentration or equivalent; ACCTG 537 or permission of instructor.

ACCTG 539 Tax Research and Decision Making (4)

Decision-making processes in relation to problems of taxation. Tools of tax analysis and research and the communication of conclusions flowing from professional tax work. Role of the professional

accountant in client business transactions and in negotiations with taxing authorities is highlighted and simulated on the basis of actual case histories. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 540 Ethics and Communications for Taxation Professionals (4) Focuses on ethics and internal communications in accounting settings. Evaluation of the ethics of difficult tax questions and practice communicating explanations and recommendations to colleagues and managers.

ACCTG 541 Communications for Taxation Professionals II (4) Introduction to the communications forms and to practices of professional accountants and accounting managers. Development of effective written and oral skills employed in accounting presentations, such as audit reports and consultants' reports. Study of results of organizational communications research applicable to accounting firms and/or units within firms. Prerequisite: undergraduate accounting concentration or permission of instructor.

ACCTG 542 Communications for Taxation Professionals III (4) Development of oral and written skills associated with the tax accountant's role as a client advocate. Develop communication production related to the various stages of a tax case. Prerequisite: ACCTG 541.

ACCTG 543 Income Taxation of Trusts and Estates (3) Development of fundamental skills regarding income taxation of trusts and estates. Calculation of distributable net income and the distribution deduction for the fiduciary entity. Basic analysis of the throwback rules. Case studies. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 545 State and Local Tax Issues (4) Focuses on state and local tax issues such as multi-state tax treaties, sales taxes, nexus, taxes on gross receipts, and apportionment. Prerequisite: Undergraduate accounting concentration or equivalent.

ACCTG 547 Estate and Gift Taxation (3) Development of fundamental knowledge of the unified transfer tax on the transfer of property from one person to another. Calculation of gross estate, adjusted gross estate, and taxable estate. Calculation

of gift and estate taxes owing. Discussion of estate planning concepts. Prerequisite: undergraduate accounting concentration or equivalent.

ACCTG 548 Speaker Forum-Tax (3) Covers topics such as state and local taxation, international taxation, interperiod tax allocation, qualified and nonqualified stock options, the R&D credit, and IRS audit issues presented by practicing professionals in the industry.

ACCTG 549 International Tax Issues (4) Covers international tax concepts including the foreign tax credit, international tax ownership structures, permanent establishments, income sourcing rules, and international tax treaties.

ACCTG 564 Governmental Accounting (4) Budgetary and financial accounting/reporting as applied at the state, local, and special-purpose governments; financial accounting and reporting for not-for-profit organizations.

ACCTG 566 Issues in International Accounting (4) Insights into the conceptual, managerial, professional, and institutional issues of international accounting. Focus on current topics in international accounting and on the cultural, managerial, and governmental forces that shape both internal and external accounting in specific countries.

ACCTG 575 Internship (14) Professional internship in graduate accounting program. Cannot be taken for credit if ACCTG 577 is taken for credit. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 576 Experiential Learning Project (2) Written communication describing experiences learned in the MPAcc internship or MPAcc Independent research project. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 577 Independent Research Project (2-8) Independent research on a topic of contemporary interest to the accounting profession. Cannot be taken for credit if ACCTG 575 is taken for credit. Prerequisite: Enrollment in MPAcc program or by permission of the MPAcc Program Office.

ACCTG 579 Special Topics in Accounting (2/4, max. 12) Accounting topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar content announced in advance of scheduled offering. Prerequisite: permission of instructor.

ACCTG 580 Doctoral Seminar: Introduction to Accounting Research (4) Examination of research problems and techniques in accounting. Interdisciplinary nature of accounting research emphasized. Work in finance, economics, and psychology used to develop current trends in accounting research. Prerequisite: doctoral student status.

ACCTG 581 Doctoral Seminar in Managerial Accounting (4) Critical examination of conceptual and practical issues of cost and managerial accounting. Specific topics may change from quarter to quarter, and they include application of behavioral, quantitative, and economic models to managerial accounting problems. Prerequisite: ACCTG 511 or permission of instructor.

ACCTG 582 PhD Research Seminar: Introduction to Selected Research Topics (4) Introduces first-year and second-year accounting PhD students to the research areas and methodologies of the current account faculty. Research areas include financial, managerial, audit, and tax. Research methodologies include analytical, archival, experiments, and surveys.

ACCTG 596 Doctoral Seminar in Financial Accounting Research (4) Review and critical analysis of research strategies and methods applied to problems in financial reporting practice and financial accounting standard setting. Prerequisite: doctoral student status and ACCTG 580 or equivalent or permission of graduate office.

ACCTG 597 Doctoral Seminar in Managerial Accounting Research (4) Critical analysis of current managerial accounting research, both published and unpublished. Prerequisite: doctoral student status and ACCTG 581 or equivalent or permission of graduate office.

ACCTG 599 Doctoral Seminar in Accounting (1, max. 12) Study and research in advanced topics of accounting. Generally concerned with unpublished

areas of research as well as research methodology and philosophy. Conducted by departmental faculty and occasional distinguished visiting faculty. Prerequisite: doctoral student status.

ACCTG 600 Independent Study or Research (*-)

ADMINISTRATION

ADMIN 510 Fundamentals of Business Administration ([1-15]-, max. 15) Includes materials basic to study and application of business theories and practice; accounting; business economics and financial control; and business strategy; commercial law; human resources and negotiations; marketing; operations management. Faculty team-teaching approach. Not open to master of business administration majors. Credit/no-credit only.

ADMIN 511 Fundamentals of Business Administration (4) Develops student's ability to think as practicing executive; providing practice in analyzing, evaluating, and modifying organizations' strategies in light of changing conditions for profit and non-profits. Develops marketing skills in understanding targeted customer's needs and the specific marketing steps to create demand. Not open to MBA students. Credit/no-credit only.

ADMIN 512 Fundamentals of Business Administration - People Management, Leadership, and Teams (4) Introduces theories and practices relating to the management of people and teams, organizational behavior, human resources and leadership. Helps distinguish management factors that create a sustaining culture that attracts, motivates and retains the right people for the right jobs. Not open to MBA students. Credit/no-credit only. Offered: W.

ADMIN 513 Fundamentals of Business Administration: Accounting and Finance (4) Introduces financial and managerial accounting and finance. Topics include financial statements, capital structure decisions, cost of debt and equity, ratio analysis, classifying costs, breakeven analysis, budgeting, and capital budgeting. The goal is to understand external reports and to use financial information internally for decision-making. Not open to MBA students. Credit/no-credit only. Offered: Sp.

ADMIN 514 Fundamentals of Business**Administration: Business Plan Practicum I (2)**

Students develop a business plan on a team based on their interests. Applies the information from the ADMIN 511 and ADMIN 512 to the development of the plan. Prerequisite: ADMIN 511; ADMIN 512, which may be taken concurrently. Credit/no-credit only. Offered: W.

ADMIN 515 Fundamentals of Business**Administration: Business Plan Practicum II (1)**

Students complete the business plan on a team that was developed in ADMIN 514. Applies the information from ADMIN 511, ADMIN 512, and ADMIN 513 to the development of the plan. Prerequisite: ADMIN 514. Credit/no-credit only. Offered: Sp.

BUSINESS ADMINISTRATION

B A 110 International Baccalaureate (IB) Business Management (4-6) Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

B A 300 Foreign Study-Business Administration (1-5, max. 15) For participants in approved foreign-study programs where equivalent UW business administration courses are not available.

B A 390 Business Honors Seminar (2-5, max. 5) Special topics in business. Required for Honors students in Business Administration.

B A 391 Learning Leadership in Theory and Practice (2-4) Explores leadership techniques and principle using readings, case, lectures, and large group discussions designed to increase knowledge of leadership theory and practice as well as develop leadership potential. Uses small group sessions incorporating experiential exercises, self-reflection, and leadership conversations. Credit/no-credit only. Offered: jointly with GEN ST 301.

B A 490 Special Topics in Business (1-6, max. 12)

B A 495 Business Internship (1-4, max. 8) Internship with a private firm, nonprofit organization, or government agency, where work experience involves substantial application of business concepts

learned in the classroom. Prerequisite: ACCTG 225. Credit/no-credit only. Offered: AWSpS.

B A 500 Business Administration I (16) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 501 Business Administration II (14) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 502 Business Administration III (8) Coordinated series consisting of accounting, business economics, business ethics, business policy, finance, information systems, international business, legal environment of business, management, and organizational behavior, marketing, operations management, and quantitative methods for management. Prerequisite: permission of the Foster School of Business.

B A 505 Global Business Fundamentals (16) An intensive overview of the fundamental core business topics: financial accounting, managerial accounting, business economics, statistics, management, macroeconomics, finance, marketing, operations management, quantitative methods, and strategy. Prerequisite: permission. Offered: S.

B A 541 Environmental Management I (4) Survey of environmental ethics, environmental laws and regulation, the economics of environmental decisions, and the relationship of business to public policy and the environment. Must be taken concurrently with B A 544. Prerequisite: permission of instructor.

B A 542 Environmental Management II (4) Applications of the functional areas of business to environmental concerns. Major federal legislation affecting these concerns applied to business problems in the areas of accounting, finance, marketing, management information systems, and

organizational behavior. Must be taken concurrently with B A 544. Prerequisite: B A 541 or permission of instructor.

B A 543 Environmental Management III (4) Case studies that integrate the fundamentals of business and environmental management to address such issues as plant siting, regulatory compliance, production line changes, and innovative, proactive responses to environmental issues. Case studies include results of student consulting projects and a capstone case in environmental management. Must be taken concurrently with B A 544. Prerequisite: B A 542 or permission of instructor.

B A 544 Environmental Management Seminar (1, max. 3) Guest lecturers from academia, business, government, and advocacy groups discuss environmental science, ethics, law, regulation, economics, finance, accounting, and policy issues. Seminar topics supplement course material in B A 541, B A 542, B A 543, which are to be taken concurrently.

B A 545 The Global Business Forum: Current Issues in Global Business (1, max. 3) Discussion of current trends in the global business environment and of international issues facing companies. Leaders from international businesses and other organizations, as well as faculty members from various departments and specializations, invited to share their perspectives with seminar participants. Topics change each quarter.

B A 560 Cooperative Education in Business (1) Business practicum: internship with approved business or governmental agency. Open only to students who meet requirements of internship program. Internship credit may not be applied to fulfill specific course requirements or to credits required for graduation. Credit/no-credit only. Offered: S.

B A 571 Research Reports (4-) Independent study in business administration; critical evaluation of business analysis and research methods. Effective communication of ideas emphasized. Methods and content of independent research studies subjected to critical evaluation. Open only to MBA non-thesis students. Prerequisite: instructor's approval of preliminary research topic outline.

B A 572 Research Reports (-4) Independent study in business administration; critical evaluation of business analysis and research methods. Effective communication of ideas emphasized. Methods and content of independent research studies subjected to critical evaluation. Open only to MBA non-thesis students. Prerequisite: B A 571.

B A 578 Strategic Management Practicum (2/4, max. 8) Students apply skills learned in the MBA classroom to real world challenges and opportunities facing contemporary enterprises. Under faculty oversight, students partner with host firms on applied learning, consulting-style projects that offer additional development opportunities not available in traditional classrooms. Credit/no-credit only.

B A 580 Problems in Microeconomics (4) Study of microeconomic intuition, directed toward Business School Ph.D. students, showing the interconnections between formal, mathematical analysis and the unstructured economic questions posed by the world. Emphasis on setting up problems and examining the intuition behind the analysis of them. Many applications to specific business issues.

B A 599 Teaching Effectiveness Seminar (2, max. 4) Prepares doctoral students to serve as a teaching assistant and course instructor. Discusses how to design a syllabus, present material, grade, handle difficult classroom situations, and other activities associated with undergraduate and graduate education. Builds long-term skills for a lifetime of teaching as part of an academic career. Credit/no-credit only.

B A 700 Master's Thesis (*-)

B A 800 Doctoral Dissertation (*-)

BUS ADMIN RESEARCH METHODS

BA RM 580 Applied Econometrics I (4) Emphasizes the application of econometric methods rather than the mathematical proofs of statistical procedures. Introduction to the linear regression model, interpretation of summary statistics, bias and precision of regression estimates, analysis of the residuals, and hypothesis testing. Prerequisite: STAT 342 or STAT 395 or STAT 481, or permission of instructor.

BA RM 581 Applied Econometrics II (4) Continuation of BA RM 580. Measurement errors, distributed lags, and simultaneous equation models. Prerequisite: BA RM 580.

BA RM 590 Behavioral Research Methods - Theory and Design (4) Philosophy of science, development of scientific method, and meaning of behavioral research. Historical perspective of scientific investigation and the evaluation of research. The development of theory and its relationship to research. Various strategies and designs in behavioral research. Prerequisite: coursework in statistics or permission of instructor.

BA RM 591 Behavioral Research Methods - Approaches and Applications (4) Considers alternative research approaches, such as laboratory and field experimentation, simulation, and surveys, with data-gathering techniques appropriate for each approach. Primarily concerned with developing alternative approaches to research problems and with discussing specific applications. Builds upon a background of specific statistical tools and techniques and an understanding of theory development and research design. Prerequisite: coursework in statistics or permission of instructor.

BUSINESS ANALYTICS

BUS AN 500 Finance and Accounting (3) Provides a broad introduction to the use of financial information to make decisions within an organization. Covers topics that are most useful to managers who are (or will be) in business analytics roles. Offered: A.

BUS AN 501 Negotiations (2) Provides a broad array of negotiation skills that are needed for business analytics solutions to be accepted and implemented. Allows participants the opportunity to develop these skills experientially and to understand negotiations in useful analytic frameworks. Offered: W.

BUS AN 502 Leadership and Professional Development (2) Leadership in the role of a business analytics professional. Possible approaches to accelerate leadership development, and proven behaviors of effective leaders. Utilizing contemporary leadership models as the organizing framework, reviews practical tools to assess

students' leadership skills and develops a plan for students' leadership development. Offered: S.

BUS AN 503 Competitive Strategy (2) Focus on students' ability to think as practicing executives. Provides practice in analyzing, evaluating, and modifying organizations' strategies in light of changing macro-economic conditions. Emphasis on interplay between competitive strategy and business analytics concepts. Offered: S.

BUS AN 504 Marketing Fundamentals (3) Provides a broad introduction to marketing decisions within an organization. Marketing as an organizational philosophy and set of guiding principles for interfacing with customers, competitors, collaborators, and the environment. Covers topics most useful to managers who are (or will be) in business analytics roles. Offered: A.

BUS AN 505 Marketing Strategy and Channel Management (2) Covers analysis and decision-making in management of exchange processes with customers. Analysis of market forces; choice of marketing strategy, objectives, and marketing mix variables. Offered: A.

BUS AN 506 Operations and Supply Chain Management (3) Provides a broad introduction to Operations Management (OM), the design and management of the processes that transform inputs into finished goods or services. The objective of this course is to provide students with a solid foundation in the models and principles that are necessary to generate improvement ideas. Offered: W.

BUS AN 507 Spreadsheet Modeling for Business Enterprise (2) Implementing spreadsheets as the initial step in modeling data. Typical spreadsheet modeling problems. Equips students with tools necessary to start business analytics projects. Offered: S.

BUS AN 510 Probability and Statistics (3) Uses of statistical tools to present, analyze, and interpret data. Emphasis on applications of statistical tools and their uses for organizational decision-making. Offered: S.

BUS AN 511 Programming Essentials (2) Software and programming skills. Using software such as R,

Python, and others to manage and prepare data and implement models to analyze data. Offered: S.

BUS AN 512 Data Management and Visualization (2) SQL and the basic elements of data management and visualization. Offered: S.

BUS AN 513 Customer Analytics (3) Focuses on the firm's interaction with its customers and how data can be used to improve these interactions. Targeting and personalization are the core concepts of modern customer-centric marketing. Provides students with the tools and methods that will allow leveraging data to help shape customer relationship. Offered: A.

BUS AN 514 Analytics for Firm Decisions (3) How firms can use data analytics to optimize marketing mix decisions or the 4 Ps - Product Design, Pricing, Promotion and Advertising, and Placement. Developing statistical models for descriptive, causal, and predictive models for large-scale data. Offered: W.

BUS AN 515 Digital Marketing (3) Quantitative methods. Introduces some core concepts of digital marketing, and use of a quantitative approach to develop optimal marketing strategies. Provides a solid analytical foundation to evaluate digital opportunities, marketing strategies, and online business models. Offered: Sp.

BUS AN 516 Operations Research Data Analytics (3) Business analytics - problem and techniques. Techniques applicable to functional areas of business, such as operations, marketing, accounting, finance, etc. Offered: W.

BUS AN 517 Machine Learning Methods and AI (3) Introduces a theoretical and practical understanding of core artificial intelligence and machine learning concepts and techniques; and provide hands-on experience in applying these techniques to practical real-world business problems. Topics include inductive learning, knowledge representation, reinforcement learning, recommendation systems, artificial neural networks, and natural language processing. Offered: Sp.

BUS AN 550 Business Analytics Leaders Series (1-3, max. 3) Provides students the opportunity to complement their in-class learning experience with

seminars given by business analytics leaders. Credit/no-credit only. Offered: AWS.

BUS AN 579 Special Topics in Business Analytics (1-3, max. 6) Topics vary.

BUS AN 599 Business Analytics Practicum (2/3) Provides the program capstone experience. Students complement their in-class learning experience by working on a project. Offered: Sp.

BUS AN 600 Independent Study or Research (2/3, max. 6) Study or research under the supervision of individual faculty members. Prerequisite: permission of the MSBA program office and faculty advisor. Offered: AWSpS.

BUSINESS COMMUNICATION

B CMU 301 Strategic Business Communication (4) Strategic approach to communications as a management tool. Analysis of the psychology, semantics, planning, and principles of effective business writing, presenting, and interpersonal and team communication. Practical applications include written and oral messages, inform and persuade, individual and team presentations, and tools and processes to increase collaboration among members of a team. Prerequisite: Cannot be taken for credit if credit earned in B CMU 302.

B CMU 410 Business Reports and Other Specialized Communications (4) Covers internal and external, written and oral business reporting. Considers communications strategies within the context of rapidly changing technologies. Students learn to apply primary and secondary research to quarter-long, individual projects resulting in a variety of reports: proposals, progress reports, feasibility studies, business plans, etc. Prerequisite: B CMU 301 or B CMU 302.

B CMU 490 Special Topics in Business Communications (1-6, max. 12) Students and faculty focus on current topics of concern. Prerequisite: either B CMU 301 or B CMU 302.

B CMU 499 Research in Business Communications (1-6, max. 9)

B CMU 509 Finding your Voice (2) Develop a leadership communication style by discovering core values and learning how to translate those values into effective messages. Students give speeches as well as critique speeches of classmates, produce written evaluation of speeches given in class and receive instructor feedback. Prerequisite: B A 501.

B CMU 510 Business Communications for Managers (4) Develops understanding of communication theories, describes strategies for planning managerial communications, and builds skills in oral and written reporting and persuading. Looks at how new technologies are changing the way people in business communicate, and the implications those changes have for organizations. Prerequisite: B A 501.

B CMU 579 Special Topics in Business Communication (2/4, max. 12) Business and managerial communication topics of current interest to faculty and students.

B CMU 600 Independent Study or Research (*)
Offered: AWSp.

BUSINESS ECONOMICS

B ECON 300 Managerial Economics (4) Analysis of economic factors affecting decisions made by business firms. Demand and cost analysis, and alternative policies from the firm's point of view. Prerequisite: ACCTG 225; ECON 201; either MATH 112, MATH 124, MATH 125, MATH 127, MATH 134, or Q SCI 291; either IND E 315, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221/SOC 221/CS&SS 221, STAT 311, or STAT 390; may not be repeated.

B ECON 301 Intermediate Macroeconomics (4) Analysis of economy with attention to the business cycle, output of goods and services (GNP), inflation, unemployment, and government's fiscal and monetary policies. How the economy affects individuals and firms and how to deal effectively with the economic environment. Prerequisite: ECON 201; may not be repeated.

B ECON 420 Financial Markets (4) Analysis of the structure and functions of the money and capital markets; the saving-investment process and financial

intermediaries; supply and demand for lendable funds and the level and structure of interest rates, role of Federal Reserve and Treasury in money market developments. Prerequisite: either B ECON 300 or ECON 300; may not be repeated.

B ECON 426 Competing in the Global Economy (4) Examines the global environment for business and the challenges facing managers in this environment. Explores the implications of the common phrase "think global - act local." Prerequisite: either B ECON 300 or ECON 300.

B ECON 427 International Finance (4) Asset choice and institutional operations in international finance, foreign exchange problems, the impact of international financial problems and operations on business, short- and long-term international financing. Prerequisite: either B ECON 300 or ECON 300; may not be repeated.

B ECON 490 Special Topics in Business Economics (1-6, max. 12) Study and research on topics of current concern to faculty and students. Only offered when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings.

B ECON 499 Undergraduate Research (1-6, max. 9) Research in selected areas of business economics.

B ECON 500 Introduction to Business Economics (4) Factors underlying the determination of cost and prices for the industry and the firm, demand and supply analysis and firm behavior. The relation of the economic environment to the microeconomic decisions of the firm.

B ECON 501 Analysis of Global Economic Conditions (4) Analysis of real and monetary factors affecting national and international economics, supply and demand for money, interest rates and stabilization problems and policies, in relation to government policy effects on business and individual affairs. Focuses on global macroeconomic issues. Prerequisite: MBA core microeconomics.

B ECON 510 Microeconomics for Managers (4)
Alexis Leon In this course, students gain an understanding of how markets work, and learn optimal (profit-maximizing) strategies for managers. Offered: W.

B ECON 520 Financial Markets (4) Analysis of the structures and functions of financial markets and institutions; the behavior of interest rates through time; the cross-sectional structure of interest rates; and the roles of the Federal Reserve and Treasury in financial markets. Prerequisite: MBA Core Finance.

B ECON 526 Competing in the Global Economy (4) Examines the global environment for business and the challenges facing managers in this environment. Explores the implications of the common phrase "think globally - act locally." Offered: WSp.

B ECON 527 International Finance (4) Study of selected problems in financing, international trade, investment, and foreign business operations; international aspects of money markets; problems of evaluation of foreign investments. Prerequisite: MBA core finance.

B ECON 560 Student Investment Fund (1-2, max. 8) Student directed course that requires students to analyze companies and to select stocks to manage a portfolio of public domestic equity under the guidance of the faculty advisor and the UW Investment Office.

B ECON 579 Special Topics in Business Economics (2/4, max. 12) Business economics topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar content announced in advance of scheduled offering. Prerequisite: permission of instructor.

B ECON 600 Independent Study or Research (*-)

ENTREPRENEURSHIP AND INNOVATION

ENTRE 370 Introduction to Entrepreneurship (4) Introduction to entrepreneurial practices with an emphasis on learning how to find business ideas, how to evaluate their potential, and how to recognize the barriers to success. Exposure to the stresses of a start-up business, the uncertainties that exist, and the behavior of entrepreneurs. Prerequisite: either ACCTG 219 or ACCTG 225; ECON 200.

ENTRE 372 Grand Challenges for Entrepreneurship (4) Explores big problems and opportunities facing

society ranging from healthcare, education, big data, and poverty. Examines how solutions to these challenges can be researched, validated, and implemented using entrepreneurial skills such as creativity, business models, pivoting, and execution.

ENTRE 422 Innovation Strategy (4) Focuses on starting a hardware or software company. Includes guest entrepreneurs, lawyers, and financiers discussing market identification and analysis; planning the business; financing; and typical operating and administrative problems.

ENTRE 432 Software Entrepreneurship (4) Explores the opportunities and challenges of launching a software company. Issues include an overview of the industry, trends and emerging opportunities, funding, technology transfer, industry challenges, and cutting-edge software practices.

ENTRE 440 Business Plan Practicum (2) Enables students interested in new venture creation to explore their entrepreneurial aptitude, formulate their ideas, validate the opportunity, develop a business plan, and demonstrate the depth of their knowledge by preparing an executive summary and competing in the UW Business Plan Competition. Credit/no-credit only.

ENTRE 443 Environmental Innovation Practicum (2) Focuses on developing innovative solutions to real-world environmental problems and creating new business opportunities. Speakers include experts from the clean-tech community, environmental start-ups, the public sector, as well as corporate environmental strategists. Themes include water, energy, green building, and transportation. Includes the opportunity to participate in the UW Environmental Innovation Challenge.

ENTRE 445 Health Innovation Challenge Practicum (2) Explores the biggest challenges in the health field, domestic and global, and how various actors are creating solutions for them through innovation. Students form cross-disciplinary teams around project concepts chosen by the class and present the team's solutions to classmates and a panel of experts.

ENTRE 455 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap marketing in their start-up firms. Students learn to

identify target market segments, position their products, estimate demand, set prices, gain access to channels, and manage the issues of rapid growth. Prerequisite: MKTG 301; may not be repeated. Offered: jointly with MKTG 455.

ENTRE 457 Entrepreneurial Finance (4) Explores financial issues that face entrepreneurs, including the stages of financing, business cash flow models, and strategic positioning of the early-stage company. Examines the role of business angels, venture capital funds, institutional investors, strategic alliances, licensing agreements, and exit strategies. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: jointly with FIN 457.

ENTRE 459 Venture Investing (4) Analyzes and makes recommendations on investment opportunities through learning the fundamentals of venture investing and performing due diligence on real companies. Explores the venture investing process from the entrepreneur's and the investor's point of view. Students present their recommendations to the Investment Committee of the W Fund. Offered: jointly with FIN 459.

ENTRE 472 Creating a Company I (4-) Two-course sequence with ENTRE 473. Working in teams, students develop a business plan for a new venture, present their plans to a panel of investors, obtain funding, run the business, and exit the firm at the end of the second quarter. Prerequisite: ENTRE 370.

ENTRE 473 Creating a Company II (-4) Two-course sequence with ENTRE 472. Working in teams, students develop a business plan for a new venture, present their plans to a panel of investors, obtain funding, run the business, and exit the firm at the end of the second quarter. Prerequisite: ENTRE 472.

ENTRE 490 Special Topics in Entrepreneurship (1-6, max. 12)

ENTRE 499 Undergraduate Research (1-6, max. 9) Independent research in selected areas of entrepreneurship; new venture strategy and investment; market analysis and financial forecasts; and corporate issues under faculty supervision. Prerequisite: ENTRE 370.

ENTRE 509 Foundations of Entrepreneurship (2) Evaluation of new market opportunities and starting

a new venture; focuses on identifying and evaluating new venture opportunities, developing and testing market strategies, evaluating test market performance, and evaluating business plans. Emphasizes the interplay between marketing, manufacturing, finance, accounting, and team management. Prerequisite: Permission of Foster School of Business. Offered: Sp.

ENTRE 510 Entrepreneurial Strategy (4) Uses the tools of competitive strategy to analyze the success and failure of entrepreneurial ventures, identifying general strategic principles that might increase the probability that an entrepreneurial venture will succeed. Draws heavily on the principles of microeconomics and strategy. Prerequisite: B A 500; B A 502.

ENTRE 521 Corporate Entrepreneurship (4) Focuses on entrepreneurial activities in large, established corporation. Introduces the theory and best practices on the process of converting new ideas to commercial products and new businesses. Prerequisite: B A 500; B A 501; B A 502.

ENTRE 522 Innovation Strategy (4) Explores how firms tap into external sources of innovation, focusing on user communities, universities, and entrepreneurial ventures. Demonstrates how open, collaborative, community-based models of innovation create successful business options. Offered: jointly with MGMT 522.

ENTRE 530 Entrepreneurial Decision Making (4) Provides an overview of the major decisions entrepreneurs face when creating a business. Covers the startup lifecycle from idea generation and opportunity recognition to entry strategy, growth, and exit. Prerequisite: B POL 509; B A 501. Instructors: Song Offered: W.

ENTRE 531 Developing Business Models for Emerging Technologies (4) Focuses on the commercialization of emerging technologies. Topics include conducting feasibility assessments of intellectual property landscape, evaluating business opportunities, analyzing competition, developing business models and strategies, constructing a professional quality business plan, and presenting business plan, transforming a new technology into a market-ready technology-based business. Offered: W.

ENTRE 532 Software Entrepreneurship (4) A case- and project-based course, focusing on starting a software or hardware company. Guest entrepreneurs, lawyers, and financiers discuss market identification and analysis, planning the business, financing, and typical operating and administrative problems.

ENTRE 535 Business Models in Global Health (4) Explores many of the models used to tackle these issues in global health, using public-private partnership, corporate, and entrepreneurial cases. Examines and debates the efficacy of efforts in combating the biggest killers: non-communicable diseases (NCDs) such as AIDS, malaria, and Tuberculosis. Includes the economics of eradication efforts, funding architecture, issues around neglected diseases, and pricing models for the developing world.

ENTRE 540 Business Plan Practicum (2, max. 4) Gives student entrepreneurs the opportunity to network with the founders/CEOs of companies, explore their entrepreneurial aptitude, and work through the details of their own start-ups. Provides structure, tools, and resources to start of company, and compete in the UW Business Plan Competition. Credit/no-credit only.

ENTRE 541 Technology Commercialization Practicum (4) Provides the experience of researching and creating a commercialization plan for a promising technology. Designed to apply the skills and perspectives of students in cross-disciplinary teams so they learn how to work effectively with peers in assessing complex and potentially ambiguous situations. Offered: S.

ENTRE 542 Venture Capital Investment Practicum (2) Provides overview and teaches the mechanics of the venture capital industry and culminates in intramural venture capital competition. Students assume the role of investors in a venture capital firm and real entrepreneurs pitch to them for investment dollars. Teams defend their allocation decisions before a judging panel of venture capitalists. Credit/no-credit only. Offered: A.

ENTRE 543 Environmental Innovation Practicum (2) Focuses on developing innovation solutions to real-world environmental problems and creating new business opportunities. Speakers include experts

from the clean-tech community, environmental start-ups, the public sector, as well as corporate environmental strategists. Themes include water, energy, green building, and transportation. Students have the opportunity to participate in the UW Environmental Innovation Challenge. Offered: A.

ENTRE 545 Health Innovation Challenge Practicum (2) Explores the biggest challenges in the health field, domestic and global, and how various actors are creating solutions for them through innovation. Students form cross-disciplinary teams around project concepts chosen by the class and present the team's solutions to classmates and a panel of experts.

ENTRE 555 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap or guerilla early-stage companies. Covers how to target market segments, position products, estimate demand, set prices, gain access to channels, and manage issues of rapid growth. Prerequisite: B A 501, MKGT 501 or equivalent. Offered: jointly with MKTG 555.

ENTRE 557 Entrepreneurial Finance (4) Analyzes the unique financial issues facing entrepreneurial firms. Topics include assessing financial performance, financial forecasting and planning, financial management of rapidly growing businesses, start-up ventures, valuation, sources of financing, venture capital, initial public offerings, and the decision to harvest. Prerequisite: MBA core courses. Offered: jointly with FIN 557.

ENTRE 560 Accounting Fundamentals for Entrepreneurs (2) Familiarizes prospective entrepreneurs with the fundamentals of financial and managerial accounting. Covers the principles of accounting decision-making from the perspective of both external investors and internal managers.

ENTRE 561 Essentials of Finance for Entrepreneurs (3) Studies the essentials of finance, how individuals make consumption and savings decisions, and how firms make investment and financing decisions, necessary for entrepreneurs to develop a competitive advantage over their peers. Offered: A.

ENTRE 562 Legal Essentials for Entrepreneurs (1) Provides an overview of critical and fundamental aspects of United States contract law, types of

business structures, and intellectual property law that are essential for entrepreneurs to make informed business decisions.

ENTRE 563 Opportunity Recognition and Validation (2-4) Covers the range, scope, and complexity of issues involved in entrepreneurial startups. Explores how entrepreneurs conceive, adapt, and execute strategies to create new enterprises.

ENTRE 564 Competitive Strategy (2-4) Introduces different aspects of the strategic decision-making process. Pays particular attention to the context within which the decision maker operates; the pressures of performance; and both the personal and professional limitations of the individual executive as they try to manage effectively. Also highlights the interplay between competitive strategy and entrepreneurship related topics.

ENTRE 565 Entrepreneurial Marketing I (2) Focuses on marketing strategy. Assesses market opportunities by analyzing customers, competitors, collaborators, context, and the strengths and weaknesses of a company. Examines how to design focus marketing strategies to maximize a company's chance of winning in these markets, and better evaluate different potential growth trajectories. First in a two-course entrepreneurial marketing sequence.

ENTRE 566 Entrepreneurial Marketing II (2) Focuses on the decisions that entrepreneurs make and the tools that they use to implement an effective marketing strategy. Covers how to communicate and defend marketing recommendations as well as critically examine and build upon the recommendations of others. Second in a two-course entrepreneurial marketing sequence.

ENTRE 567 Entrepreneurial Strategy and Decision Making (4) Uses the tools of competitive strategy to analyze the success and failure of entrepreneurial ventures, identifying general strategic principles that might increase the probability that an entrepreneurial venture will succeed. Provides an overview of the major decisions entrepreneurs face when creating a business. Covers the startup lifecycle from idea generation and opportunity recognition to entry strategy, growth, and exit.

ENTRE 568 Digital Media Marketing (1-2) Examines the principles and tools related to internet marketing, mobile marketing, and social media. Compares marketing communications in the new media landscape compared to traditional marketing communications. Analyzes business models in new media landscape such as the value proposition and the revenue model of a firm. Covers new media marketing tactics. Offered: W.

ENTRE 569 Strategies for Funding Ventures (4) Provides an in-depth view of the fundraising process including the elements of deal making and working with investors, and sensitizes prospective entrepreneurs to the strategic and people issues around venture finance.

ENTRE 570 Persuasion: Pitching, Public Relations, and Public Speaking (2) Examines the role verbal communication, influence, and persuasion play in shaping an entrepreneur's success in starting, growing, managing, leading, and exiting a venture. Follows the progression of different forms of pitching that an entrepreneur needs to be able to deliver.

ENTRE 571 Essentials of Sales for Entrepreneurs (2) Introduces the principles and concepts of selling and its strategic role in new ventures. Promotes an understanding of how products or services are used to create value for a customer and how that information is used by entrepreneurs to decide to enter a market and how to remain competitive in the market.

ENTRE 575 Entrepreneurial Leadership Seminar (1, max. 4) Covers common issues associated with leading and coordinating people in entrepreneurial ventures. Topics vary by quarter and include individual level of leadership, managing projects, managing teams, and scaling ventures. Credit/no-credit only.

ENTRE 579 Special Topics in Entrepreneurship (2-4, max. 12) Topics vary. Offered only when faculty members are available and there is sufficient student interest.

ENTRE 581 Theoretical Foundations of Entrepreneurship (4) Focuses on theoretical overview, entrepreneurs, environment and organizational founding, entrepreneurship's links

with other disciplines, venture capital and venture capitalists, new venture strategy and performance, growth processes and challenges, and entrepreneurial networks and alliances. Offered: A.

ENTRE 582 Technology, Innovation, and Entrepreneurship (4) Explores issues of how a knowledge-based economy competes and performs using technological innovations and entrepreneurship. Explores research on capabilities of broader entities; processes of learning at the firm, industry, technology, economy-level; development of know-how as evolutionary process; and explorations by firms, sectors and economies exploring new technologies and techniques. Offered: W.

ENTRE 590 New Venture Research Practicum (4) Exposes students to new venture creation phenomena. Teaches how to think about and understand empirical research methods such as case studies, participant-observation, and other field methods while contributing to on-going cumulative data collection process.

ENTRE 595 Venture Planning and Execution Independent Study (1-3, max. 10) Independent study focused on venture planning and execution of an entrepreneurial venture of the students' design. Credit/no-credit only.

ENTRE 600 Independent Study or Research (*-)

FINANCE

FIN 205 Personal Financial Literacy (3) Provides basic framework for making rational financial decisions impacting personal life with goal of maximizing financial value of those decisions. Integrates theory with real world applications in the analysis of financial decisions, and evaluates costs and benefits of those decisions.

FIN 350 Business Finance (4) Evaluating and funding projects within the firm. Time value of money, inflation, capital budgeting; risk and return in the financial markets, stocks, bonds, portfolios and diversifiable risk, market efficiency and the balance between debt and equity to fund the firm. Prerequisite: ACCTG 225; ECON 201; either MATH 112, MATH 124, MATH 125, MATH 134, or Q SCI 291;

either IND E 315, MATH 390, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221/SOC 221/CS&SS 221, STAT 311, or STAT 390.

FIN 423 Banking and the Financial System (4) Role of banks and nonbank financial institutions in the financial system; asset choices of banks and nonbank financial institutions; problems in the management of financial institutions with emphasis on commercial banks. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated.

FIN 425 Introduction to Real Estate Finance and Investment (4) *T. Seslen* Introduction to valuing, financing, and investing in real estate with emphasis on those topics that distinguish real estate from other investments, including valuation techniques, lease structures, loan options, equity partnerships, risk management, and taxation. Prerequisite: FIN 350.

FIN 428 International Financial Management (4) Analysis of financial problems facing businesses engaged in international activities. Financing foreign investment, financial control of foreign operations, and working capital management including foreign exchange positions using cases and readings. Prerequisite: FIN 350; either one 400-level FIN course, B ECON 301 or ECON 301.

FIN 435 Introduction to Real Estate Capital Markets (4) *Tracey Seslen* Examines who the real estate capital providers are, how that capital is priced, and why the markets operate as they do. Provides a toolbox for sound decision-making, either as an investor seeking funding or as a note-holder in the secondary market. Prerequisite: FIN 350.

FIN 445 Real Estate Development and Feasibility Analysis (4) *Tracey Seslen* Teams of students will create a development proposal for an underutilized parcel of land in an economically challenged neighborhood of Seattle. Learning modules include development finance, market analysis, principles of land use and entitlements, site planning and architecture, construction and project budgeting, and the nuances of different property types, including affordable housing. Prerequisite: FIN 425, which may be taken concurrently.

FIN 450 Problems in Corporate Finance (4) Case problems in corporate financial management.

Includes cases on management of current assets, obtaining short-term loans, raising long-term capital, capital budgeting, and dividend policy. The management point of view is stressed. Prerequisite: FIN 350; either B ECON 300 or ECON 300.

FIN 453 Financial Theory and Analysis (4) Business financial strategic planning. Topics include business valuation and financing, performance evaluation, risk analysis, capital budgeting, and inflation and taxes. Emphasizes tools with real-world applications while incorporating modern finance concepts. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated.

FIN 454 Business Valuation, Investment, and Financing (4) Key issues in financial management using both analytical and case study illustrations. Valuation of public and private companies; cost of capital estimation; investment complications, such as taxes, inflation, risk, project interdependencies, and financing-investment interactions; leasing; mergers; spin-offs and carve-outs. Prerequisite: FIN 350; either B ECON 300 or ECON 300.

FIN 457 Entrepreneurial Finance (4) Explores financial issues that face entrepreneurs, including the stages of financing, business cash flow models, and strategic positioning of the early-stage company. Examines the role of business angels, venture capital funds, institutional investors, strategic alliances, licensing agreements, and exit strategies. Prerequisite: FIN 350; either B ECON 300 or ECON 300. Offered: jointly with ENTRE 457.

FIN 458 Mergers and Acquisitions (4) Advanced finance topics focusing on providing the necessary training to value, structure, and close acquisitions. Additional topics include antitrust issues, the legal environment governing mergers, and antitakeover defense. Prerequisite: FIN 350; and either B ECON 300 or ECON 300.

FIN 459 Venture Investing (4) Analyzes and makes recommendations on investment opportunities through learning the fundamentals of venture investing and performing due diligence on real companies. Explores the venture investing process from the entrepreneur's and the investor's point of view. Students present their recommendations to the Investment Committee of the W Fund. Offered: jointly with ENTRE 459.

FIN 460 Investments (4) Introduction to the nature, problems, and process of evaluating particular securities and portfolio construction and administration. Special attention is directed to the risk and rate-of-return aspects of particular securities portfolios, and total wealth. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated.

FIN 461 Financial Futures and Options Markets (4) Introduction to financial futures and options markets. Institutional aspects and social functions of these markets, pricing of options and futures, and risk shifting by hedging. Prerequisite: FIN 350; either B ECON 300 or ECON 300; may not be repeated.

FIN 462 Management of Financial Risk (4) Modern tools for managing financial risk. Fixed income securities and interest rate risk, credit risk, foreign currency risk, and insurance. Emphasis on use of futures, forwards swaps, and option contracts. Prerequisite: FIN 350; either B ECON 300 or ECON 300.

FIN 465 Asset Management (4) Review of asset management industry and participants. Exploration of end investor's objectives, preferences and biases as basis for allocating client assets across an entire portfolio. Development of an investment strategy while addressing problems in implementing that strategy from a practitioner's perspective. Prerequisite: FIN 350; and either FIN 460, FIN 461, or FIN 462; recommended: FIN 460.

FIN 466 Alternative Investments: Hedge Funds and Private Equity (4) Examination of the market for alternative investments including the investment strategies employed by hedge funds and private equity firms, the risk-return tradeoffs of those strategies, and the legal and economic environments in which alternative investment firms operate. Prerequisite: FIN 350; either B ECON 300 or ECON 300.

FIN 467 Fixed Income Securities (4) Examination of the main concepts and participants in the fixed income markets, with an emphasis on the risks and other instrument-specific factors that differentiate fixed income securities, as well as the tools and techniques for pricing and managing the risk of fixed income securities. Prerequisite: FIN 350; and either B ECON 300 or ECON 300.

FIN 490 Special Topics in Finance (1-6, max. 12)

Study and research on topics of current concern to faculty and students. Only offered when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings.

FIN 495 Finance Internship (1-4, max. 8)

Internship with a private firm, nonprofit organization or government agency, where work experience involves substantial application of finance concepts learned in classroom. Prerequisite: FIN 350. Credit/no-credit only.

FIN 499 Undergraduate Research (1-6, max. 9)

Research in selected areas of business finance, money and banking, or investments, with permission of instructor.

FIN 502 Business Finance (4) Financial management of the firm, including capital budgets, working capital analysis, and financing policy. Prerequisite: ACCTG 500, B ECON 500, QMETH 500.

FIN 505 Corporate Finance (4) *L. Young* This course elucidates the theory of corporate finance, and explores how it's applied in the financial decision making of a firm. The study of these decisions will involve understanding how capital markets function and learning to use and evaluate performance of a company, business, or department based on financial models. Offered: Sp.

FIN 528 International Financial Management (4)

Analysis of financial problems facing businesses engaged in international activities: financing foreign investment, financial control of foreign operations, and working capital management including foreign exchange positions using cases and readings. Prerequisite: B A 502 or FIN 509.

FIN 530 Financial Management of Banks (4)

Analysis of problems in the financial management of commercial banks and other financial institutions. Loan and investment policies, liability management, capital policies, and other selected issues are discussed. Prerequisite: B ECON 520 or permission of graduate office.

FIN 550 Advanced Business Finance (4) Systematic coverage of key theoretical issues in financial management. Application of quantitative analysis to

financial problems of the firm that are important in practice, including issues related to financing and investment. Prerequisite: MBA Core Finance.

FIN 551 Problems in Business Finance (4)

Uses case studies to examine a broad range of financial management topics, including forecasting financial statements, use of bank credit, working capital management, public and private securities issues, capital budgeting, and business valuation. Credit allowed for only one of FIN 551 and FIN 552. Prerequisite: B A 502.

FIN 552 Problems in Corporate Planning and Financing (4)

Uses case studies to examine business financing. Topics include financial statement analysis, financial planning and forecasting, banking relationships, and financing sources, including the use of derivative securities, venture capital, and private equity. Credit allowed for only one of FIN 551 and FIN 552. Prerequisite: either B A 501 or FIN 502.

FIN 553 Problems in Capital Investment Planning (4)

Case discussions used to examine corporate resource allocation decisions. Topics include capital budgeting techniques, estimation of capital costs, capital budgeting systems, strategic investment decisions, and financial restructurings. Prerequisite: either B A 501 or FIN 502.

FIN 555 Financing Decisions, Payout Policy, and Corporate Control (4)

Analysis of business financing methods, payout policy, management compensation, ownership structure, and the distribution of control rights. Covers the major issues critical to structuring contracts within the corporation. Prerequisite: MBA Core Finance.

FIN 556 Business Valuation and Investment Analysis (4)

Valuation of business enterprises, evaluation of financial performance, analysis of complex investment opportunities, business taxation, leasing, and business acquisitions. Emphasis on complications encountered in practice. Prerequisite: MBA Core Finance.

FIN 557 Entrepreneurial Finance (4)

Analyzes the unique financial issues facing entrepreneurial firms. Topics include assessing financial performance, financial forecasting and planning, financial management of rapidly growing businesses, start-up ventures, valuation, sources of financing, venture

capital, initial public offerings, and the decision to harvest. Prerequisite: MBA core courses. Offered: jointly with ENTRE 557.

FIN 558 Mergers and Acquisitions (2/4) Advanced finance topics focusing on providing the necessary training to value, structure, and close acquisitions. Additional topics include antitrust issues, the legal environment governing mergers, and antitakeover defense. Prerequisite: either B A 500, FIN 502, or FIN 505.

FIN 560 Investments (4) Introduction to the nature, problems, and process of evaluating particular securities and portfolio construction and administration. Special attention is directed to the risk and rate of return aspects of particular securities, securities portfolios, and total wealth. Prerequisite: MBA Core Finance.

FIN 561 Financial Futures and Options Markets (4) Overview of futures markets and options markets. Analysis of pricing of futures contracts and options; comparison of futures, forward, and options contracts; risk management with hedging; alternative investment strategies; and review of empirical evidence. Prerequisite: MBA Core Finance.

FIN 562 Management of Financial Risk (4) Modern tools for managing financial risk. Fixed income securities and interest rate risk, credit risk, foreign currency risk, and insurance. Emphasis on use of futures, forwards, swaps, and option contracts. Prerequisite: MBA Core Finance.

FIN 563 Real Options (2) Short overview of option pricing theory, followed by applications of option analysis in evaluating complex investment projects by business firms. Prerequisite: B A 502.

FIN 566 Alternative Investments: Hedge Funds and Private Equity (4) Examination of the market for alternative investments including the investment strategies employed by hedge funds and private equity firms, the risk-return tradeoffs of those strategies, and the legal and economic environments in which alternative investment firms operate.

FIN 579 Special Topics in Finance (2/4, max. 12) Finance topics of current concern to faculty and students. Offered only when faculty are available and sufficient student interest exists. Seminar

content announced in advance of scheduled offerings. Prerequisite: permission of instructor.

FIN 580 Doctoral Seminar in Financial Economics (4) Study of the financing of the corporation, including recent theoretical and institutional developments. Extensive reading and discussion in designated areas covering problems relating to financial management and to the social and economic implications of the financial process. Prerequisite: ECON 500 or permission of instructor.

FIN 590 Doctoral Seminar in Capital Market Theory (4) Decision making under uncertainty, information and capital market efficiency, portfolio theory, capital asset pricing model, arbitrage pricing model, and options pricing model. Prerequisite: ECON 500 or permission of instructor.

FIN 591 Doctoral Seminar in Corporate Finance (4) Principles of intertemporal choice, alternative valuation models, theory of investment under uncertainty, impact of dividend and financing decisions on firm valuation in perfect and imperfect markets, and theory of firm organization and agency costs. Prerequisite: FIN 590 and BA RM 581 or ECON 582 or permission of instructor.

FIN 592 Doctoral Seminar in Financial Research (4) Empirical research in finance with emphasis on methodology and scientific method. Empirical research in market efficiency, capital asset pricing model, options pricing model, and impact of firm's dividend and financing decisions on firm value. Prerequisite: FIN 590 and BA RM 581 or ECON 582 or permission of instructor.

FIN 599 Doctoral Seminar in Finance (1, max. 12) Study and research in advanced topics of finance. Generally concerned with unpublished areas of research, conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

FIN 600 Independent Study or Research (*-)

INFORMATION SYSTEMS

I S 300 Introduction to Information Systems (5) Fundamentals of information systems, what they are, how they affect organizations. Technical and

organizational foundations of information systems, building information systems, managing information system resources. Laboratory emphasizes using computer to analyze, coordinate, solve organizational decision-making problems.

Prerequisite: ACCTG 225; ECON 200; either MATH 112, MATH 124, MATH 125, MATH 134, MATH 135, or Q SCI 291; either ECON 311, IND E 315, QMETH 201, Q SCI 291, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 221/SOC 221/CS&SS 221, STAT 311, or STAT 390; may not be repeated. Offered: AWSpS.

I S 310 Fundamentals of Business Information

Technologies (4) Exposure to fundamental programming and scripting concepts, conceptual data modeling, database management, and XML. Applying data types and control structures. Continues the concepts of I S 300 of entity-relationship diagrams and record structure diagrams. Database management component includes relational databases, basic SQL, data architecture issues. Prerequisite: I S 300. Offered: AWSp.

I S 320 Fundamentals of Application Programming

(4) Fundamental programming concepts including data types, control structures, modularization, and structure programming. Developing solutions for problems in interactive business applications. Introduction to data and file structures. Extensive use of an event-driven programming language. Prerequisite: I S 300, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 410 Networks and Cybersecurity (4)

Technology and applications of business data communication networks and cybersecurity. Topics include network architecture, communication protocols, cloud computing, Internet of Things, cryptography, cyberattack, prevention techniques, and network economics. Prerequisite: I S 300, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 445 Database Management (4)

Examines the business need for database processing. Discusses database design, development, and administration. Students practice real-world database design and implementation using SQL. Discusses issues related to transaction management, data warehouse, etc. Prerequisite: I S 320, which may be taken concurrently; may not be repeated. Offered: AWSp.

I S 451 Business Data Analytics (4) *Yong Tan*

Introduction to business data analytics concepts and techniques, including association rules, classification, cluster analysis, decision trees, logistic regression, text mining, and web analytics. Real-world applications in information systems, supply chain management, and others. Prerequisite: I S 300, OPMGT301. Offered: AWSp.

I S 460 Systems Analysis and Design (4)

Analysis and design of business information systems. Concentrates on the analysis phase of systems development. Covers systems development life cycle, feasibility studies, analysis of user requirements, and development of logical system models. Prerequisite: I S 410; I S 445; both of which may be taken concurrently; may not be repeated. Offered: WSp.

I S 461 Systems Implementation (4)

Develops business information systems integrating knowledge gained in previous 400-level I S courses. Topics include software project management, system/database design, GUI, software testing, systems implementation/support/maintenance, user training, integrating web, and business environments. Prerequisite: I S 445; I S 460; may not be repeated.

I S 490 Selected Topics in Information Systems (1-6, max. 12)

Topics of current concern to faculty and students. Potential topics include networks and distributed information-processing systems, office automation, artificial intelligence and knowledge-based systems, new approaches to systems development, fourth- and fifth-generation languages, economics of information systems. Prerequisite: I S 320.

I S 495 Practical Experience in Information Systems

(1-4, max. 8) Undergraduate substantive I S internship and mentorship. Internships can be repeated up to two quarters for maximum of 4 credits; grades based on weekly status reports, paper, demonstration of knowledge. Mentorship program (maximum 1 credit/quarter) allows student to be matched with I S executive; grade based on status reports, other participatory events. Offered: AWSpS.

I S 499 Undergraduate Research (1-6, max. 12)

Selected problems in information systems and computer applications.

I S 504 Computer-Based Information Systems for Management (3)

Introduction to information systems and computer technology. Covers concepts of information use in decision making. Use of decision-support problem-solving tools (e.g., spreadsheet, database software). Management's responsibility in defining, developing, using information systems is focal point.

I S 530 Management of Information Systems

Resources (4) Topics include general control problem in organizations; performance evaluation of data processing managers; technology and cost trends; software cost estimation; capacity planning; short term utilization; queuing and associated externalities; issues in centralization and decentralization of the information system facilities. Prerequisite: B A 501 or I S 504 or equivalent.

I S 545 Database Systems and Applications (4)

Logical data models, relational database systems, structured query language (SQL), conceptual modeling, database design, Web-connected databases, transaction management, distributed and heterogeneous systems, data warehousing, data mining, database administration issues. Focuses on the use/management of business data in areas such as finance. Prerequisite: B A 502 or I S 504.

I S 560 Information Systems Development (4)

Offers comprehensive look at information systems development. Covers user requirements analysis, logical and physical system models, system implementation and maintenance, project valuation and management. Additional topics include object-oriented approach, systems development in online environments, and financial information systems. Prerequisite: B A 501 or permission of instructor.

I S 570 Business Data Communications and

Networking (4) Networking basics, Internet/web-based services, client-server architecture, fundamentals of transmission, networking protocols, physical layer, data-link layer, local-area networks, backbone networks, internetworking devices, metropolitan and wide-area networks, wireless networking, network security, network analysis and management. Combines technical, operational, and

management issues in data communications.

Prerequisite: B A 502 or I S 504.

I S 579 Selected Topics in Information Systems (2/4,

max. 12) Topics of current concern to faculty and students. Potential topics include networks and distributed information-processing systems, office automation, artificial intelligence and knowledge-based systems, new approaches to systems development, fourth- and fifth-generation languages, economics of information systems. Prerequisite: B A 501 or I S 504 or permission of instructor.

I S 580 Advanced Research Topics in Information Systems I (4, max. 12)

Overview of research problems and techniques in information systems. Focuses on application of microeconomic theories, mathematical, statistical, and operations research methods. Extensive reading and discussion in current and emerging research topics. Prerequisite: doctoral student or permission of instructor.

I S 581 Advanced Research Topics in Information

Systems II (4, max. 12) Advanced topics of current interest of faculty in heterogeneous database, temporal database, data warehousing, data uncertainty, active and deductive database systems, database design, and formal database languages. Prerequisite: doctoral student or permission of instructor.

I S 582 Advanced Research Topics in Information Systems III (4, max. 12)

Potential topics include information systems design, software engineering, decision support and expert systems, empirical methods, optimal control theory. Prerequisite: I S 580 or doctoral student or permission of instructor.

I S 599 Doctoral Seminar (1, max. 12)

Advanced topics of information systems. Generally concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

I S 600 Independent Study or Research (*-)**M.S. INFORMATION SYSTEMS****MSIS 501 Information Technology and**

Organizational Strategy (3) Discusses the role of

information technology (IT) in the development and execution of business strategy that takes into account competitors, customers, and firm competencies (including IT capabilities) . Examines the impact of IT on two sets of strategic issues for a company - where to compete and how to compete. Helps students develop tools to use IT in aiding strategy. Offered: SpS.

MSIS 502 Business Data Analysis (2) Covers statistical techniques for managerial decision making. Includes hypotheses testing, regression, and analysis of variance. Offered: SpS.

MSIS 503 Operations and Business Process Management (3) Presents a framework to understand organizational processes, offers tools to improve these processes. Covers process improvement methodologies such as reengineering, TQM, six-sigma, simulation, and collaboration. Focuses on discussing application and implementations of improvement programs in a wide variety of settings, including operations processes related to inventory and scheduling, service, and quality assurance. Offered: SpS.

MSIS 504 Business Decision Models (2) Covers formulating and modeling business decision problems. Includes risk analysis, simulation, linear programming, and extensions. Offered: SpS.

MSIS 510 Introduction to Data Mining and Analytics (3) Covers managerial decision-making and business intelligence. Topics include naive Bayesian classifier, decision trees, rule covering, and other classification techniques, as well as issue related to data cleaning, design, testing, and validation. Special attention given to embedded intelligence in modern business processes and applications. Offered: AS.

MSIS 511 Digital Transformation of Organizations (2) Studies the impact of digital technologies within an organization, an industry, and an economy. Discusses system architecture that enables business process and provides foundation for management and use of information systems within organizations. Covers issues related to workflow process changes, efficiency and effectiveness, innovation, convergence, competitive advantage, and sustainability. Offered: A.

MSIS 512 Information Security and Assurance in a Networked World (3) Explores technical and managerial aspects of information security and assurance within a networked environment. Includes inspection and protection of information assets, detection of and reaction to internal and external threats, determining the levels of protection needed, and design of a consistent and reasonable information security architecture along with an implementable process. Offered: AS.

MSIS 521 Information Technology and Marketing in the New Economy (3) Explores issues related to marketing models based on social networking/computing, such as concepts and applications of search engine optimization (SEO) , viral marketing, web analytics, user generated content, the wisdom of crowds, and prediction markets. Students work in teams on real-world projects to develop marketing strategies for maximizing online traffic to business sites. Offered: AS.

MSIS 522 Advanced Business Data Mining (2) Covers managerial decision-making and business intelligence. Topics include association rule mining and regression. Special attention given to embedded intelligence in modern business processes and applications. Offered: AW.

MSIS 523 Cyber Security Policy, Management, and Compliance (3) Covers the overall framework of information technology (IT) compliance, both generic and industry-specific. Includes intellectual property rights, privacy, copyright protection, trade secrets, and other legal issues relevant to IT. Offered: AW.

MSIS 524 Managing Information Technology Projects (3) Explores issues related to analyzing and managing complex information technology (IT) projects in a globalized and networked world. Topics include life-cycle models, use case point estimation, function point analysis, COCOMO, scheduling and budgeting, project risk analysis, monitoring and control, contract design, outsourcing, and capability maturity model (CMM) . Students manage real-world information technology project in a simulated environment. Offered: AW.

MSIS 526 Enterprise Systems and Integration (3) Provides an overall understanding of the complex

role of information systems in transforming organizational processes and integrating them as part of an enterprise system. Topics include the concept of process-enabling information technologies and enterprise resource planning systems that support organizational manufacturing, customer service, and human resource management. Offered: SpS.

MSIS 541 Advanced and Unstructured Data Mining (2) Advanced topics in data mining, focusing on unstructured data, web mining, and text mining. Students learn and apply unstructured data mining tools on real-world unstructured data. Offered: WSp.

MSIS 542 Advanced Development Frameworks (2) Introduces object-oriented principles and key web-based system development tools. Topics include object-oriented modeling, object-oriented programming languages, and advanced user interface design. Students use object analysis and design, modern programming languages, and advanced database technology to develop business applications. Offered: WSp.

MSIS 543 Advanced Database Systems and Data Warehouses (3) Extends and enhances understanding of enterprise databases to design, implement, and support business intelligence (BI) solutions. Topics include DBMS extensions for data warehousing, data warehouse and data mart design, loading and extracting data, performance tuning, and cloud-based BI application design. Emphasizes agile techniques to efficiently produce optimal solutions that meet business requirements and increase competitive advantage. Offered: WSp.

MSIS 544 Managing Information Technology Resources (2) Covers issues related to managing operations of the information (IT) department in an organization. Topics include IT budgeting, systems implementation/support/maintenance, user training, hardware replacement strategies, performance evaluation, technology cost estimation and trend forecasting, capacity planning, website utilization and traffic load balancing, and coordination with other functional departments. Offered: WSp.

MSIS 545 Technology Entrepreneurship (2) Examines the issues involved in creating an organizational environment that recognizes,

nurtures, and grows technology-related entrepreneurial activities, the practice of selecting and monitoring ventures, and the capital process within a firm. Offered: WSp.

MSIS 546 Information Systems Economics (2) Examines basic concepts of economics as it pertains to information technology and systems. Includes the value of information, cost-benefit analysis, economies of scale, network effects, pricing of digital goods, information uncertainty in electronic markets, risk-return trade-offs, and other related topics. Offered: WSp.

MSIS 547 Managing in the Era of Cloud Computing (2) *W. DEY* Covers cloud computing; risks and benefits of information technology (IT) infrastructure; service and deployment models; virtualization and organizational impact; and cloud security. Offered: W.

MSIS 549 Machine Learning and Artificial Intelligence for Business Applications (2) Covers machine learning, deep learning, and artificial intelligence algorithms for business applications. Students will learn the theory of deep learning and gain practical experience from building neural networks to solve big data problems in business.

MSIS 550 MSIS Leadership Series (1-, max. 5) Provides the capstone learning experience. Includes seminars by information technology leaders. Seminar topics and speakers chosen based on the progression of other courses in the program. Credit/no-credit only. Offered: AWSpS.

MSIS 551 Security Analytics (2) Covers the process of and tools for data collection, aggregation, and analysis in security monitoring and threat detection. Students will learn common security attacks, the deployment of Security Information and Event Management (SIEM) to identify anomalies and threat, and the process of incident responses.

MSIS 579 Contemporary Topics in Information Systems (2) Contemporary topics in Information Systems. Offered: WSp.

MSIS 600 Independent Study or Research (*, max. 5) Study or research under the supervision of individual faculty members. Prerequisite: permission of instructor.

MSIS 601 Internship (*, max. 5) Graduate internship under the supervision of individual faculty members. Prerequisite: permission of instructor.

INTERNATIONAL BUSINESS

I BUS 300 Introduction to Global Business (4) Prepares students to understand the most important aspects of the international political economy. Emphasis on the important relationships among nations and business and economic institutions that influence students' performances as managers, consumers, and citizens. Prerequisite: ECON 200.

I BUS 330 Global Business Strategy in Emerging Markets (4) Explores challenges and opportunities involved in doing business in emerging and developing markets. Topics include: analysis of foreign economic, cultural and political environments; market entry decisions; competitive strategies; management of risks; roles of technology, trade policy, macroeconomic and exchange rates. Prerequisite: I BUS 300 or JSIS 222; may not be repeated.

I BUS 340 Global Business Strategy in Developed Markets (4) Addresses strategic approaches to challenges and opportunities in developed markets, especially those in Europe and Asia. Topics include: analysis of competition; leveraging competitiveness advantages; analysis of political and regulatory environment; responses to technological change. Prerequisite: I BUS 300 or JSIS 222; may not be repeated.

I BUS 440 Business in Asia (4) Major aspects of the Asian business environment and how Asian enterprises are managed. Problems and opportunities of foreign corporations in Asia. Prerequisite: I BUS 300; may not be repeated.

I BUS 461 Science, Technology, and Innovation in East Asia: Japan, South Korea, Taiwan, and China (5) I&S Marie C Anchoroguy Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores conditions for its successful continuation. Offered: jointly with JSIS A 472.

I BUS 462 Japanese Business and Technology (5) I&S Anchoroguy Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with JSIS A 478.

I BUS 490 Special Topics in International Business (1-6, max. 12) Students and faculty focus on current topics of concern. Offered when faculty, student interest, and availability allow. Prerequisite: I BUS 300.

I BUS 491 CISB Track Seminar (1, max. 9) Students meet with business community leaders to discuss international aspects of their companies. Allows for networking and sharing experiences with other students as well as practicing foreign languages. Credit/no-credit only.

I BUS 495 International Business Internship (1-4, max. 8) An internship with a company, not-for-profit organization, or government agency in an international business capacity. Prerequisite: I BUS 300. Credit/no-credit only.

I BUS 496 Global Business Consulting (4) Offers students opportunity to apply principles, concepts and skills learned previously to a real-life business situation. Projects illustrate issues and choices facing managers operating in a global business environment, such as identification of target markets, choice of market entry strategy, building and managing a global supply chain, importing and exporting processes; working with global partners; and local laws and regulations. Prerequisite: I BUS 300 or JSIS 222; may not be repeated

I BUS 499 Undergraduate Research (1-6, max. 9) Prerequisite: I BUS 300.

I BUS 520 International Trade Policy (4) Examines issues important to trade policy. Topics include trade policy basics, tariffs and non-tariff barriers, safeguards, voluntary restraints, dumping, subsidies and strategic trade theory, agricultural trade, developing country rules, regionalism, and services. Prerequisite: B A 500 or course in international economics, trade, or international finance, or permission of graduate office.

I BUS 530 International Business in Less Developed Countries (4) Understanding the economic, sociocultural, and political environment in the less developed countries. Problems of international trade and investment, north-south relations, commodities, technology transfer, foreign aid, and capital flows. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 540 International Business in Industrialized Countries (4) Understanding the economic, sociocultural, and political environment in developed, industrialized countries. Problems of international trade and payments relations, economic integration, national policies, and supranational organizations' impact on managerial environments. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 545 Cases in Sustainability (4) *Stearns* Examines components of corporate sustainability-financial, social, and environmental - in cases and articles format. Tackles rigorous global cases using triple bottom line framework. All topics are augmented by executive experts. Students research and critique strategic and executional and intent actions of companies as they face twenty-first century challenges and shareholder demands.

I BUS 550 International Business Consulting (4) Research, analysis, and report on a specific international business project with an existing organization involved with international trade. Possible tasks include identifying most viable foreign target markets, developing best market entry strategies, establishing international terms and conditions of sale, and completing a preliminary marketing or business plan for clients.

I BUS 560 Multinational Business Management (4) Managerial responses to problems of international business organizations and operations. Strategy formulation in an international context; design and control of multinational organization; adaptation of management systems and policies to different economic, sociocultural, and political environments. Prerequisite: B A 500 or course in international economics or trade or international finance, or permission of graduate office.

I BUS 561 Science, Technology, and Innovation in East Asia: Japan, South Korea, Taiwan, and China (5) Role of state and technological change in economic development. Analyzes state and corporate policies historically. Technology concepts, institutions, and policies in Japan, South Korea, Taiwan, and China. Examines sources of Asia's rise in world of technology and explores conditions for its successful continuation. Offered: jointly with JSIS A 581.

I BUS 562 Japanese Business and Technology (5) *Anchordoguy* Examination of Japan's postwar enterprise system in its historical context. Topics include corporate and financial structure, production and distribution, trade and investment policies, government-business relations, system of innovation, technological developments, prospects for the future. Offered: jointly with JSIS A 578.

I BUS 570 International Study Tour (2) Educational international study tour. Includes pre-tour and post-tour activities. Prerequisite: B A 502 and permission of Foster School of Business.

I BUS 572 Cross-Cultural Conversations on Contemporary Issues (1, max. 4) Creates opportunities for students from across the globe to share information and perspectives on contemporary issues important to international business. In weekly, facilitated, small-group conversations, students improve their ability to formulate and express ideas and opinions, and practice persuasion and facilitation skills. Credit/no-credit only.

I BUS 575 Business Studies Abroad (*, max. 24) Research and study of foreign business problems in the country or countries where the firms are located. Limited to students who have the approval of their major adviser and a faculty member who has agreed to direct their work in accordance with a definite program of studies. Credit/no-credit only.

I BUS 579 Seminar: Special Topics in International Business (2/4, max. 12) Application of international business principles to the analysis of a specific issue in trade or resource transfer, or to the business conditions in a particular country. Japan and other Pacific Rim countries are frequent topics. Prerequisite: B A 500 or permission of instructor.

I BUS 600 Independent Study or Research (*-)**MANAGEMENT**

MGMT 200 Introduction to Law (5) I&S Legal institutions and processes; law as a system of social thought and behavior and a frame of order within which rival claims are resolved and compromised; legal reasoning; law as a process of protecting and facilitating voluntary arrangements in a business society.

MGMT 275 Management Essentials (3)

I&S McPherson Explores management and leadership through understanding individuals, teams, and organizations. Discusses relevant concepts and applications of strategic planning, problem solving, conflict management, negotiation, change management, and control systems. Also covers current issues regarding ethical behavior, social responsibility, and diversity. Not open for credit to students pursuing a business degree.

MGMT 300 Leadership and Organizational Behavior

(4) Focuses on how managers become effective leaders. Examines basic principles of managing people, making use of theories that transcend the workplace, including the psychology of individual and group behavior. Emphasizes leadership, strategic thinking, team building, and performance.

MGMT 311 Introduction to Strategic Human Resources Management (4) Introduces core human resources management concepts that form the foundation for advanced human resources coursework. Surveys major human resources topics including selection, compensation, performance management/appraisal, and employee governance. Develop skills to design and build human resources management systems that align with organizational strategies and goals.

MGMT 312 Career Development Workshop (2)

Develops career goals in business administration and guides students toward the academic training that achieves their goals. Emphasizes development of the personal skills necessary to market oneself in a competitive marketplace and present oneself to potential employers.

MGMT 320 Business, Government, and Society (4)

Political, social, and legal environment of business. Critical managerial issues from historical, theoretical, ethical perspectives; their impact on organization. Corporate political power, boards of directors, capitalism, industrial policy, business ethics and social responsibility, alternative corporate roles in society.

MGMT 401 Leadership Development (4) Develops student's unique and effective leadership style/model and provides a framework/plan for leadership development. Covers relevant leadership models and helps create a toolbox of leadership techniques to foster individual development. Topics include: effectively engaging others to enhance motivation and performance, understanding what constitutes an individual model for leading others, providing feedback to develop others, etc.

MGMT 402 Negotiations (4) Develops effective negotiators across a variety of contexts including salary negotiations, price discounts, interpersonal norms, and contracts using experiential exercises and analytic frameworks.

MGMT 403 Developing High Performing Individuals, Teams, and Organizations (4) Introduces evidence-based models for enhancing motivation and performance in organizations. Covers various strategies and methods to facilitate high performing individuals, teams, and organizations. Topics include how to design an effective goal setting program and plan for individuals and teams; designing work and jobs that optimizes individual and team motivation; and issues of current interest.

MGMT 404 Organization Development and Change (4) Using a systems framework and contemporary methods, explores strategies for executing common change initiatives in organizations. Topics may include talent development initiatives, employee engagement interventions, compensation changes, and leadership development, as well as contemporary shifts towards using different types of communication technology initiatives or appreciate inquiry.

MGMT 407 Managing a Global Workforce (4) I&S, DIV Explores cross-cultural management issues to enhance cultural intelligence and develop a global mindset with the intent to apply theoretical and

analytical tools to management decisions within a global workforce. Recommended: MGMT 300.

MGMT 411 Recruiting, Hiring, and Retaining Talent

(4) Addresses strategies to identify, attract, select, and retain employees who contribute to having a competitive advantage in one's team or organization, to help achieve tactical and strategic organizational goals. Explores workforce forecasting, employee sourcing, legal issues, recruiting, and selection. Helps develop critical thinking and analytical skills to evaluate the effectiveness of an organization's selection and evaluation systems. Prerequisite: MGMT 311.

MGMT 412 Performance Management and Compensation

(4) Explores major compensation tools (e.g., salary, incentives, and benefits) to solicit desirable employee behaviors, which lead to organization success. Covers how to design a pay and reward system that is both internally fair and externally competitive. Prerequisite: MGMT 311.

MGMT 430 Strategic Management **(4)** Develops strategic thinking skills for balancing opportunities and risks of business competition to generate superior value for stakeholders. Performs in-depth analyses of industries and competitors, predicts competitive behavior, and explores how firms develop and sustain competitive advantage over time. Prerequisite: FIN 350; MKTG 301; either HRMOB 300 or MGMT 300.

MGMT 440 Business Consulting **(4)** Integrates knowledge and tools from the undergraduate business core curriculum with a focus on consulting. Students learn theoretical frameworks and develop proficiencies in a wide range of skills. Students gain practical experiences working in teams and assisting local organizations to solving immediate business issues.

MGMT 445 Multicultural Marketing and Business Development

(4) DIV Integrates tools from marketing, consulting, and multi-cultural business management to provide consulting services to small business in economically-distressed communities. Working in teams with assistance from industry mentors and alumni from the course, students gain practical experience in multi-cultural marketing, consulting, and managing a business. Prerequisite: MKTG 301. Offered: jointly with MKTG 445.

MGMT 490 Special Topics in Management **(1-6, max. 12)** Topics of current interest to faculty and students. Offered when allowed by faculty availability and sufficient student interest. Content announced in advance of scheduled offerings.

MGMT 495 Management Internship **(1-4, max. 8)**

Internship with a private firm, nonprofit organization, or government agency, where work experience involves substantial application of management concepts learned in classroom. Prerequisite: MGMT 300. Credit/no-credit only. Offered: A/W/SpS.

MGMT 499 Undergraduate Research **(1-6, max. 9)**

Independent research in selected areas of human resource management, organizational behavior, and business strategy under faculty supervision. Prerequisite: MGMT 300; MGMT 320.

MGMT 500 Management and Leadership **(4)**

Behavioral aspects of management with emphasis on leadership, motivation, and decision making. May include communication, conflict management, group dynamics, and organizational change.

MGMT 501 Leading Teams and Organizations **(4)**

Offers a practical framework and empirically validated models and methods that can be used in innovative ways to enhance human capital and its impact, including of course your own capital. Offered: A.

MGMT 502 Business Strategy **(4)** Policy decisions and strategic leadership from the general management point of view. Determination of corporate product-service objectives, development of a network of internal operating policies and methods to achieve objectives at a cost satisfactory to the consumer and to society. Prerequisite: all first-year required courses in MBA curriculum.

MGMT 504 Ethical Leadership **(2/4)** Examines the ethical aspects of conducting business. Topics include ethical decision-making, the ethical aspects of leadership and culture, stakeholder management, corporate social responsibility, sustainability, and corporate governance. Prerequisite: first-year MBA required courses.

MGMT 509 Global Strategy **(2)** Develops a broad overview of many of the issues that global managers

face including government-MNE relations, global strategy, entry modes, country analysis, national culture, and the social responsibility of a global enterprise. Prerequisite: permission of School of Business Administration.

MGMT 510 Developing Leadership Skills ([0-2]-, max. 2) Assessment, instruction, and coaching to develop leadership abilities. Emphasizes team building and collaboration, written, oral, and interpersonal communication, and applied leadership activities.

MGMT 511 Leadership and Coaching Practicum (2, max. 4) Gives Leadership Fellows a venue to analyze and assess their coaching activities with first-year MBA student teams, receive feedback from the instructor and their fellow coaches, discuss readings on leadership, coaching, collaboration, and communication, and hear guest speakers on related topics. Credit/no-credit only.

MGMT 520 Designing a Corporate Strategy (4) Addresses the broad question: what business(es) should we compete in? Focuses on decisions related to an appropriate level of diversification and the means by which that diversification is implemented. Includes the following issues: mergers and acquisitions, strategic alliances, joint ventures, LBOs, and spin-offs.

MGMT 521 Strategic Management of Technology and Innovation (4) Examines how innovative firms often experience rapid and disruptive levels of growth and change and how without effective management of new technologies, the boom can quickly turn to bust. Investigates the micro-economic drivers of competition in technology industries, explores how technological change affects competition, and examines the implications for competitive strategy.

MGMT 522 Innovation Strategy (4) Explores how firms tap into external sources of innovation, focusing on user communities, universities, and entrepreneurial ventures. Demonstrates how open, collaborative, community-based models of innovation create successful business options. Offered: jointly with ENTRE 522.

MGMT 530 Global Strategy (2) *H Kevin Steensma* Provides a broad overview of many of the issues that

managers face including globalization trends, government-multinational firm relations, country risk, entry modes, cross-border collaborative challenges, and various strategies and organizational structures. Offered: W.

MGMT 531 Leading Organizational Change (2) Hybrid MBA Program elective course that focuses on how to lead effective organizational change.

MGMT 533 Dynamics of Negotiations (2) Introduces various theories and processes of negotiation. Discusses research-based negotiation principles from the fields of psychology, social psychology, sociology, industrial-organizational psychology, and organizational behavior. Helps develop the necessary skills to discover optional solutions to problems faced in negotiations and the best means to implement those solutions.

MGMT 540 Competitive Strategy (4) Develops a T-shaped strategic mindset through development of analytical and diagnostic skills, based on mastery of frameworks and analogical thinking skills that can be applied across a wide set of industry domains.

MGMT 545 Leading and Managing High-Performance Organizations (4) Focuses on the nature and function of effective leadership in high-performance systems. Includes visionary and transformational leadership, decision-making and empowerment, power and influence in organizations desiring flexibility and innovation, and leading organizational change. Places emphasis on leadership of emerging forms of organization such as learning organizations, virtual organizations, and networks.

MGMT 546 High Involvement Employees (4) Focuses on two domains: (1) how managers can lead and motivate their people; and (2) how actual organizations, particularly high technology and entrepreneurial firms, employ these strategies. Specific topics include commitment, involvement, enthusiasm, effort, participation, citizenship, and performance. Student teams investigate how local companies utilize these ideas.

MGMT 547 Successful Negotiations (2) Focuses on a broad array of conflict resolution skills needed for effective management in a constantly changing business environment. Examines methods of conflict

resolution - bargaining, distributive and integrative negotiation, mediation, and arbitration. Applies these tools to managerial challenges such as employment contracts, buyer-seller agreements, and mediated and arbitrated agreements.

MGMT 548 Dealmaking in High Velocity Ventures (2) Focuses on negotiations in ventures that lack conventional customers, suppliers, employees, joint-venture partners, strategic allies, and money. Analyzes negotiations with early potential customers and essential suppliers, sources of funding (e.g., "angels" and venture capitalists), critical partners and/or strategic allies (including established firms), and key employees.

MGMT 549 Dealmaking in the Global Arena (2) For students who expect to engage in significant international business negotiations. Includes deal-structuring skills needed in a range of cross-border transactions and relationships. Individual segments develop broad analytical themes, cross-cultural dimensions, and distinctive national approaches to corporate governance and their impact on negotiating strategy. Prerequisite: MGMT 547.

MGMT 550 CEO and Board Governance (4) Prepares students both to be effective board members and to work productively with board members as executives. Focuses on board effectiveness in creating value in oversight and strategic leadership within organizations regardless of size and form of business.

MGMT 555 Nonprofit Board Fellows Leadership Seminar ([1-2]-, max. 4) Assists students participating in the Board Fellows Program to maximize their service to their assigned organizations by examining the fundamental responsibilities of board members and the challenges faced by board members; ways boards shape the organization's strategic direction; ways board members can strengthen their organizations' financial management and stability; and the strengths and limitations of various board governance structures.

MGMT 579 Special Topics in Management (2/4, max. 12) In-depth study and research on topics of special interest to faculty members and students in the fields of human resources management, organizational behavior, and strategic management.

Offered on an ad hoc basis. Content announced before scheduled offering.

MGMT 580 Psychological Foundations of Organizational Behavior (4) Focuses on attributes the individual brings to the organization. Covers important performance-related processes such as learning, motivation, and decision-making as well as an understanding of personal attitudes and personality traits.

MGMT 581 Social Processes in Organizations (4) Focuses on ways in which the individual and the organization get things done through working with others. Includes leadership, social influence, and the use and abuse of power, with attention given to positive organizational activities such as citizenship behavior and extra role activities.

MGMT 582 Contemporary Organizational Behavior Research (4) Facilitates understanding of empirical foundations of theory development and testing in contemporary organizational behavior research. Focuses on assessing ways in which the empirical tradition has evolved in organizational behavior with special attention paid to emerging research areas and research methodologies.

MGMT 583 Special Topics in Organizational Behavior Research I (4) Focuses on the psychological, social psychological, and sociological factors that shape organizations and their members. Covers concepts such as cognition, emotions, identity, communication, group dynamics, team development, organizational culture, global culture, behavioral ethics, etc.

MGMT 584 Special Topics in Organizational Behavior Research II (4) Focuses on the psychological, social psychological, and sociological factors that shape organizations and their members. Covers concepts such as cognition, emotions, identity, communication, group dynamics, team development, organizational culture, global culture, behavioral ethics, etc. in more depth.

MGMT 590 Economic Foundations of Strategic Management (4) Reviews the economic theories that support strategies pursued by firms and explores the links between market processes, firm strategy, and firm performance. Topics include agency theory, transaction cost economics, resource

dependence, population ecology, and neo-Austrian economics.

MGMT 591 Sociological Foundations of Strategic Management (4) Explores the sociology of organizations from multiple perspectives while introducing fundamental sociological questions and preparing students for conducting research in organizations. Emphasis on structural contingencies, institutions, resource dependence, population ecology, negotiated order and culture, organizational learning and decision making, organizational power and politics, networks, and inter-organizational relations.

MGMT 592 Contemporary Strategic Management Research (4) Facilitates understanding of empirical foundations of theory development and testing in contemporary strategic management research. Focuses on evaluation of ways in which the empirical tradition has evolved in the strategic management area. Attention to evaluating research methodologies used in the field.

MGMT 593 Special Topics in Strategic Management I (4)

MGMT 594 Special Topics in Strategic Management II (4) Focuses on the social and political factors that help shape corporate strategy using stakeholder management as an integrating concept. Topics include corporate governance, corporate political activity, governmental regulation, comparative political economy, and normative aspects of strategic management, including ethics and corporate social responsibility.

MGMT 599 Doctoral Seminar in Management (1, max. 12) Advanced topics in the fields of human resources management and organizational behavior. May be used by visiting faculty members to present topics of interest to students.

MGMT 600 Independent Study or Research (*-)

MARKETING

MKTG 275 Marketing Essentials (3) I&S Beard
Explores marketing principles and their usefulness in diverse business and organizational settings. Discusses controllable and uncontrollable factors in

making marketing decisions, and the implications of product life cycle for decision-making. Develops working knowledge of marketing strategy. Not open for credit to students pursuing a Business degree.

MKTG 301 Marketing Concepts (4) Tools, factors, and concepts used by management in planning, establishing policies, and solving marketing problems. Marketing concepts, consumer demand and behavior, location analysis, marketing, functions, institutions, channels, prices, and public policy. Prerequisite: ECON 200.

MKTG 335 Principles of Selling (4) Focuses on selling from salesperson's perspective, role of persuasion in professional selling and other organizational settings. In addition to coursework in such areas as consumer behavior, negotiation, and communication, students practice sales skills in role plays, presentations, and other exercises requiring practical application of selling theory. Prerequisite: MKTG 301.

MKTG 370 Retailing (4) Profit planning and business control; buying, stock control, pricing, promotion; store location, layout, organization, policies, systems; coordination of store activities. Prerequisite: MKTG 301; may not be repeated.

MKTG 411 Business to Business Marketing (4)
Covers the integrated marketing approach that enables a supplier firm to understand, create, and deliver value to other businesses, governments, and institutional customers. Case-based and project-oriented approach to studying marketing management in the business-to-business market that brings the fundamental concepts to life with practical example. Prerequisite: MKTG 301.
Instructors: Caldieraro

MKTG 415 Pricing Strategy and Value Management (4) Examines theoretical and applied perspectives in pricing strategy and tactics. Explores how firms optimally create, communicate, and capture value to achieve organizational objectives. Provides students with a rigorous foundation for pricing decisions and profitable customer solutions. Prerequisite: MKTG 301.

MKTG 430 Sales Force Management (4) Focuses on the role of the sales manager within the organization. Includes distribution planning, sales

organization, management of the sales force, methods of sales, cost and financial analysis, and performance analysis. Prerequisite: MKTG 301; may not be repeated.

MKTG 445 Multicultural Marketing and Business Development (4) DIV Integrates tools from marketing, consulting, and multi-cultural business management to provide consulting services to small business in economically-distressed communities. Working in teams with assistance from industry mentors and alumni from the course, students gain practical experience in multi-cultural marketing, consulting, and managing a business. Prerequisite: MKTG 301. Offered: jointly with MGMT 445.

MKTG 450 Consumer Behavior (4) Theory and practice pertinent to marketing decisions; utilization of theories from behavioral sciences in marketing research; theories of fashion, characteristics of goods, shopping behavior, product differentiation, market segmentation, and opinion leadership; application of concepts to management of advertising, personal selling, pricing, and channels of distribution. Prerequisite: MKTG 301; may not be repeated.

MKTG 452 Consumer Marketing and Brand Strategy (4) Presents a consumer psychology inspired framework for cultivating and maximizing brand equity. Specific emphasis on brand positioning, visual identity design, brand association creation, and brand portfolio management. Greater attention to consumer-facing brands, but B2B brands will also be discussed. Prerequisite: MKTG 301. Instructors: Forehand

MKTG 454 Strategic Product Management (4) Focuses on best practices in new product development including customer-centric innovation, market identification, prototype development, value proposition communication, testing tactics and launch strategy. Prerequisite: MKTG 301; may not be repeated.

MKTG 455 Entrepreneurial Marketing (4) Examines the skills and tools entrepreneurs need for bootstrap marketing in their start-up firms. Students learn to identify target market segments, position their products, estimate demand, set prices, gain access to channels, and manage the issues of rapid growth.

Prerequisite: MKTG 301; may not be repeated. Offered: jointly with ENTRE 455.

MKTG 456 Advertising (4) Management of the advertising function and its integration with other forms of promotion. Planning the program, determining the most effective approach, evaluation of media and budget, advertising research, advertising institutions, economic and social aspects. Prerequisite: MKTG 301; may not be repeated.

MKTG 460 Consumer Insights (4) Ann Schlosser Examines marketing research process; steps of research design, questionnaire construction, sampling, data analysis, evaluation/presentation of findings, online research, and web surveys. Class project provides practical application. May not be repeated. Prerequisite: MKTG 301; either ECON 311, QMETH 201, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 301, STAT 311, or STAT 390.

MKTG 462 Customer Analytics (4) Focuses on how to use existing customer data to develop marketing strategies that improve customer response. The featured analytics translate customer data into inferred customer needs that can guide marketing decisions on pricing, advertising, and product recommendations. Prerequisite: MKTG 301.

MKTG 464 Analytics for Marketing Decisions (4) H. YOGANARASIMHAN Focuses on how firms can use real large scale databases and analytics to improve and automate firm-level marketing decisions. Consists of five modules - product design analytics, analytics for large-scale field experiments, advertising analytics, digital analytics, and mobile analytics. Prerequisite: MKTG 301.

MKTG 466 Digital Marketing Analytics (4) Amin Sayedi Provides a quantitative analysis of the digital marketing landscape on topics such as online advertising, social media, growth strategies and search engine optimization. Explores data-driven methods to evaluate digital opportunities, marketing strategies, and online business models. Prerequisite: MKTG 301.

MKTG 470 International Marketing (4) Focuses on assessing international marketing opportunities, formulating and implementing international marketing strategies. Examines how to use marketing analyses and deductive decision modeling

in assessing international marketing opportunities. Uses marketing tools and concepts in the planning, preparation, and presentation and discussion of cases and class project. Prerequisite: MKTG 301; may not be repeated.

MKTG 485 Strategic Market Management (4)

Strategically analyzes important marketing issues by combining basic models of marketing with powerful spreadsheet analysis. Case discussions and projects provide valuable application exercises. Prerequisite: MKTG 301.

MKTG 490 Special Topics and Issues in Marketing

(1-6, max. 12) Contemporary topics and issues in marketing: marketing in nonprofit organizations, marketing of services, marketing in the public sector, and marketing in an economy of scarcity. Ordinarily only one topic area is addressed in any one quarter. Course content reflects contemporary developments and the current interests of instructors and students. Prerequisite: MKTG 301.

MKTG 495 Marketing Internship (1-4, max. 8)

An internship with a company, not for profit organization, or government agency in a marketing capacity. Prerequisite: MKTG 301. Credit/no-credit only.

MKTG 496 Marketing Practicum (4)

Offers opportunities to apply principles, concepts, and skills learned previously to actual business situations. Participation in class part-time and in an internship with a business employer part-time. Prerequisite: MKTG 301. Instructors: Rhodes

MKTG 499 Undergraduate Research (1-6, max. 9)

Prerequisite: MKTG 301.

MKTG 501 Marketing Management (4)

Analysis and management of customer satisfaction in goods and services markets by profit and nonprofit organizations. Buyer behavior, market segmentation and product positioning, product policy, pricing, distribution, sales force and advertising management, and market research in the contexts of strategy development, decision making, implementation, and control.

MKTG 505 Marketing Strategy (4)

Focuses on the role of analytical marketing tools and competitive dynamics in strategy formation. Accentuates the

integrative nature of marketing strategy through development of a strategic marketing plan and use of simulation software. Prerequisite: MBA core marketing.

MKTG 511 Business-to-Business Marketing (4)

Integrated approach to product marketing management in the business-to-business marketplace. Analysis of core competencies, competitive environment, positioning and segmentation strategies, cost structure, and customer satisfaction. Case-based and project-oriented approach to studying marketing management in the business-to-business market. Prerequisite: MBA core marketing or permission of instructor.

MKTG 515 Strategic Pricing and Value Management

(4) J. SHULMAN Examines theoretical and applied perspectives in pricing strategy and tactics. Explores how firms optimally create, communicate, and capture value to achieve organizational objectives. Provides students with a rigorous foundation for pricing decisions and profitable customer solutions. Prerequisite: B A 500 or MKTG 501.

MKTG 518 Strategic Marketing Management (4)

Dan Turner Designed to enable students to become better marketing decision makers, i.e., one who can recommend specific marketing actions that have a higher probability of achieving organizational goals by using a decision process that consumes fewer organizational resources. Offered: W.

MKTG 520 Marketing Channels (4)

Channels of distribution decisions for goods and services in profit and nonprofit organizations. Considers methods of optimizing the number, quality of institutions and activities employed in dealing with exchange, and space and time aspects of channel management. Relates management of marketing channels to marketing mix, organizational objectives. Prerequisite: MBA core marketing.

MKTG 530 Managing the Sales System (4)

Examines the revenue generation function of a firm from a system-wide perspective. Topics include strategic and tactical considerations related to customer acquisition and retention, end-to-end sales and support operations, strategic partnerships, and continuous performance monitoring. Emphasis on

case studies and team projects. Prerequisite: MBA core marketing.

MKTG 531 Product Management (2) J. Shulman

Provides framework to be successful in the development and launching of new products. Covers customer-centric innovation, market identification, prototype development, value proposition communication, testing tactics and launch strategy.

MKTG 550 Managing Customer Relationships through Direct Marketing (4)

Management of customer relationships through the lens of direct marketing. Topics include direct marketing creative activity, strategy, and execution; media and segmentation; direct marketing budgeting and financials; targeting, database, and predictive modeling; catalogue marketing; relationship marketing; business-to-business complex sales; privacy. Prerequisite: MBA core marketing.

MKTG 552 Consumer Marketing and Brand Strategy (4) M. FOREHAND

Presents a consumer psychology inspired framework for cultivating and maximizing brand equity. Specific emphasis on brand positioning, visual identity design, brand association creation, and brand portfolio management. Greater attention to consumer-facing brands, but B2B brands will also be discussed. Prerequisite: B A 500 or MKTG 501.

MKTG 554 Strategic Product Management (4) A. BORAH

Focuses on best practices in new product development including customer-centric innovation, market identification, prototype development, value proposition communication, testing tactics and launch strategy. Prerequisite: B A 500 or MKTG 501.

MKTG 555 Entrepreneurial Marketing (4)

Examines the skills and tools entrepreneurs need for bootstrap or guerilla early-stage companies. Covers how to target market segments, position products, estimate demand, set prices, gain access to channels, and manage issues of rapid growth. Prerequisite: B A 501, MKGT 501 or equivalent. Offered: jointly with ENTRE 555.

MKTG 556 Advertising and Promotion Management (4)

Management of advertising and promotional activities and their integration with other elements of the marketing mix. Topics include: understanding the communication process, analyzing markets,

working with suppliers, establishing objectives, determining budgets, selecting media, measuring and evaluating effectiveness, using publicity and promotions. Legal, social, and economic consequences are considered. Prerequisite: MBA core marketing.

MKTG 560 Consumer Insights (4) Ann Schlosser

Methods and applications of marketing research to solve marketing problems. Deals with: problem definition, research design, questionnaire construction, sampling, and data analysis using SPSS. Introduces promising new developments in online research, web surveys, and data analysis. Class research project provides practical application. Prerequisite: MBA core marketing.

MKTG 562 Customer Analytics (4) O. RUTZ

Focuses on how to use existing customer data to develop marketing strategies that improve customer response. The featured analytics translate customer data into inferred customer needs that can guide marketing decisions on pricing, advertising, and product recommendations. Prerequisite: B A 500 or MKTG 501.

MKTG 564 Analytics for Marketing Decisions (4) H. Yoganarasimhan

Focuses on how firms can use real large scale databases and analytics to improve and automate firm-level marketing decisions. Consists of four key modules - Product design analytics, Pricing analytics, Promotion and advertising analytics, Placement analytics (with focus on digital and mobile channels) . Prerequisite: B A 500 or MKTG 501

MKTG 566 Digital Marketing Analytics (4) Amin Seyedi, Scott A. Fasser

Provides a quantitative analytics of the digital marketing landscape on topics such as online advertising, social media, growth strategies and search engine optimization. Explores data-driven methods to evaluate digital opportunities, marketing strategies, and online business models. Prerequisite: B A 500 or MKTG 501.

MKTG 570 International Marketing (4)

Analysis of the marketing strategies and tactics of multinational corporations. Choice of entry strategies for foreign markets, analyzing international competition at home and abroad, and developing global marketing strategies. Prerequisite: MBA core marketing.

MKTG 575 Marketing High-Technology Products (4)

Management of the marketing requirements of high-technology products. Examines how markets for high-tech products involve shortened product life cycles, demand for continual product updates, perceived risk of adoption by customers, requirements for intensive customer service and relationships, and growing reliance on business partners. Prerequisite: MBA core marketing.

MKTG 579 Special Topics in Marketing (2/4, max.

12) Marketing topics of current concern to faculty and students. Offered only when allowed by faculty availability and sufficient student interest. Seminar content to be announced in advance of scheduled offerings. Prerequisite: MBA core marketing.

MKTG 581 Doctoral Seminar in Consumer Behavior

(4) Survey of the field of consumer behavior introduces fundamental topics in consumer behavior including cognitive processes, emotion, and consumer satisfaction. Provides exposure to a variety of research methods including experiments, surveys, and phenomenological research.

MKTG 582 Doctoral Seminar in Multivariate

Analysis for Marketing Research (4) Survey of methods useful for empirical evaluation of multivariate marketing phenomena and relationships. Includes an overview of measurement theory and practice; multidimensional scaling; conjoint analysis; cluster, factor, and discriminant analyses; multivariate analysis of variance; structural equation modeling; and other methods commonly encountered in academic marketing research.

MKTG 583 Doctoral Seminar in Marketing Strategy

(4) Study of factors influencing business performance and role of marketing in achieving competitive advantage. Analysis of prevailing, and emerging, theories underlying strategic thinking and competitive process. Examination of empirical research regarding measurement, level, and persistence of business success and implications of findings for theory and strategy development. Prerequisite: BA RM 580.

MKTG 584 Doctoral Seminar in Research Issues in Marketing (2/4, max. 12)

Examination of research problems and issues in marketing. Specific topics vary depending on the interest of faculty and students.

MKTG 591 Doctoral Seminar in Consumer Behavior Research Topics (4)

Investigates research topics of current interest in consumer behavior. Considers the processes used by consumers to acquire and evaluate marketing information including advertising, publicity, word of mouth, packaging, product description, price, and retail outlets, and examines ways the principles in social perception influence consumers' individual responses to marketing-related activities.

MKTG 593 Doctoral Seminar in Marketing Models

(4) Focuses on modeling research efforts in various areas of marketing. Discussion of mathematical and statistical modeling approaches which contribute to scientific development in the marketing area and ways in which modeling is used to characterize and summarize the nature of general marketing situations in complex environments.

MKTG 599 Doctoral Seminar in Marketing (1, max.

12) Study and research in advanced topics of marketing. The seminar is generally concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

MKTG 600 Independent Study or Research (*-)

OPERATIONS MANAGEMENT

OPMGT 301 Principles of Operations Management

(4) Examines problems encountered in planning, operating, and controlling production of goods and services. Topics include: waiting-line management, quality assurance, production systems, project management, and inventory management. Computer and quantitative models used in formulating managerial problems. Prerequisite: ACCTG 225; ECON 200; either MATH 112, MATH 124, MATH125, MATH 134, or Q SCI 291; either ECON 311, IND E 315, QMETH 201, Q SCI 381, PSYCH 315, PSYCH 318, STAT 220, STAT 301, STAT 221/SOC 221/CS&SS 221, STAT 311, or STAT 390.

OPMGT 402 Introduction to Logistics (4)

Logistics studies of the efficient delivery of goods and services. A total-cost approach recognizes this involves not only the obvious vehicle-routing issues but also shipment size and mix, warehouse location, product design, and customer services. Includes

study of real companies' logistics problems.
Prerequisite: OPMGT 301.

OPMGT 443 Inventory and Supply Chain Management (4) Examines modeling and analysis of global supply chains in order to improve service and decrease cost. Covers tools and methods for managing inventory of items with different demand and supply characteristics. Topics include forecasting, Just-in-Time production, deterministic and stochastic inventory models, Materials Requirements Planning; and supplier management. Prerequisite: OPMGT 301.

OPMGT 450 Introduction to Project Management (4) Focuses on management principles, methods, and tools to effectively plan and implement complex projects. Includes project selection, preparation, planning, and monitoring. Covers classical techniques and new methodologies; spreadsheet-based tools; and probabilistic project simulation from strategic, tactical, and operational perspectives. Prerequisite: OPMGT 301.

OPMGT 490 Special Topics in Operations Management (1-6, max. 12) Operations management topics of current concern to faculty and students. Potential topics: logistics management, project scheduling, manufacturing strategy, site and location analysis, management of service operations. Prerequisite: OPMGT 301.

OPMGT 495 Operations Management Internship (1-4, max. 8) Internship with a private firm, nonprofit organization, or government agency, where work experience involves substantial application of analysis techniques and management concepts learned in classroom. Prerequisite: OPMGT 301. Credit/no-credit only.

OPMGT 499 Undergraduate Research (1-6, max. 9)

OPMGT 502 Introduction to Operations Management (3) Managerial decision making in operations problems, including application of quantitative analysis and use of computers. Production of goods or services in any type of organization. Inventory management, scheduling, facility location, management of service systems, and quality assurance. Prerequisite: QMETH 500.

OPMGT 520 Operations Management (4) H. *Mamani* In this course, important concepts and the state of the art analytical techniques essential for managing the operations of any organization, especially hi-tech companies, are covered. In particular, topics such as process management, capacity and waiting lines management and inventory and supply chain management are introduced. Offered: Sp.

OPMGT 550 Project Management (4) Management of complex projects, and tools and techniques (e.g., CPM and PERT) developed to aid the planning, scheduling, and control of projects. Includes work breakdown structures, precedence networks, Gantt charts, resource leveling and allocation, and the use of microcomputer programs. Prerequisite: B A 502 or OPMGT 502 or equivalent.

OPMGT 560 Supply Chain Management (4) This course focuses on efficient integration of suppliers, factories, warehouses and stores so that merchandise is produced and distributed in the right quantities, to the right locations and at the right time. The course objectives are to develop modeling skills and provide concepts applicable to the design, planning of supply chains. Offered: W.

OPMGT 565 Business Analytics-Tools for Big Data (2/4) *Hamed Mamani, Michael R Wagner* Introduces data analytic techniques via quantitative tools and sophisticated software (R and Tableau) . These techniques are drawn from machine learning, data mining, and optimization. Note that this is not a technical or theoretical course. Offered: ASp.

OPMGT 570 Operations Strategy (4) Strategic management of operations and manufacturing in domestic and international companies. Developing and implementing a coherent strategy based on continuous improvement of quality, productivity, products, processes, and customer services. Facilities, capacity, process/work-force planning, organization, people, systems integration, coordination between operations, marketing, engineering, and R&D. Prerequisite: B A 502 or OPMGT 502 or equivalent.

OPMGT 579 Special Topics in Operations Management (2/4, max. 12) Major topics in operations management and systems analysis. Emphasis on research and, where appropriate,

application of quantitative analysis and computers. Topics vary, including workforce planning, project management, research and development management, quality assurance, technology planning and forecasting, systems analysis of complex organizations, and urban systems analysis. Prerequisite: B A 502, OPGMT 502, or equivalent.

OPMGT 581 Advanced Research Topics in Operations Management I (4) Overview of research problems and techniques in operations management. Focuses on emerging and ongoing research relating to current issues in the field, including readings and discussions of literature dealing with subjects of special interest to participants. Prerequisite: doctoral student or permission of instructor. Instructors: Wagner Offered: A.

OPMGT 582 Advanced Research Topics in Operations Management II (4) Overview of research problems and techniques in operations management. Focuses on emerging and ongoing research (beyond those discussed in OPGMT 581) relating to current issues in the field, including readings and discussions of literature dealing with subjects of special interest to participants. Prerequisite: doctoral student or permission of instructor. Instructors: Moizadeh Offered: W.

OPMGT 583 Advanced Research Topics in Operations Management III (4) Examine interdisciplinary research in operations and supply chain management. Focuses on one specific application area of interest each quarter including: healthcare, sustainability, marketing, game theory, economics, etc. Prerequisite: doctoral student or permission of instructor. Instructors: Mamani Offered: Sp.

OPMGT 584 Fundamentals of Operations Management Research (4) Surveys basic areas that form the foundations for much of the research in operations management today. Topic areas include facility location, scheduling, project management, and supply chain management. Prerequisite: QMETH 580. Instructors: Klastorin Offered: W.

OPMGT 587 Advanced Topics in Inventory Management (4) Survey of literature in inventory/production control with emphasis on current research. Topics include single-echelon deterministic and probabilistic models and multi-

echelon stochastic models. Prerequisite: QMETH 592 and course in probability theory and in stochastic processes.

OPMGT 590 Stochastic Models for Research in Business Management (4) *F. IRAVANI* Covers the foundation and applications of stochastic models used in business and management research. Prerequisite: doctoral student or permission of instructor. Offered: A.

OPMGT 599 Doctoral Seminar in Operations Management (1, max. 12) Study and research in advanced topics of operations management. Concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status.

OPMGT 600 Independent Study or Research (*-)

QUANTITATIVE METHODS

QMETH 201 Introduction to Statistical Methods (4) NW, QSR Survey of principles of data analysis and their applications for management problems. Elementary techniques of classification, summarization, and visual display of data. Applications of probability models for inference and decision making are illustrated through examples. Prerequisite: either MATH 112, MATH 124, MATH 125, MATH 134, or MATH 145.

QMETH 450 Spreadsheet Models for Managerial Decision Making (4) Formulation and solution of business problems using operations research techniques in a spreadsheet environment. Techniques of linear and integer programming, decision analysis, network optimization, queuing, and simulation. Applications from marketing, finance, and operations. Prerequisite: I S 300.

QMETH 490 Special Problems in Quantitative Analysis (1-6, max. 12) Specialized quantitative techniques useful for solving business problems. Topics from operation research, statistics, computer methods. Emphasis on application. Prerequisite: either ECON 311, QMETH 201, PSYCH 213, PSYCH 218, STAT 220, STAT 301, STAT 311, or STAT 390.

QMETH 499 Undergraduate Research (1-6, max. 9) Research in selected problems in business statistics,

operations research, decision theory, and computer applications.

QMETH 500 Statistical Data Analysis for Management (4) Statistical models, techniques, and tools for aiding management decisions. Use of spreadsheets in basic business problems. Probability distributions, random sampling and standard errors, hypothesis testing, multiple regression, ANOVA, chi-square tests. Prerequisite: preparation in elementary calculus and successful completion of University-administered proficiency exam.

QMETH 501 Decision Support Models (2) Introduction to computer-based modeling techniques for management decision making. Linear programming, decision analysis, and simulation. Formulation and interpretation. Prerequisite: QMETH 500, B A 500, or equivalent.

QMETH 503 Practical Methods for Data Analysis (4) Basic exploratory data analysis with business examples. Data summaries, multivariate data, time series, multiway tables. Techniques include graphical display, transformation, outlier identification, cluster analysis, smoothing, regression, robustness. Departmental credit allowed for only one of 403 and 503. Prerequisite: B A 500 or QMETH 500 or equivalent or permission of instructor. Offered: jointly with STAT 503.

QMETH 505 Decision Modeling (2) *I. Sirichakwal* Introduces students to the concepts and methods of management science, which applies to mathematical modeling and analysis to management problems. Offered: Sp.

QMETH 510 Data Analysis (2) Covers statistics and probability relevant to the collection, analysis, and interpretation of data, and deals with uncertainty in the decision-making process. Offered: A.

QMETH 520 Managerial Applications of Regression Models (4) Data exploration and inference using regression models for business forecasting and management. Models include simple, multiple, logistic, and nonlinear regression, use of dummy variables, transformations, variable selection, and diagnostics. Prerequisite: QMETH 500 or B A 500.

QMETH 528 Survey Sampling Applications (4) Introduction to design and implementation of

sample surveys with emphasis on business applications. Simple random, stratified, cluster, multistage sample methods. Probability sampling, optimal allocation of sampling units. Mail, telephone, interview methods. Estimation methods, Questionnaire design. Non-response. Prerequisite: QMETH 500 or B A 500 or equivalent or permission of instructor.

QMETH 530 Forecasting Models in Business (4) Introduction to time series analysis and forecasting. Topics include seasonal adjustment, decomposition, exponential smoothing, moving average, and autoregression as well as model identification, estimation, diagnostics, and adaptive forecasting illustrations using real data. Prerequisite: QMETH 500 or B A 500.

QMETH 551 Modeling with Spreadsheets (4) Advanced formulation and modeling of business problems in a spreadsheet environment. Techniques of linear, integer, and nonlinear programming, multi-objective goal programming, and simulation. Applications from finance, marketing, and operations. Prerequisite: B A 502 or QMETH 501 or equivalent.

QMETH 579 Special Topics in Quantitative Methods (2-4, max. 12) Presentation of topics of current concern to students and faculty in operations research and applied business statistics. Potential topics include applications and extensions of mathematical programming, stochastic processes, discrete programming, networks models, and the application of statistical techniques.

QMETH 580 Mathematical Programming (4) Advanced survey of mathematical programming with applications to business problems. Includes linear, integer, stochastic, nonlinear, and dynamic programming and network optimization. Treatment includes formulation, optimality conditions, duality theory, solution algorithms. Applications to production, scheduling, marketing, finance, and equipment replacement. Prerequisite: B A 501 or equivalent and doctoral student or permission of instructor.

QMETH 592 Stochastic Models: Queuing and Simulation (4) Application of stochastic processes to business problems. Focuses on development and application of queuing theory and discrete event

simulation. Prerequisite: OPMGT 590 or permission of instructor.

QMETH 599 Doctoral Seminar in Operations Research (1, max. 12) Study and research in advanced topics of operations research. Concerned with unpublished areas of research and conducted by visiting professors and departmental faculty. Prerequisite: doctoral student status. Credit/no-credit only.

QMETH 600 Independent Study or Research (*-)

SUPPLY CHAIN MANAGEMENT

SCM 500 Finance and Accounting for Supply Chain Management (3) Covers concepts and tools needed to understand, apply, and explain finance and accounting information for managerial decisions and performance evaluation. Offered: S.

SCM 501 Probability and Statistics (3) Covers statistical tools, techniques, and models for aiding management decisions. Use of spreadsheets in basic business problems. Frequency and probability distributions, random sampling and standard errors, testing hypotheses, ANOVA, multiple regression models, and logistic regression models. Offered: S.

SCM 502 Negotiations for Supply Chain Management (2) Develops negotiation techniques and skills applicable to solving supply chain problems. Offered: S.

SCM 503 Leadership for Supply Chain Managers (2) Assesses and develops written and oral communication, interpersonal and leadership skills needed to succeed in the cross-functional and cross-cultural team environment common in a global supply chain environment. Offered: S.

SCM 504 Building Effective Teams (0.5-2, max. 4) Tools to establish strong, shared commitment to a compelling team purpose; bring about collective buy-in to concrete performance objectives; promote team-member adherence to a set of suitable work rules and roles; and foster interpersonal trust and respect crucial to mutual team-member support and extraordinary team performance. Credit/no-credit only. Offered: AWSpS.

SCM 510 Marketing Strategy and Channel Management (3) Covers analysis and decision-making in management of exchange processes with customers. Analysis of market forces and choice of marketing strategy, objectives, and marketing mix variables. Offered: A.

SCM 511 Strategic Sourcing and Procurement (2) Discusses strategic sourcing and procurement in supply chains. Covers topics such as total cost of ownership, outsourcing, E-Sourcing/auctions, spend analytics, supply contracts and supplier scorecard. Offered: A.

SCM 512 Spreadsheet Modeling for Business Enterprise (2) *M. HILLIER* Introduces formulation and modeling of business problems in a spreadsheet environment. Includes linear programming, integer programming, sensitivity analysis, decision analysis, and Monte Carlo simulation. Prerequisite: SCM 501 or equivalent. Offered: A.

SCM 513 Operations Management and Process Analysis (2) Introduces operations management, which focuses on efficient operations and on time delivery of goods and services. Covers topics such as process management and analysis, process flow charting, bottleneck identification, flow balancing, push vs. pull systems, theory of constraints, queue psychology and queue layout and queue analysis. Prerequisite: SCM 501. Offered: A.

SCM 520 Forecasting, Inventory Management, and Supply Chain Analytics (3) Introduces forecasting methods, deterministic and stochastic inventory models, lot-sizing and MRP, JIT, design for logistics, bull-whip effect and other contemporary topics in supply chain. Prerequisite: SCM 511; SFM 512; SCM 513. Offered: W.

SCM 521 Managing Supply Chain Projects (3) Examines the management of complex projects. Specific topics include project teams, project selection, scheduling and budgeting, risk management, and monitoring and control. Also discusses PM software products, and relationships between these products and the requirements of managing risky projects in today's economic environment. Offered: W.

SCM 522 Lean Management, Total Quality, and Six Sigma (2) Describes the basic principles, tools, and

methods of Lean and Six Sigma. Discusses their implementation in variety of settings and shows how to apply them in real supply chains. Topics include seven wastes, value stream mapping, DMAIC, and reengineering. Offered: W.

SCM 523 Competitive Strategy (2) Develops student's ability to think as practicing executives; and provides practice in analyzing, evaluating, and modifying organizations' strategies in light of changing macro-economic conditions. Emphasizes highlighting the interplay between competitive strategy and supply chain management concepts. Offered: W.

SCM 530 Managing and Mining Big Data (3) Explores issues related to managing and mining business big data. Topics include data storage, visualization, clustering analysis, supervised learning techniques, text and web mining, and mining networked data. Real-world applications in supply chain management. Offered: Sp.

SCM 531 Enterprise Systems and Integration (2) Provides an overall understanding of the complex role of information systems in transforming organizational processes and integrating them as part of an enterprise system. Topics include the

concept of process-enabling information technologies and enterprise resource planning systems that support chain management processes. Offered: Sp.

SCM 532 Global Supply Chain Logistics (3) Examines the designing and managing complex global supply chains. Specific topics include global SC design, logistics and sourcing, supply chain inventory models, postponement, supply integration, and contracts. Discusses the interrelation between supply chain management and product design. Offered: Sp.

SCM 533 Special Topics in Supply Chain Management (1-3, max. 6) Reviews current topics and emerging trends in supply chain management. Offered: Sp.

SCM 599 Supply Chain Leaders Series and Practicum (1-2, max. 5) Provides the capstone learning experience. Includes seminars given by supply chain leaders, a final quarter student report and student presentations. Provides students the opportunity to complement their in-class learning experience with related practical experience by working on a project. Credit/no-credit only. Offered: AWSpS.

SCHOOL OF DENTISTRY

DENTAL CLERKSHIP

DENTCL 603 Patient Advocacy - Third Year (1-, max. 3) Teaches third year dental students the practice of comprehensive patient care. Students required to monitor the care of 30 to 50 patients and make recommendations with regard to treatment sequence and recall strategies. Offered: AWSpS.

DENTCL 605 Foundations of Interprofessional Education ([0/1]-) IPE prepares students to collaborate with other health professions in interprofessional patient care practice (IPP), to improve patient care and health outcomes. Students will experience co-learning, working in teams with faculty and students from other health professions, to understand the roles of members of the healthcare team, and have clinical experiences that involve working with other healthcare professional students and practitioners. Credit/no-credit only. Offered: AWSp.

DENTCL 607 Ethics and Jurisprudence ([0-1]-, max. 1) The ADA Ethical Code and state laws governing the practice of dentistry. Students evaluate both ethical dilemmas systematically through online didactic and small group learning and the ethical and legal aspects of case-based scenarios and real-life examples. Offered: AWSpS.

DENTCL 609 Practice Management 3 ([0-1]-, max. 1) Application of business and leadership concepts, regulatory requirements, and information technologies for dentistry. Involves working with staff as leader of a dental practice and assessing financial aspects of dental practitioners. Provides 'hands on' experience. Includes interactive class sessions concurrent with patient care experiences. Credit/no-credit only. Offered: ASp.

DENTCL 631 Prosthodontics Clerkship 1 (2) Builds on preclinical training. Enables student dentists to understand the prosthodontic needs of patients and design and deliver prosthodontic treatment. Offered: S.

DENTCL 632 Periodontics Clerkship 1 (2) Treating patients, including diagnosis, treatment planning,

and periodontal therapy of minimal-moderate difficulty level. Determination of when to refer to a periodontal specialist. Offered: S.

DENTCL 633 Endodontics Clerkship (8) Prepares dental students to provide endodontic therapy within the scope of general dentistry. In the seminar component, students expand their didactic knowledge in preparation for clinical experiences. In the clinical component, student treat patients, including diagnosis, treatment planning, and endodontic therapy of minimal-moderate difficulty level. Offered: AWSpS.

DENTCL 634 Operative Dentistry Clerkship 1 (2) Diagnosing and treating conditions of human dentition, with emphasis on preventive therapies for caries, using patient assessment and treatment planning to ensure preventive and restorative procedures are appropriate for a patient's comprehensive care. Offered: S.

DENTCL 635 Oral Diagnosis and Treatment Planning Clerkship 1 (2) Patient examination and development of comprehensive, multi-disciplinary, person-centered treatment plans, considering patients' desires, expectations, and financial limitations. Offered: S.

DENTCL 636 Oral Medicine Clerkship 1 (2) Provides clinical experience and develops competency in the diagnosis and management of acute and chronic orofacial pain, diseases of the oral mucosa, salivary dysfunction, oral manifestations of systemic diseases, dental management of patients with developmental or other disabilities, and taking interpretation of radiographs. Offered: S.

DENTCL 637 Oral and Maxillofacial Surgery Clerkship (8) Introduces students to the specialty of oral and maxillofacial surgery. An equally important goal is to supply students with the knowledge base and clinical skills necessary to practice general dentistry in our communities. Offered: AWSpS.

DENTCL 638 Pediatric Dentistry and Orthodontic Clerkship (8) Didactic and clinical educational experiences in comprehensive care of pediatric

dental patients in the areas of prevention, diagnosis, treatment planning, and restorative dentistry. In addition, recognition, analysis and treatment planning of malocclusions as well as introduction to limited tooth movement. Offered: AWSpS.

DENTCL 641 Prosthodontics Clerkship 2 (2) Builds on preclinical training. Enables student dentists to understand the prosthodontic needs of patients and design and deliver prosthodontic treatment. Offered: A.

DENTCL 642 Periodontics Clerkship 2 (2) Treating patients, including diagnosis, treatment planning, and periodontal therapy of minimal-moderate difficulty level. Determination of when to refer to a periodontal specialist. Offered: A.

DENTCL 644 Operative Dentistry Clerkship 2 (2) Diagnosing and treating conditions of human dentition, with emphasis on preventive therapies for caries, using patient assessment and treatment planning to ensure preventive and restorative procedures are appropriate for a patient's comprehensive care. Offered: A.

DENTCL 645 Oral Diagnosis and Treatment Planning Clerkship 2 (2) Patient examination and development of comprehensive, multi-disciplinary, person-centered treatment plans, considering patients' desires, expectations, and financial limitations. Offered: A.

DENTCL 646 Oral Medicine Clerkship 2 (2) Provides clinical experience and develops competency in the diagnosis and management of acute and chronic orofacial pain, diseases of the oral mucosa, salivary dysfunction, oral manifestations of systemic diseases, dental management of patients with developmental or other disabilities, and taking interpretation of radiographs. Offered: A.

DENTCL 651 Prosthodontics Clerkship 3 (2) Builds on preclinical training. Enables student dentists to understand the prosthodontic needs of patients and design and deliver prosthodontic treatment. Offered: W.

DENTCL 652 Periodontics Clerkship 3 (2) Treating patients, including diagnosis, treatment planning, and periodontal therapy of minimal-moderate

difficulty level. Determination of when to refer to a periodontal specialist. Offered: W.

DENTCL 654 Operative Dentistry Clerkship 3 (2) Diagnosing and treating conditions of human dentition, with emphasis on preventive therapies for caries, using patient assessment and treatment planning to ensure preventive and restorative procedures are appropriate for a patient's comprehensive care. Offered: W.

DENTCL 655 Oral Diagnosis and Treatment Planning Clerkship 3 (2) Patient examination and development of comprehensive, multi-disciplinary, person-centered treatment plans, considering patients' desires, expectations, and financial limitations. Offered: W.

DENTCL 656 Oral Medicine Clerkship 3 (2) Provides clinical experience and develops competency in the diagnosis and management of acute and chronic orofacial pain, diseases of the oral mucosa, salivary dysfunction, oral manifestations of systemic diseases, dental management of patients with developmental or other disabilities, and taking interpretation of radiographs. Offered: W.

DENTCL 661 Prosthodontics Clerkship 4 (2) Builds on preclinical training. Enables student dentists to understand the prosthodontic needs of patients and design and deliver prosthodontic treatment. Offered: Sp.

DENTCL 662 Periodontics Clerkship 4 (2) Treating patients, including diagnosis, treatment planning, and periodontal therapy of minimal-moderate difficulty level. Determination of when to refer to a periodontal specialist. Offered: Sp.

DENTCL 664 Operative Dentistry Clerkship 4 (2) Diagnosing and treating conditions of human dentition, with emphasis on preventive therapies for caries, using patient assessment and treatment planning to ensure preventive and restorative procedures are appropriate for a patient's comprehensive care. Offered: Sp.

DENTCL 665 Oral Diagnosis and Treatment Planning Clerkship 4 (2) Patient examination and development of comprehensive, multi-disciplinary, person-centered treatment plans, considering

patients' desires, expectations, and financial limitations. Offered: Sp.

DENTCL 666 Oral Medicine Clerkship 4 (2) Provides clinical experience and develops competency in the diagnosis and management of acute and chronic orofacial pain, diseases of the oral mucosa, salivary dysfunction, oral manifestations of systemic diseases, dental management of patients with developmental or other disabilities, and taking interpretation of radiographs. Offered: Sp.

DENTAL ELECTIVE

DENTEL 510 Careers in Dentistry (1) Provides students with knowledge in a wide array of topics relating to a successful career in dentistry. Seminars featuring experienced dentists and experts from different fields will inform students regarding the business side of dentistry and will serve as resources as students face challenges in the dental field. Credit/no-credit only. Offered: AWSp.

DENTEL 512 Ethics Journal Club (1) This course will expose students to the impact of recent developments in biomedical research, which they discuss in an interactive journal club atmosphere. It is open to 1st, 2nd, 3rd, 4th year Predoctoral students and Graduate students in the UW School of Dentistry. Credit/no-credit only. Offered: AWSp.

DENTEL 513 Ethics Publication Review (1) Students will develop, write, and submit a peer reviewed journal submission. Prerequisite: DENTEL 512 Ethics Journal Club or Advance Permission of the Course Director Credit/no-credit only. Offered: AWSp.

DENTEL 520 Global Oral Health (1, max. 6) Provides an overview of global health inequalities and the burden of oral disease worldwide. Students will be introduced to international health care systems and the social, political, cultural, behavioral and economic factors influencing them. The course will use case studies with interactive student participation to analyze the impact of oral health on the public health system at a country level. Credit/no-credit only. Offered: WSp.

DENTEL 530 Research Methods Seminar (1) Provides terminology and concepts related to

different aspects of dental research. Credit/no-credit only. Offered: Sp.

DENTEL 602 Advanced Dentistry in Interprofessional Practice (1) Dental students deepen their understanding of the roles of members of the healthcare team, by communicating and collaborating with other healthcare professional students and practitioners in the provision of patient care and education. Credit/no-credit only. Offered: WSp.

DENTAL FOUNDATIONS

DENTFN 500 Early Clinical Immersion (3) Provides introduction to clinical dentistry and each of the pre-doctoral curriculum threads. Students participate in classroom lectures with multidisciplinary faculty. Also includes small group activities, large group activities and offsite experiences. Credit/no-credit only. Offered: S.

DENTFN 501 Head and Neck Anatomy for Dental Students (3) An overview of Head and Neck Anatomy geared toward dental students. Through lectures and hands-on dissection, students learn the gross anatomical structures of the oro-facial complex and their interrelationship the organization of the nervous system, (vasculature, lymphatics etc.) , of the rest of the body. Credit/no-credit only. Offered: S.

DENTFN 510 Molecular and Cellular Basis of Disease - Foundations (6) Teaches the principles of cell and molecular biology, physiology, biochemistry and genetics. Aspects include the organization of the genome, properties of macromolecules, and cytoarchitecture. Students gain an understanding of intracellular communication, cell-cell interactions, properties of differentiated cells, and the diversity of their physiological properties and functions. Offered: A.

DENTFN 511 Invaders and Defenders - Foundations (5) Covers and integrates the immune system, microbial biology, infectious diseases (including treatment) , inflammation and repair, and skin and connective tissue. Topics include the pathogenesis and immunity of infectious disease, immunodeficiencies, hypersensitivity, autoimmunity, the basis of immunologic diagnostics. Offered: A.

DENTFN 512 Foundations of Dental Medicine (2)

Familiarizes students with the elements of patient interviewing, including developing a problem-focused, medical, social, and dental history. Covers how to physically assess the dental patient. Teaches how to apply principles of cultural competence and ethics throughout this process. Offered: A.

DENTFN 513 Oral Microbiology (2) Applies basic sciences to an understanding of the molecular bases of the interactions between microorganisms and oral tissues that lead to plaque formation and dental diseases. Covers principles of clinical asepsis and diagnosis of caries and periodontal diseases. Offered: A.

DENTFN 520 Cardiac, Pulmonary, and Renal Diseases - Foundations (8) Covers the structure, function, and diseases of the cardiac, pulmonary, and renal systems, with special emphasis on the management of these diseases in the practice of dental medicine and surgery. Offered: W.

DENTFN 521 Introduction to Dental Public Health (2) Students analyze a real-world public health case, and develop feasible solutions. Each small group present their solutions at the end of the course. Credit/no-credit only. Offered: W.

DENTFN 522 Foundations of Dental Medicine (2) Students increase expertise with patient interviewing and developing a problem-focused medical, social, and dental history. Improves student skills in physical assessment, including diagnostic tests. Covers how to develop a differential diagnosis. Students learn and apply principles of cultural competence and ethics throughout this process. Offered: W.

DENTFN 523 Oral Histology and Embryology I (3) Development of orofacial and neck structures; tooth/pulp histology, development, eruption and exfoliation; innervation of teeth and oral structures; craniofacial and dental anomalies; cranioskeletal development; temporomandibular joint; masticatory muscle structure and function; oral mucosa and epithelial differentiation; periodontium and epithelial attachment; specialized mucosa; gustation; and salivary gland structure and physiology. Offered: W.

DENTFN 530 Blood and Cancer - Foundations (3) Provides an overview of hematology and oncology. Students learn the biology of bone marrow and blood, with an introduction to the field of cancer medicine. Specific cancer subtypes are discussed, providing illustrative examples of the impact of molecular biology and environmental risk factors in the development/treatment of malignancy. Offered: Sp.

DENTFN 531 Energetics and Homeostasis - Foundations (5) Covers energy metabolism, nutrition, obesity, diabetes, gastrointestinal/liver physiology, and endocrinology. Topics include physiology and pathology of digestion and hepatic function; principles and practice of clinical nutrition; endocrine integration of metabolism; and endocrine pathophysiology. Also covers relevant anatomy, histology, and pharmacology of the endocrine and GI systems. Offered: Sp.

DENTFN 533 Oral Histology and Embryology 2 (3) Examines the development of orofacial and neck structures; tooth/pulp histology, development, eruption and exfoliation; innervation of teeth and oral structures; craniofacial and dental anomalies; cranioskeletal development; temporomandibular joint; masticatory muscle structure/function; oral mucosa and epithelial differentiation; periodontium and epithelial attachment; specialized mucosa; gustation; and salivary gland structure and physiology. Offered: Sp.

DENTFN 560 Mind, Brain, and Behavior - Foundations (7) Covers the macro- and microscopic structure and function of the human nervous and musculoskeletal systems in terms of students' contribution to observable behavior, ranging from reflexes through cognitive and social behavior. Offered: A.

DENTFN 561 Lifecycle - Foundations (4) Covers the physiology, anatomy/imaging, and pathology of the human lifecycle from conception to death and gives the dental student the necessary medical background to facilitate dental treatment of patients experiencing these diseases and disorders. Offered: A.

DENTFN 562 Foundations of Dental Medicine 3 (2) Reviews the medical, legal, social, and historical contexts affecting the oral and overall health of

people with disabilities, patients in all stages of life, and patients from diverse backgrounds. Discusses communication techniques, delivery of care, and health promotion for diverse populations. Offered: A.

DENTAL GENERAL PRACTICE

DENTGP 650 Advanced Topics in General Dentistry (3) Faculty members from multiple departments participate with senior dental students in this course, which includes clinical practice management; ethics and jurisprudence; and coordinated multidisciplinary care; incorporating diagnosis and treatment planning; medical and surgical management; restorative dentistry; prosthodontics; implant dentistry; periodontics; endodontics; and orthodontics. Offered: S.

DENTGP 652 Comprehensive General Dentistry 1 (7) Immersion in group practice atmosphere that simulates general dental practice. Students will provide comprehensive dental care to patients of all ages and stages of life in UWSOD general practice clinic and the Center for Pediatric Dentistry. Offered: S.

DENTGP 653 Treatments of Patients with Special Needs 1 (2) Exposes students to the assessment process and treatment strategies for successful management of patients with developmental and acquired disabilities, medically complex patients, geriatric patients, and anxious, fearful, or phobic patients in a variety of treatment settings, including clinical, hospital, and extramural (nursing home or senior center) . Credit/no-credit only. Offered: S.

DENTGP 654 Dental Urgent and Emergent Care 1 (2) Advanced instruction and clinical practice in the diagnosis and management of patients requiring urgent and emergent dental care as well as patients needing assessment and care in the discipline of oral medicine. Includes clinical rotations in oral maxillofacial radiology and oral medicine specialty clinics. Offered: S.

DENTGP 655 Service Learning Rotation (6) P. HOWELL Students practice clinical dentistry for 4 weeks at a designate rural and/or underscored community health center. The student further develops an understanding of cultural competence

by analyzing and reflecting on the social and cultural factors that contribute to the oral health needs of these diverse populations. Offered: AWSpS.

DENTGP 660 Advanced Topics in General Dentistry 2 (3) Includes clinical practice management; ethics and jurisprudence; and coordinated multidisciplinary care. Incorporates diagnosis and treatment planning; medical and surgical management; restorative dentistry; prosthodontics; implant dentistry; periodontics; endodontics; and orthodontics. Offered: A.

DENTGP 662 Comprehensive General Dentistry 2 (7) Immersion in group practice atmosphere that simulates general dental practice. Students will provide comprehensive dental care to patients of all ages and stages of life in the UWSOD general practice clinic and the Center for Pediatric Dentistry. Offered: A.

DENTGP 663 Treatments of Patients with Special Needs 2 (2) K. ESPINOZA Exposes students to the assessment process and treatment strategies for successful management of patients with developmental and acquired disabilities, medically complex patients, geriatric patients, and anxious, fearful, or phobic patients in a variety of treatment settings, including clinical, hospital, and extramural (nursing home or senior center) . Credit/no-credit only. Offered: A.

DENTGP 664 Dental Urgent and Emergent Care 2 (2) Advanced instruction and clinical practice in the diagnosis and management of patients requiring urgent and emergent dental care as well as patients needing assessment and care in the discipline of oral medicine. Includes clinical rotations in oral maxillofacial radiology and oral medicine specialty clinics. Offered: A.

DENTGP 670 Advanced Topics in General Dentistry 3 (3) Faculty members from multiple departments will participate with senior dental students in this active learning course, which will inch clinical practice management, ethics and jurisprudence, and coordinated multidisciplinary care, incorporating diagnosis and treatment planning, medical and surgical management, restorative dentistry, prosthodontics, implant dentistry, periodontics, endodontics, and orthodontics. Online content emphasized. Offered: W.

DENTGP 672 Comprehensive General Dentistry 3 (7)

Immersion in group practice atmosphere that simulates general dental practice. Students will provide comprehensive dental care to patients of all ages and stages of life in the UWSOD general practice clinic and the Center for Pediatric Dentistry. Offered: W.

DENTGP 673 Treatments of Patients with Special Needs 3 (2)

Exposes students to the assessment process and treatment strategies for successful management of patients with developmental and acquired disabilities, medically complex patients, geriatric patients, and anxious, fearful, or phobic patients in a variety of treatment settings, including clinical, hospital, and extramural (nursing home or senior center) . Credit/no-credit only. Offered: W.

DENTGP 674 Dental Urgent and Emergent Care 3 (2)

Advanced instruction and clinical practice in the diagnosis and management of patients requiring urgent and emergent dental care as well as patients needing assessment and care in the discipline of oral medicine. Includes clinical rotations in oral maxillofacial radiology and oral medicine specialty clinics. Offered: W.

DENTGP 676 RIDE Comprehensive General Dentistry 3 (13-)

Students work in a clinical setting, serving a diverse population in rural and/or underserved areas. The RIDE Regional Director and Clinical Site Preceptors (UW affiliate faculty) supervise senior dental students in: practice management, ethics and jurisprudence, evidence-based multidisciplinary care, dx and tx planning, medical & surgical management, restorative, prosthodontic, and implant dentistry, periodontics, endodontics, and orthodontics. Offered: W.

DENTGP 680 Advanced Topics in General Dentistry 4 (3)

Faculty members from multiple departments will participate with senior dental students in this active learning course, which will include clinical practice management, ethics and jurisprudence, and coordinated multidisciplinary care, incorporating diagnosis and treatment planning, medical and surgical management, restorative dentistry, prosthodontics, implant dentistry, periodontics, endodontics, and orthodontics. Online content emphasized. Offered: Sp.

DENTGP 682 Comprehensive General Dentistry 4 (7)

Immersion in group practice atmosphere that simulates general dental practice. Students will provide comprehensive dental care to patients of all ages and stages of life in the UWSOD general practice clinic and the Center for Pediatric Dentistry. Offered: Sp.

DENTGP 683 Treatments of Patients with Special Needs 4 (2)

Exposes students to the assessment process and treatment strategies for successful management of patients with developmental and acquired disabilities, medically complex patients, geriatric patients, and anxious, fearful, or phobic patients in a variety of treatment settings, including clinical, hospital, and extramural (nursing home or senior center) . Credit/no-credit only. Offered: Sp.

DENTGP 684 Dental Urgent and Emergent Care 4 (2)

Advanced instruction and clinical practice in the diagnosis and management of patients requiring urgent and emergent dental care as well as patients needing assessment and care in the discipline of oral medicine. Includes clinical rotations in oral maxillofacial radiology and oral medicine specialty clinics. Offered: Sp.

DENTGP 685 4th Year Clinical Competencies (1)

In part 2 of this course, students will demonstrate competency as defined by UWSOD and CODA (Standards 2.9, 2.14, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23 A through O, and 2.24) . Students will also demonstrate global competency to practice dentistry. Offered: Sp.

DENTGP 686 RIDE Comprehensive General Dentistry 4 (-13)

Students work in a clinical setting, serving a diverse population in rural and/or underserved areas. The RIDE Regional Director and Clinical Site Preceptors (UW affiliate faculty) supervise senior dental students in: practice management, ethics and jurisprudence, evidence-based multidisciplinary care, dx and tx planning, medical & surgical management, restorative, prosthodontic, and implant dentistry, periodontics, endodontics, and orthodontics. Offered: Sp.

DENTAL HYGIENE

D HYG 500 Dental Hygiene Program Seminar (1-3, max. 15) Credit/no-credit only.

D HYG 501 Dental Hygiene Capstone I ([2-8]-, max. 8)

D HYG 502 Dental Hygiene Capstone II (-[2-8]-, max. 8)

D HYG 503 Dental Hygiene Capstone III (-[2-8], max. 8)

D HYG 594 Principles of Teaching for Oral Health Professionals (3) Application of principles of learning to teaching methods and techniques used in education, with opportunity for course planning, demonstration, and practice teaching. Prerequisite: graduate program admission.

D HYG 595 Internship (*, max. 12) Clinical and/or didactic teaching experience or program administration. Teaching and administration responsibilities assigned according to student's previous experience, education needs, and interest. Seminar required. Prerequisite: D HYG 494 or D HYG 594 and permission of instructor. Offered: AWSpS.

DENTAL PRE-CLINICAL

DENTPC 510 Dental Anatomy (3) Includes lecture and laboratory content on the morphology and nomenclature of individual teeth of the adult dentition; introduction to tooth histology and function; and the influence of tooth anatomy on clinical dental procedures. Offered: A.

DENTPC 511 Introduction to Periodontics (2) Explores the clinical, histopathologic, and radiographic features of periodontal diseases, principles of preventive periodontics and initial examination of the periodontium. Topics include normal structure, classification and epidemiology of periodontal diseases, etiologic factors, host response, and pathogenic lesions and periodontal disease. Offered: A.

DENTPC 520 Dental Occlusion (3) Topics include: fabrication of master case models; articulator use and function; contacts in MIP and CO, temporomandibular joint function; mandibular excursive movements; mandibular envelopes of movement; and how anatomical determinants influence occlusal function in all anatomical planes. Offered: W.

DENTPC 523 Dental Materials Science 1 (1) Explores basic concepts of dental materials science, specifically the physical, mechanical, chemical and biological properties, as well as clinical applications of the dental materials commonly used in the fabrication and placement of direct and indirect restorations. Offered: W.

DENTPC 530 Introduction to Operative Dentistry (2) Students become familiar with and obtain expertise in applied dental materials, elementary concepts of tooth restoration, understanding of etiology and preventive aspects of caries, understanding of caries management by risk assessment. Student learn and develop the surgical skills for the restoration of one surface pathologic lesions. Offered: Sp.

DENTPC 531 Introduction to Evidence-Based Dentistry (1) Evidence-based dental decision-making considers patient needs and desires, clinician strengths and weaknesses, and up-to-date research evidence. Students learn about why evidence-based patient care is safer and more effective. They learn how to evaluation scientific evidence on oral health, and apply it in clinical decision making. Offered: Sp.

DENTPC 532 Oral and Maxillofacial Radiology Theory 1 (2) This course prepares students for all courses where radiographs are needed for diagnosis, treatment planning or follow-up. Recognizing normal and aberrant anatomy on intraoral and extraoral radiographs will be covered as well as radiation protection. This will prepare the student for part 2 of the Radiology series (DENTPC 552) on radiographic pathology. Offered: Sp.

DENTPC 533 Dental Materials Science 2 (1) Explores basic concepts of dental materials science, specifically the physical, mechanical, chemical and biological properties, as well as clinical applications of the dental materials commonly used in the fabrication and placement of direct and indirect restorations. Offered: Sp.

DENTPC 534 Introduction to Oral Pathology (3) This is the first course in a three-part series designed to introduce students to oral diseases bridging the field of dentistry to medicine. This course covers oral soft tissue diseases, etiology, pathogenesis, clinical signs and symptoms, histology, laboratory findings (when applicable) , and prognosis. Offered: Sp.

DENTPC 535 Removable Partial Denture Design (2)

Develops proficiency in basic principles of the designs of removable partial dentures. Offered: Sp.

DENTPC 550 Operative Dentistry 2 (5) Students obtain proficiency in applied dental materials, advanced concepts of tooth restoration, understanding of etiology and preventive aspect of caries, understanding of caries management by risk assessment. Students learn and develop the surgical skills for the restoration of multi-surface pathologic lesions. Emphasizes ergonomics and ethics. Offered: S.

DENTPC 551 Immediate Dentures (3) Covers the basic principles of immediate denture and the procedures for the fabrication of an immediate denture. Topics include treatment planning; record maintenance; and laboratory steps for the fabrication of the ICD; surgical procedures; and post insertion care and complications. Offered: S.

DENTPC 552 Oral and Maxillofacial Radiology Theory 2 (1) This course covers dental anomalies and pathology of bone and how they present on radiographs of the head and neck region. The students will be taught how to interpret radiographs and how to formulate a differential diagnosis based on the characteristics of the radiographic appearance. Offered: S.

DENTPC 553 Local Anesthesia (3) Covers the pharmacology, anatomy, techniques and clinical practice of local anesthesia. The safe and effective administration of local anesthesia is integral to general dentistry and most specialties. Offered: Sp.

DENTPC 554 Oral Pathology 1 (2) This course covers common diseases of jaw bones. Each disease will be discussed to include: etiology and pathogenesis, clinical signs and symptoms, histological features, laboratory findings (when applicable) , pitfalls in diagnosis and prognosis. Offered: S.

DENTPC 560 Operative Dentistry 3 (3) Students become familiar with very small amalgam and composite class 2 slot restorations and learn the replacement of large cusp fractures, utilizing pins, slots, grooves, potholes, and endo posts for retention. Also teaches Class 2 intracoronal cast restorations and the restoration of teeth with Class 4 lesions. Offered: A.

DENTPC 561 Fixed Prosthodontics I (2) Students gain knowledge in the principles of fixed prosthodontics for the restoration of damaged tooth surfaces with metal and/or esthetic veneer single tooth restorations as well as become familiar with the material science and use of the various dental materials used in this discipline. Offered: A.

DENTPC 562 Complete Dentures I (3) Deals with the basic principles of conventional complete denture fabrication, as well as the diagnosis and treatment of a completely edentulous patient. Offered: A.

DENTPC 565 Conversations on Dental Practice (1) Provides the specific core content within each of the approximately 30 filaments within the practice management thread. Credit/no-credit only. Offered: AWSp.

DENTPC 570 Operative Dentistry 4 (2) Explores applied dental materials, advanced concepts of tooth restoration, understanding of etiology and preventive aspects of caries, understanding of caries management by risk assessment. Students learn and develop the surgical skills for the restoration of multi-surface pathologic lesions. Offered: W.

DENTPC 571 Fixed Prosthodontics 2 (4) Explores the planning, restoration and replacement of missing teeth with fixed prostheses, planning and designing for the restoration of endodontically treated teeth as well as become familiar with the material science and use of the various dental materials used in this discipline. Offered: W.

DENTPC 572 Complete Dentures 2 (2) Second of two courses dealing with the basic principles of conventional complete denture fabrication, as well as the diagnosis and treatment of a completely edentulous patient. The instructional material will be presented prior to each laboratory session. Affiliate instructors will supervise the laboratory application of the lecture instruction. Offered: W.

DENTPC 573 Orthodontics 1: Growth and Development of the Face and Dentition (2) Explores principles of facial growth, occlusal development, and diagnosis of the different types of malocclusion. The overall goal is for the student to gain knowledge and skills necessary for the analysis and treatment of malocclusion. Offered: W.

DENTPC 574 Oral Pathology 2 (4) Taught in a clinical-pathological conference (CPC) format, with cases directly building on and supplementing the lecture material covered in DENTPC 534 and DENTPC 554. Each class will start with a short lecture/review of the specific topic, followed by an in-depth discussion of ten clinical cases. Students participate in formulating a differential diagnosis, rendering a final diagnosis based on histology, and offering treatment and prognosis Offered: W.

DENTPC 575 Removable Partial Denture Technique (2) Prepares the pre-doctoral dental students to evaluate, design, prepare, fabricate and provide maintenance for a removable partial denture, when treating partially edentulous patients during their clinical training. Offered: W.

DENTPC 576 Clinical Oral Radiology (2) Intraoral radiographic techniques (periapical, bitewing, occlusal and oblique occlusal radiography) . Includes a virtual reality module (QBION) to practice periapical radiography skills. Students perform a quality assessment and a radiographic interpretation report on panoramic radiographs. Offered: W.

DENTPC 577 Periodontics 2: Prevention/Periodontics (2) Introduction to prevention in dentistry. Topics covered include examination of the dentition and periodontium, dental disease indices, scaling and root planning instruments and instrumentation, sharpening, and oral hygiene chemotherapeutics. Students prepare for providing patient care in the next course, DENTPC 587-Periodontics 3. Offered: W.

DENTPC 580 Operative Dentistry 5 (3) Explores applied dental materials, advanced concepts of tooth restoration, understanding of etiology and preventive aspects of caries, understanding of caries management by risk assessment. Students learn and develop the surgical skills for the restoration of multi-surface pathologic lesions. Offered: Sp.

DENTPC 581 Fixed Prosthodontics 3 (2) Explores indications, materials selection, fabrication of esthetic veneer restorations for fixed prostheses and the science of color application to esthetic restorations. The rationale is learned for resin-bonded ultraconservative fixed prostheses and resin or ceramic veneered prostheses. The student will plan and wax an anterior esthetics case. Offered: Sp.

DENTPC 582 Implant Dentistry (2) Explores the basic science of osseointegration, and be able to manage the restorative phase of the partially and completely edentulous patient. Students will learn to use implant components, computer software for the planning and placement of the implants and to restore a single tooth implant in the laboratory. Offered: Sp.

DENTPC 583 Orthodontics 2 (2) Explores the development of the occlusion, diagnosis of different types of malocclusion, and basic principles of biomechanics during orthodontic treatment. The goal is for the student to be able to analyze malocclusions and make appropriate treatment decisions. Offered: Sp.

DENTPC 584 Introduction to Endodontics (4) This introductory course in Endodontics includes both didactic and laboratory components. The didactic component covers the biology, pathology, diagnosis, and treatment of pulpal and periapical pathosis. The preclinical laboratory component covers endodontic treatment techniques using extracted and artificial teeth. The course prepares students for the third-year Endodontic Clerkship. Offered: Sp.

DENTPC 585 Removable Partial Denture Technique (4) Describes those procedures that a dentist must perform to fabricate a removable partial denture. The projects will prepare the pre-doctoral students to evaluate, design, prepare, fabricate, and provide maintenance for the prosthesis when treating partially edentulous patients during their clinical training. Offered: Sp.

DENTPC 586 Introduction to Pediatric Dentistry (2) Introduction to clinical pediatric dentistry, including behavior management, oral diagnosis, preventive dentistry, dental anomalies, radiography, anesthesia, restorative procedures, pulpal therapy, space maintenance and traumatic dental injuries in the primary and permanent dentitions. Offered: Sp.

DENTPC 587 Periodontics 3: Prevention/Periodontics II (2) This course is the clinical application of topics covered the prior quarter. Students will see patients for preventive maintenance appointments and will apply knowledge in caries detection and treatment planning, identification of periodontal predisposing factors, dentinal hypersensitivity, and advanced

instrumentation. Students will provide patient care in the weekly clinical sessions. Offered: Sp.

DENTAL PUBLIC HEALTH SCIENCES

DPHS 449 P-Directed Studies in Dental Public Health Sciences (*) Students and faculty with common academic interests pursue them together within the curriculum by means of independent study and a tutorial student-faculty relationship. Credit/no-credit only. Offered: AWSpS.

DENTAL SELECTIVE

DENTSL 550 Rural/Underserved Opportunities Program Community Rotations (6) Students gain an early clinical patient care experience with oversight from School of Dentistry affiliate faculty at calibrated community health clinics in Washington and Montana. They work with dentists and dental hygienists, along with dental assistants and staff who perform the support functions necessary to operating a dental clinic. Offered: S.

DENTSL 552 Patient Care Experience Selective (6) Exposes students to an early clinical patient care experience working side-by-side with advanced dental students, and along with staff who perform the support functions necessary to operating a dental practice. Credit/no-credit only. Offered: S.

DENTSL 651 Directed Studies in General Dentistry 1 (2) Additional summer quarter study and/or clinic time, instruction, and/or mentoring in the practice and/or theory of general dental practice for the student who wishes or requires an individualized augmentation to the 4th year curriculum. Offered: S.

DENTSL 655 Peer Mentor Interdisciplinary - Selective (1, max. 12) Senior dental students participate as Peer Mentors for 1st and 2nd year dental students in various pre-clinical Interdisciplinary courses. This experience builds upon, enhances and refines the students in Peer Mentoring. Credit/no-credit only. Offered: AWSpS.

DENTSL 661 Directed Studies in General Dentistry 2 (2) Provides additional autumn quarter study and/or clinic time, instruction, and/or mentoring in the practice and/or theory of general dental practice to the student who wishes or requires an individualized

augmentation to the 4th year curriculum. Credit/no-credit only. Offered: A.

DENTSL 662 Advanced Implant Dentistry 2 (1) Offers opportunities for predoctoral students to gain additional knowledge to manage more advanced and complex implant cases. Includes treatment planning and managing the surgical and restorative part of the treatment under supervision of faculty from the three departments. Credit/no-credit only. Offered: A.

DENTSL 665 Dental Photography - Selective (1) Provides students with sufficient knowledge and experience to select and use correct photographic equipment for photographing patients (facial and intraoral views), casts, instruments, x-rays, charts, and objects. Credit/no-credit only. Offered: AS.

DENTSL 671 Directed Studies in General Dentistry 3 (2) Provides additional winter quarter study and/or clinic time, instruction, and/or mentoring in the practice and/or theory of general dental practice to the student who wishes or requires an individualized augmentation to the 4th year curriculum. Credit/no-credit only. Offered: W.

DENTSL 672 Advanced Implant Dentistry 3 (1) Offers opportunities for predoctoral students to gain additional knowledge to manage more advanced and complex implant cases. Includes treatment planning and managing the surgical and restorative part of the treatment under supervision of faculty from the three departments. Credit/no-credit only. Offered: W.

DENTSL 681 Directed Studies in General Dentistry 4 (2) Provides additional spring quarter study and/or clinic time, instruction, and/or mentoring in the practice and/or theory of general dental practice for the student who wishes or requires an individualized augmentation to the 4th year curriculum. Offered: Sp.

DENTSL 682 Advanced Implant Dentistry 4 (1) Offers opportunities for predoctoral students to gain additional knowledge to manage more advanced and complex implant cases. Includes treatment planning and managing the surgical and restorative part of the treatment under supervision of faculty from the three departments. Credit/no-credit only. Offered: Sp.

DENTISTRY

DENT 550 P-Special Studies in Dentistry (*, max. 12)

Offered by the various departments from which students may elect study in areas of special interest to them. Includes subject matter applicable to all phases of dentistry. Credit/no-credit only. Offered: AWSpS.

DENT 563 Elements of Conscious Sedation (1-2)

Details theory and techniques for rendering oral, inhalation, transmucosal, intramuscular, and intravenous forms of conscious sedation. Focuses on pharmacology and pharmacokinetics of nitrous oxide, benzodiazepines, narcotics, and barbiturates. Addresses usual applications, special considerations, legal issues, and proper record keeping. Emphasizes prevention and management of emergencies. Credit/no-credit only. Offered: A.

DENT 565 Dental Photography and Imaging (2)

Provides postdoctoral students with sufficient knowledge and experience to select and use correct photographic equipment for photographing patients (facial and intraoral views), casts, instruments, x-rays, charts, and objects. Offered: S.

DENT 568 Internal Medicine for Dentistry ([1-3]-, max. 6)

Review of major organ systems, including normal anatomy and physiology, common pathophysiologies, medical interventions. Details modifications necessary for dental treatment and medical emergency management. Credit/no-credit only. Offered: S.

DENT 663 Treatments of Patients with Special Needs 2 (2) K. ESPINOZA

Exposes students to the assessment process and treatment strategies for successful management of patients with developmental and acquired disabilities, medically complex patients, geriatric patients, and anxious, fearful, or phobic patients in a variety of treatment settings, including clinical, hospital, and extramural (nursing home or senior center). Credit/no-credit only. Offered: A.

DENT 690 P-Extended Clinical Dentistry (1)

Educational experiences in clinical dentistry. Available to students who have successfully completed the University of Washington Doctor of Dental Surgery curriculum and seek additional

supervised experience in the delivery of oral health care services within three quarters of graduation and prior to licensure. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

DENT 700 Master's Thesis (*-) Offered: AWSpS.

ENDODONTICS

ENDO 550 P-Directed Studies in Endodontics (*, max. 6) See DPHS 449 for course description. Credit/no-credit only.

ENDO 560 Advanced Endodontic Diagnosis and Treatment (2) Current concepts are presented and discussed relating to the diagnosis and treatment of pulpal and periapical pathosis. Criteria for evaluation of success or failure of root canal therapy are presented.

ENDO 561 Anatomical Basis for Clinical Endodontics (2) Root canal anatomy of significance in clinical endodontics is discussed in a seminar format. Offered: S.

ENDO 562 Anatomical Bases for Surgical Endodontics (2) Diagnosis and treatment of acute symptoms of dental origin, surgical endodontic therapy, traumatic dental injuries, and the relationship between periodontal and pulpal pathosis, including differential diagnosis and appropriate treatment planning.

ENDO 563 Radiographic Interpretation (2) Various aspects of radiographic interpretation of particular relevance to endodontics, including interpretation of normal structures, acquired and developmental abnormalities, infections, sialoliths, dysplasias, cysts, malignant lesions, benign tumors, and various diseases other than tumors.

ENDO 566 Advanced Radiographic Interpretation (2) Various aspects of radiographic interpretation of particular relevance to endodontics, including malignant lesions, benign tumors, various diseases other than tumors, soft-tissue calcifications, and radiographic technique.

ENDO 568 Endodontic Practice Management (1) Essential elements for establishing and managing a

successful specialty practice in Endodontics.
Prerequisite: ENDO 562.

ENDO 580 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: S.

ENDO 581 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: A.

ENDO 582 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: W.

ENDO 583 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: Sp.

ENDO 584 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: S.

ENDO 585 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: A.

ENDO 586 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: W.

ENDO 587 Endodontic Seminar (2) Ongoing weekly seminar devoted to review of endodontic and related literature and discussion of research methods. Offered: Sp.

ENDO 590 Treatment Planning Seminar (2, max. 16) Weekly seminar to discuss controversial treatment problems, difficult diagnostic cases, and presentation of endodontic treatment cases. Offered: AWSpS.

ENDO 593 Clinical Practice Teaching (1, max. 3) Closely supervised experience in teaching clinical

endodontics to the undergraduate dental student. Offered: SpS.

ENDO 594 Current Endodontic Literature (1) A review and critical evaluation of the current literature relative to endodontics. Credit/no-credit only. Offered: AWSpS.

ENDO 595 Endodontic Surgery (2) Reviews biological and technical aspects of endodontic surgery with emphasis on both the classic and current scientific surgical literature. Lectures and topic seminar discussion along with surgical case presentations.

ENDO 597 Endodontics Teaching Seminar (2) Weekly seminars devoted to an examination of general problems of teaching and learning and specific problems of endodontics teaching.

ENDO 598 Endodontics Teaching Seminar (2) Weekly seminars devoted to an examination of general problems of teaching and learning and specific problems of endodontics teaching.

ENDO 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

ENDO 651 Honors Endodontics - Classical Literature Seminar - Selective (3) This course is one quarter within a series of seminars (ENDO 580, 581, 582, 583, 584, 585, 586, and 587). The literature covered in these seminars review endodontic topics at the graduate level for students in the Advanced Program in Endodontics. In Honors Endodontics, fourth year predoctoral students are given the opportunity to join graduate students and participate in these seminars. Offered: AWSpS.

ENDO 655 Peer Mentor Endodontics - Selective (1, max. 12) Senior dental students participate as Peer Mentors for 1st and 2nd year dental students in various pre-clinical Interdisciplinary courses. This experience builds upon, enhances and refines the students in Peer Mentoring. Credit/no-credit only. Offered: AWSpS.

ENDO 658 Endodontic Emergency Rotation (1) Clinical experience in managing and treating patients in pain. Credit/no-credit only. Offered: AWSpS.

ENDO 659 P-Endodontics Extended Learning (*, max. 4) Supplemental work in endodontics to correct an area of student deficiency. Credit/no-credit only.

ENDO 660 Clinical Endodontics (4, max. 32) Clinical diagnosis and treatment of pulpal pathosis and related sequelae. Offered: AWSpS.

ENDO 671 Endodontic Treatment - Selective (1) Several of the different products and techniques available for performing root canal therapy will be introduced to students. The selective is similar to an endodontic continuing education course. Students will use extracted teeth to gain introductory level practical experience with various instrumentation and obturation systems available on the market. Credit/no-credit only. Offered: W.

ORAL BIOLOGY

ORALB 550 P-Directed Studies in Oral Biology (*, max. 12) Selected readings and seminars on a topic chosen by individual arrangement in collaboration with a faculty member. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALB 574 Clinical Stomatology (3) Y. RAWAL Diseases of the oral cavity and jaw are presented as the practitioner encounters them - detailed clinical pictures, laboratory tests, radiographic findings, surgical exploration for the establishment of a therapeutic diagnosis. Offered: jointly with O S 574; Sp.

ORAL HEALTH SCIENCES

OHS 201 Planning a Career in Dentistry for the Future (2) S. Coldwell Future-oriented overview of important concepts in dental science, contemporary modes of patient treatment, and dental-care delivery systems. Provides exposure to dentistry as a career and prerequisite materials in oral anatomy, epidemiology, and other basic sciences subjects. Open to all second-, third, and fourth-year undergraduate students. Offered: Sp.

OHS 449 Undergraduate Research Topics in Oral Biology (*, max. 30) Individual research on topics selected in collaboration with a faculty member. Offered: AWSpS.

OHS 550 P-Directed Studies in Dental Public Health Sciences (*, max. 17) Students and faculty members who have common academic interests can pursue them together within the curriculum by means of independent study and a tutorial student-faculty relationship. Credit/no-credit only. Offered: AWSpS.

OHS 561 Oral Tissue Development, Structure, and Function (3, max. 6) Selected readings and discussions explore recent advances in cellular and molecular biology relevant to oral biology and medicine. Special emphasis on craniofacial and dental development, oral mucosa and periodontal tissues, salivary gland function, and olfaction and gustation. Prerequisite: permission of instructor. Instructors: Popowics Offered: WSp.

OHS 562 Supervised Teaching in Oral Health Sciences (1-5, max. 10) Directed and guided experience in selected topics in teaching techniques, teaching philosophy, and design of courses given by the Department of Oral Health Sciences. Students are required to participate in lecture and laboratory teaching under the supervision of the course director. Prerequisite: permission of instructor. Offered: AWSpS.

OHS 568 Biostatistics in Dentistry (3) Introduction to concepts and methods of descriptive and inferential statistics with applications in dentistry emphasized. Topics include comparison of means and proportions, hypothesis testing, confidence intervals, non-parametric methods, linear regression, and correlation. Prerequisite: enrollment in School of Dentistry or permission of instructor. Instructors: Spiekerman Offered: jointly with BIOST 510; S.

OHS 569 Advanced Oral Microbiology (2) Darveau Viral, bacterial classification; physiology; toxicity mechanisms reviewed. Formation and composition of plaque and calculus, and chemical methods of control discussed. Specific microbial floras of acute and chronic gingivitis, early onset forms of periodontitis, and adult periodontitis studied. Principles of antibiotic use reviewed. Offered: W, even years.

OHS 571 Clinical Epidemiology and Study Design in Dentistry (2) Hujoel An introduction to epidemiological methods as they relate to dental research. Topics covered include the estimation of

dental disease occurrence at patient level and site level and the design and analysis of clinical trials with special emphasis on designs unique to dentistry, such as split-mouth designs. Offered: S.

OHS 575 Oral Health Sciences Seminar (1-3, max. 30) Presentation and discussion of current research problems by members of the staff, investigators from other departments in the University, visiting scientists, and trainees. Prerequisite: permission of instructor. Instructors: Presland Offered: AWSp.

OHS 578 Research Techniques in Oral Health Sciences (2-4, max. 15) Introduction to biochemical, analytical, or morphological techniques employed in biochemical cytology or molecular pathology as well as in vitro techniques of tissue and organ culture. Prerequisite: permission of instructor. Offered: AWSpS.

OHS 579 Molecular Biology (2) Applications of molecular biology and recombinant DNA methodologies to oral health science topics of interest in dental sciences. Prerequisite: BIOC 405 or BIOC 406 or equivalent, and permission of instructor. Instructors: Presland Offered: S.

OHS 580 Introduction to Molecular Biology Laboratory (4) Includes laboratory experiences involving use of restriction enzymes, cloning of DNA into plasmid vectors and plasmid DNA isolation, RNA isolation from cells and tissues, PCR, DNA sequence analysis, and web-based DNA, and protein sequence analysis. Prerequisite: either BIOC 405, BIOC 406, or permission of instructor. Instructors: Presland Offered: A, even years.

OHS 581 Secretory Process in Exocrine Glands (1-3, max. 3) *Jeffrey* Biostructural, physiological, and biochemical aspects of individual secretory systems as integrated units. Faculty members with appropriate expertise participate in discussions and presentations during each of the three quarters. Offered: Sp.

OHS 584 Craniofacial Research Seminar (1) C. *McKinney* This survey course presents a framework for basic and clinical craniofacial research and an overview of the translation spectrum of craniofacial research from basic science and clinical research to product development. Recommended: A background

in the conduct of biomedical research would be helpful. Credit/no-credit only. Offered: S.

OHS 591 Advanced Topics in Oral Biology I - Teeth and Bones (1-2, max. 2) *Herring* Covers aspects of biology basic to the dental sciences. Focuses on developmental biology of the craniofacial region, structure and function of teeth, bone, and the periodontium, and dental/oral sensation and pain. Offered: jointly with ORTHO 591; A.

OHS 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AWSpS.

OHS 650 P-Community Dentistry Clinical Electives (*, max. 12) Credit/no-credit only.

OHS 700 Master's Thesis (*-) Offered: AWSpS.

OHS 800 Doctoral Dissertation (*-) Offered: AWSpS.

ORAL MEDICINE

ORALM 404 Considerations in Care of the Patient with a Disability (*, max. 6) Role of auxiliaries in dental treatment of the special patient, including psychosocial issues, communication techniques, wheelchair transfers; dental prevention, medical and dental management of specific disabilities; drug therapy, sedation, and anesthesia. Offered: AWSpS.

ORALM 460 Clinical Management of Patients with Disabilities (*, max. 10) Participation in chair/bedside dental treatment of a broad range of disabled populations, including homebound and institutionalized patients. Offered: AWSpS.

ORALM 550 P-Directed Studies in Oral Diagnosis (*, max. 12) See DPHS 449 for course description. Credit/no-credit only. Offered: AWSpS.

ORALM 565 Oral Medicine Clinical Conference (*, max. 16) Clinical conference in which diagnostic data concerning patients seen in the oral medicine clinic are presented for evaluation. When possible, the patient is present with laboratory findings, radiographs, and the results of special tests. Offered: AWSpS.

ORALM 570 Oral Medicine and Therapy (2-, max. 6)

Lecture directed toward the presentation and discussion of oral diseases and oral manifestations of systemic disease. Primarily the clinical manifestations' relationship to generalized disease processes and patient management with in-depth discussions of therapy. Offered: AWSpS.

ORALM 576 Oral Medicine Literature Review (1)

Seminar analyzes the recent literature concerning the area of oral medicine, diagnosis, and therapy for oral disease. Offered: AWSpS.

ORALM 580 Current Concepts in Oral Radiology (2)

Lecture/seminar covering current concepts in oral radiology including technical factors, radiation risks, observer characteristics and variation, radiographic localization, interpretation, and overview of current extraoral techniques. Offered: AWSpS.

ORALM 581 Advanced Seminars in Oral Radiology (2, max. 8)

Explores aspects of oral and maxillofacial radiology and related fields. Offered: AWSpS.

ORALM 600 Independent Study or Research (*-)

Credit/no-credit only. Offered: AWSpS.

ORALM 601 Oral Medicine Research Seminar (1, max. 10)

Presentation and discussion of current research problems by graduate students, faculty, and investigators from other departments in the university. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALM 650 P-Oral Medicine Clinical Elective (1-6, max. 6)

Opportunities for students to work in various clinical activities at local hospitals or other sites outside the school. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

ORALM 651 Health and Homelessness - Elective (1-, max. 12)

Addresses oral and systemic health issues in the homeless in Seattle. Service based learning and includes presentations, readings, reflections, health education, and dental care delivery with the goal of preparing dental students to work in an interprofessional environment with other healthcare providers. Credit/no-credit only. Offered: AWSpS.

ORALM 652 Health Issues in the Homeless and Underserved-Selective (1)

Students learn about the

causes and challenges of homelessness and lack of access to care and how it affects systemic and oral health. The course includes a minimum of 12 clinical service learning hours in the community (clinical opportunities are provided) as well as online learning. Offered: Sp.

ORALM 653 Advanced Cone Beam CT Imaging and Interpretation - Selective (1)

Explores CBCT: plan/follow-up implant placement (with or without surgical guide) , assess pathology, assess dento-alveol trauma and explore anatomical variations, in combination with: radiation protection, choice of field of view, resolution, exposure parameters, patient positioning, and interpretation of the acquired images. Offered: AWSpS.

ORALM 654 DECOD Advanced Clinical - Selective (1)

Students will engage in clinical activities in special care dentistry, treating patients with developmental and/or acquired disabilities in the DECOD Clinic. Offered: AWSpS.

ORALM 655 Peer Mentor - ORALM - Selective (1)

This course allows 4th year dental students to mentor 3rd year dental students during their clinical experiences in Dental Education in the Care of Persons with Disabilities (DECOD) . Offered: AWSpS.

ORALM 656 Clinical Oral Medicine Rotation at SCCA - Selective (1)

Through clinical experiences, this course provides an overview of medical oncology. Students learn the basic of medical oncology, especially hematopoietic stem cell transplantation. Students will be given the opportunity to participate in the examination and the direction of care in the Oral Medicine Service at the Seattle Cancer Care Alliance. Credit/no-credit only. Offered: AWSpS.

ORALM 657 Botulinum Toxin Therapies in Dentistry (1)

Focus on both aesthetic and therapeutic procedures that the dentist uses to treat patients. Administration of BTX-A will be demonstrated for and performed by dental students or graduate students for both treatment of orofacial pain and movement disorders as well as facial aesthetics, including the oral, glabellar, forehead and lateral canthal regions. Credit/no-credit only. Offered: WS.

ORALM 660 Rotations in Medical Disciplines (1-4, max. 24)

Clinic, oriented to the hospital practice of oral medicine, deals with examination and

nonsurgical therapy of hospital patients. The conditions treated include primary oral diseases, oral manifestations of systemic diseases, and oral defects resulting from medical treatment of serious systemic disease. Credit/no-credit only. Offered: AWSpS.

ORALM 664 Dental Care of the Disabled II (*, max. 10) Practicum in chair/bedside delivery of dental care to different disabled populations. Includes rotations to institutions, long-term care facilities, and homebound service, using mobile equipment. Prerequisite: ORALM 564 and permission of instructor. Offered: AWSpS.

ORALM 665 Clinical Oral Medicine (*, max. 33) Clinic involving the diagnostic evaluation of patients with difficult and unusual oral diseases. The student diagnoses and treats the patient. Types of therapy include medications and chemical agents, functional physical therapy, and counseling. Offered: AWSpS.

ORALM 670 Clinical Oral Medicine Teaching (1-4, max. 16) Clinic designed to give the student experience and instruction in the teaching of clinical oral diagnosis. Treatment of emergency dental problems as well as routine and special diagnostic procedures is emphasized. Offered: AWSpS.

ORAL SURGERY

O S 550 P-Directed Studies in Oral Surgery (*, max. 16) See DPHS 449 for course description. Credit/no-credit only.

O S 574 Clinical Stomatology (3) *Y. RAWAL* Diseases of the oral cavity and jaw are presented as the practitioner encounters them - detailed clinical pictures, laboratory tests, radiographic findings, surgical exploration for the establishment of a therapeutic diagnosis. Offered: jointly with ORALB 574; Sp.

O S 654 Clinical Oral Surgery - Selective (1) This course provides students with 40 extra hours of surgical experience above and beyond that which is required for entry into General Practice Dental Clinic. Credit/no-credit only. Offered: AWSpS.

O S 655 Peer Mentor Oral and Maxillofacial Surgery - Selective (1, max. 12) Senior dental students participate as Peer Mentors for 1st and 2nd year

dental students in various pre-clinical Oral Surgery courses. This experience builds upon, enhances and refines the students in Peer Mentoring. Credit/no-credit only. Offered: AWSpS.

O S 656 Internal Medicine for Dentistry - Selective (2) Intensive review of major human medical diseases including common pathophysiology of diseases, medical interventions including detailed reviews of pharmacologic agents and current therapeutic procedures. Modifications necessary for dental treatment and medical emergency management are also detailed. Diseases of the respiratory, cardiovascular, and endocrine will be emphasized. Credit/no-credit only. Offered: AS.

O S 661 Elements of Moderate Sedation - Selective (1) Theory, techniques for rendering moderate and IV moderate sedation. Airway management, pharmacology, physiology, pharmacokinetics of common sedative agents, their usual applications, special considerations, emergency prevention, recognition and management. Emphasis on monitoring, proper record keeping, legal issues. Prerequisite: O S 656 Credit/no-credit only. Offered: A.

O S 662 Fifty Oral Lesions - Selective (1) This course covers the most important fifty oral diseases focusing on the detection of oral diseases in their early stages. It will cover common diseases, uncommon but important diseases, and, most importantly, problem cases that can be avoided by careful examination and interpretation of the clinical data. Credit/no-credit only. Offered: AS.

O S 672 Intravenous Sedation - Selective (1-2, max. 4) Students will attend clinic and under the supervision of Oral and Maxillofacial Surgery faculty or residents complete preoperative/sedation checklists, start and stabilize intravenous catheters, administer sedative medications, monitor patients during and following sedation, complete recovery evaluation of patients, and discharge patients to the care of their escorts. Prerequisite: Successful completion of O S 656 and O S 661. Offered: WSp.

PEDIATRIC DENTISTRY

PEDO 550 P-Directed Studies in Pediatric Dentistry (*, max. 6) See DPHS 449 for course description. Credit/no-credit only. Offered: S.

PEDO 560 Fundamentals of Pediatric Dentistry (1) Preclinical laboratory, lecture course covering fundamentals of primary care in pediatric dentistry, including behavior management, dental emergencies, prevention, diagnosis and treatment planning, and infection control. Offered: S.

PEDO 570 Pediatric Dentistry Seminar I (2) Principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: S.

PEDO 571 Pediatric Dentistry Seminar II (2) Principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: A.

PEDO 572 Pediatric Dentistry Seminar III (2) Principles and theory of child development and behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: W.

PEDO 573 Pediatric Dentistry Seminar IV (2) Principles and theory of child development and

behavior management for pediatric patient, including sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and scientific basis for the prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: Sp.

PEDO 574 Pediatric Dentistry Seminar V (2) Principles and theory of child development and behavior management for pediatric patient. Sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: S.

PEDO 575 Pediatric Dentistry Seminar VI (2) Principles and theory of child development and behavior management for pediatric patient. Sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: A.

PEDO 576 Pediatric Dentistry Seminar VII (2) Principles and theory of child development and behavior management for pediatric patient. Sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: W.

PEDO 577 Pediatric Dentistry Seminar VIII (2) Principles and theory of child development and behavior management for pediatric patient. Sedation, general anesthesia, and principles of informed consent, pathology of oral manifestations of diseases of children and adolescents, pediatric

radiology, and use of computers in didactic, clinical, and research endeavors, and the scientific basis for prevention and treatment of dental caries, periodontal disease, and developmental anomalies. Offered: Sp.

PEDO 580 Developmental Disabilities Seminar (1)

Multidisciplinary approach to managing children with developmental disabilities. Offered: S.

PEDO 581 Developmental Disabilities Seminar (1)

Multidisciplinary approach to managing children with developmental disabilities. Offered: A.

PEDO 582 Developmental Disabilities Seminar (1)

Multidisciplinary approach to managing children with developmental disabilities. Offered: W.

PEDO 583 Developmental Disabilities Seminar (1)

Multidisciplinary approach to managing children with developmental disabilities. Offered: Sp.

PEDO 584 Pediatric Dentistry Seminar (2) In-depth knowledge and understanding of the topics related to, and supportive of, the clinical practice of pediatric dentistry.

PEDO 600 Independent Study or Research (*-)

Prerequisite: permission of instructor. Offered: AW.

PEDO 650 P-Pediatric Dentistry Extramurals (1-6, max. 6) Clinical extramurals in the field of children's dentistry. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

PEDO 652 Pediatric Dentistry Off-Site Clinical Rotation (3) 2-week clinical rotation at the Sea Mar White Center Dental Clinic, during which students treat pediatric patients under supervision by a calibrated pediatric dentist. Participants will increase the number and diversity of pediatric dental procedures performed, practice four-handed dentistry in a pediatric community health setting, and be exposed to a diverse population of underserved pediatric patients. Credit/no-credit only. Offered: AWSpS.

PEDO 660 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: S.

PEDO 661 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: A.

PEDO 662 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: W.

PEDO 663 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: Sp.

PEDO 664 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: S.

PEDO 665 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: A.

PEDO 666 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: W.

PEDO 667 P-Clinical Pediatric Dentistry (1-3, max. 3)

Clinical experience for graduate pediatric dental students in basic through advanced pediatric dentistry. Offered: Sp.

PEDO 668 Clinical Clerkship in Pediatric Dentistry: Yakima Valley (*, max. 5)

Comprehensive dental care for economically-disadvantaged children in a rural community health center. Offered: AWSpS.

PEDO 669 Supervised Clinical Teaching (1-3, max. 4)

Graduate pediatric dental students provide clinical instruction for predoctoral dental students by supervising clinical sessions. Offered: AWSpS.

PEDO 670 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: S.

PEDO 671 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: A.

PEDO 672 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: W.

PEDO 673 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: Sp.

PEDO 674 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: S.

PEDO 675 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: A.

PEDO 676 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: W.

PEDO 677 Hospital Pediatric Dentistry (1-3, max. 3)

Diagnosis, management, and treatment of patients with disabilities in Seattle Children's Hospital Dental Clinic. Offered: Sp.

PEDO 679 Care of the Disabled Pediatric Patient (1)

Clinical experiences in the management of disabled patients. Offered: S.

PEDO 680 Pediatric Dentistry under General

Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: S.

PEDO 681 Pediatric Dentistry under General

Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: A.

PEDO 682 Pediatric Dentistry under General

Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: W.

PEDO 683 Pediatric Dentistry under General

Anesthesia (1-4, max. 4) Clinical course involving preoperative assessment of comprehensive dental treatment under general anesthesia and follow-up care. Offered: Sp.

PEDO 699 Pediatric Orthodontic Clinic (1-4, max. 4)

Clinical orthodontic care for pediatric patients. Offered: AWSpS.

PERIODONTICS

PERIO 449 Directed Studies in Periodontics (*)

See DPHS 449 for course description. Credit/no-credit only.

PERIO 550 P-Directed Studies in Periodontics (*,

max. 6) See DPHS 449 for course description. Credit/no-credit only.

PERIO 561 Periodontal Case Management (2-, max. 8)

Didactic presentation of clinical periodontics to provide a comprehensive view of the field and a grasp of modern therapeutics. Offered: AWSp.

PERIO 566 Practice Management (1)

Aspects of setting up and administering a private periodontal practice. Financing, insurance, office design, equipment, employees, professional forms, marketing strategies, and patient management. Prerequisite: PERIO 561. Credit/no-credit only. Offered: S.

PERIO 574 Periodontal Microbiology (2)

Viral, bacterial classification; physiology; toxicity mechanisms reviewed. Formation and composition of plaque and calculus, and chemical methods of control discussed. Specific microbial floras of acute and chronic gingivitis, early onset forms of periodontitis, and adult periodontitis studied. Principles of antibiotic use reviewed. Offered: A.

PERIO 575 Immunologic Aspects of Oral Diseases (2)

Acquaints students with basic concepts of immunology and immunopathology. Topics include

elements of innate and acquired immunity, genetic bases of antibody structure and function, immunopathologic mechanisms, transplantation immunology, immunologic manifestations in mucocutaneous oral lesions, caries and periodontal disease, principles of vaccination, and critical evaluation of the dental stem cells potential for oral tissue engineering. Offered: A.

PERIO 576 The Molecular and Cellular Biology of the Periodontium (2) Nucleic acid, protein, and carbohydrate biochemistry reviewed. Roles of collagens and proteoglycans in gingival tissues and the organization of oral epithelia discussed. Structures of human and animal periodontal lesions compared. Cellular and molecular inflammatory and immunological mechanisms in periodontal disease discussed. History, classification, and epidemiology of periodontal diseases described. Offered: Sp.

PERIO 577 Review of Literature (2, max. 16) Concise review of the scientific periodontal literature with specific focus on studies of periodontal diagnosis, wound healing, periodontal regeneration, microbiology, and implant procedures. Offered: AWSpS.

PERIO 578 Implant Literature Review (1) *Verardi* Reviews several topics related to dental implantology such as: history of dental implants, osseointegration, properties of materials, bone healing, bone augmentation procedures, success rates, pathogenesis of implant failures, and aesthetics in implantology. Discusses the relationship between surgical and restorative treatment phases. Credit/no-credit only. Offered: AWSp.

PERIO 580 Foundations in Implant Dentistry (1) *London, Raigrodski* Details the core surgical and prosthetic considerations in dental implant patient care. Topics include case planning, anatomy, radiography, surgery, componentry, occlusion, and applications for implant dentistry. Offered: S.

PERIO 582 Periodontic Treatment Planning Seminar (1-, max. 12) Weekly seminar involved with the presentation, discussion, and tentative solution of moderate to complex problems in diagnosis and treatment. Offered: AWSpS.

PERIO 585 Periodontal Therapy Seminar (1-, max. 12) Weekly seminar utilizing the case review method and dealing with the treatment of moderate to advanced periodontal disease. Offered: AWSpS.

PERIO 586 Longitudinal Evaluation of Periodontal Therapy (1-, max. 9) Helps to develop in-depth knowledge and analytical skills in estimating prognosis, assessing comprehensive treatment plans, evaluating long-term treatment outcomes, and evidence-based clinical decision making. Offered: AWSp.

PERIO 592 Prescription Surgery (1-, max. 3) Clinical course in periodontal surgery in which surgical procedures are performed on prescription basis for patients undergoing therapy in the undergraduate dental clinic. Exposes student to a wider spectrum of patients and simulates an environment in which the student can encounter the problems in communication and patient management that occur in the private sector.

PERIO 600 Independent Study or Research (*-) Prerequisite: permission of Graduate Program Adviser.

PERIO 651 Surgical Periodontics - Selective (2) This course gives students a greater exposure to comprehensive periodontal diagnosis and treatment planning with an evidence-based rationale, increased exposure to periodontal surgical procedures, and an overview of the specialty as a whole. Pre-approval from the Periodontics Department is required for this course. Credit/no-credit only. Offered: AWSpS.

PERIO 655 Peer Mentor Periodontics - Selective (1, max. 12) Senior dental students participate as Peer Mentors for 1st and 2nd year dental students in various pre-clinical Periodontics courses. This experience builds upon, enhances and refines the students in Peer Mentoring. Credit/no-credit only. Offered: AWSpS.

PERIO 659 P-Periodontics Extended Learning (*, max. 4) Supplemental work in periodontics to correct an area of student deficiency. Credit/no-credit only.

PERIO 660 Clinical Periodontics ([2-6]-, max. 60)

Clinical experience in diagnosis and treatment of periodontal disease.

PERIO 661 Advanced Root Preparation (1) *Daubert*

Advanced skill development in the use of the periodontal probe, gracey curettes, files and instrument sharpening. Includes laboratory sessions on dentoforms leading up to treatment of initial therapy patients. Offered: S.

PERIO 662 Stomatology Clinic (1, max. 4)

The diagnosis and treatment of oral and perioral lesions including history taking, biopsies, hematological laboratory tests and chemotherapy. Periodontal therapy in medically compromised patients in the hospital setting. Microscopic review of biopsy specimens. Offered: AWSpS.

PERIO 663 Pre-Prosthodontics Clinical Periodontics (*)

Clinical diagnosis and treatment of periodontal disease for nonperiodontics student. Prerequisite: permission of department chairperson. Credit/no-credit only.

PERIO 665 Clinical Practice Teaching (*, max. 9)

Supervised experience in teaching clinical periodontics to undergraduate dental students.

PERIO 685 Hospital Periodontics (1)

Preparation in periodontics to practice in hospital situations, including experience in operation of nitrous oxide analgesia, general anesthesia, intravenous premedication, treating of out- and inpatients.

PROSTHODONTICS

PROS 560 Complete and Immediate Dentures (2)

Lecture/seminar devoted to the diagnosis and treatment of the completely edentulous patient and the immediate denture patient, with emphasis on management of patients with difficulties in treatment. Offered: S.

PROS 563 Maxillofacial Prosthetics I (1)

Introductory lecture/seminar series with emphasis on diagnosis and prosthodontic rehabilitative treatment of patients who have experienced trauma or have congenital or acquired defects in the oral region. Offered: S.

PROS 564 Maxillofacial Prosthetics II (1)

Introductory lecture series focusing on the prosthodontic rehabilitation of patients with loss and compromise of facial anatomy, i.e., ocular, orbital, nasal, auricular, combination intraoral/extraoral, and other related facial deformities. Offered: A.

PROS 571 Review of Literature Seminar (1, max. 12)

Weekly seminar devoted to the review of prosthodontic and related literature. Offered: AWSp.

PROS 572 Special Topics Related to Prosthodontics (1, max. 2)

Lecture-seminar series focusing on relating principles of basic science to clinical application in prosthodontics. A wide and varied range of topics including surgery, psychology, speech, pharmacology, practice management, physiology, temporomandibular/myofascial joint dysfunction. Offered: S.

PROS 600 Independent Study or Research (*-)

Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

PROS 651 Intra-Oral Maxillofacial Prosthodontics - Selective (1)

This course's focus is oral rehabilitation of oral compromise resulting from congenital anomalies/head and neck syndromes, oral cancer, or trauma. The student is presented with material on oral compromise resulting from radiotherapy, chemotherapy. Implant supported or retained prostheses along with surgical innovations related to micro-vascular graft reconstructions are also presented. Credit/no-credit only. Offered: S.

RESTORATIVE DENTISTRY

RES D 550 P-Directed Studies in Restorative Dentistry (*, max. 6)

See DPHS 449 for course description. Credit/no-credit only. Offered: AWSpS.

RES D 570 Review of Literature Seminar (1, max. 6)

Continuous weekly seminar devoted to a review of restorative and related literature, and discussion of teaching methods, philosophy of teaching, and treatment. Offered: AWSp.

RES D 580 Restorative Treatment Planning Seminar (1-, max. 8)

Continuous weekly seminar to discuss controversial treatment problems and difficult

diagnostic cases selected for graduate students.
Offered: AWSp.

RES D 582 Prosthodontics Current Literature Review (1, max. 8) This course satisfies the educational requirement for the resident to have an in-depth knowledge of current literature. Graduate Prosthodontics students will be assigned one article per week from a list of peer-reviewed journals. Each student will present a short (less than 10 min) discussion of the paper along with a written abstract. Offered: AWSpS.

RES D 585 Advanced Dental Materials Science (2) Advanced concepts of dental materials science including physical, mechanical, chemical, and biological properties of restorative dental materials. Emphasis also on research design, testing methods, and proper selection of dental materials for clinical practice. Offered: W.

RES D 588 Masticatory Functional Analysis and Occlusal Adjustment (2) Lecture/seminar and clinical sessions in the study of the physiology of occlusion. Pertinent literature reviewed and discussed from the multidisciplinary viewpoint. The clinical sessions include training in masticatory functional analysis and treatment of occlusally related diseases. Offered: A.

RES D 589 Review of Literature in Occlusion (2) Seminar to review pertinent literature in occlusion. Offered: S.

RES D 590 Fundamentals of Fixed Prosthodontics (2-, max. 4) Lecture/laboratory/clinical sessions in the study of gnathological principles and procedures as they pertain to the treatment of comprehensive cases assigned to the students. Use and application of several articulators. Offered: A.

RES D 600 Independent Study or Research (*-)
Prerequisite: permission of Graduate Program Adviser. Offered: AWSpS.

RES D 620 P-Comprehensive Treatment Planning in Restorative Dentistry (3) Orientation to restorative clinical operations, administrative procedures associated with patient management, and formulation of treatment plans. Emphasizes problem-based learning, treatment outcomes, the

sequence of clinical treatment, and the diagnosis and management of dental disease. Offered: S.

RES D 650 Restorative Dentistry Clinical Elective (1-6, max. 12) Elective offering in clinical areas related to discipline. Credit/no-credit only. Offered: AWSpS.

RES D 653 Clinical Magnification - Selective (1) Faculty and affiliate members from the Department of Restorative Dentistry and Endodontics will participate with senior dental students in this active learning course, which will include didactic and clinical experiences in the provision of oral health care using high level magnification. Offered: AWSpS.

RES D 655 Peer Mentor Restorative Dentistry - Selective (1, max. 12) Senior dental students participate as Peer Mentors for 1st and 2nd year dental students in various per-clinical Restorative Dentistry courses. This experience builds upon, enhances and refines the students in Peer Mentoring. Credit/no-credit only. Offered: AWSpS.

RES D 660 Oral Rehabilitation ([1-6]-, max. 32) Clinical course to provide experience in diagnosis and treatment of patients requiring restorative procedures from single restorations to complex oral rehabilitative methods. Special emphasis is directed toward the integration of periodontics and occlusion as they relate to restorative dentistry. Offered: AWSpS.

RES D 662 Introduction to CAD/CAM in Restorative Dentistry (1, max. 4) Provides a systematic approach to learn about incorporating digital impression systems and CAD/CAM technology. Discuss ideal tooth preparation for all CAD/CAM restorations, digital impression, virtually design, sintering and staining technique, and selecting the proper ceramic materials and luting agents. Discuss the benefits and drawbacks of these digital technologies and how digital dentistry can be brought into our future practice. Credit/no-credit only. Offered: AW.

RES D 663 Advanced Operative Dentistry through Conservative Cast Gold - Selective (1) This course builds upon, enhances and refines the students Operative Dentistry skill sets via the design, preparation and seating of indirect, conservative cast gold restorations. Credit/no-credit only. Offered: AW.

RES D 664 Lasers in Restorative Dentistry (1)

Provides an overview of lasers, especially in the discipline of Restorative Dentistry, including: applications of laser devices for dental purposes, effects of laser irradiation on healthy tooth tissues, the effect of lasers on carious structures, vital pulp therapy, and the application of laser-initiated reversible cement. Credit/no-credit only. Offered: A.

RES D 665 Advanced Clinical Geriatric Dentistry -

Selective (1) Provides students with additional clinical experience in comprehensive dental treatment of medically compromised and dentally complex geriatric patients. Prerequisite: one geriatrics rotation in either DENTGP 653, DENTGP

663, or DENTGP 673. Credit/no-credit only. Offered: AWSp.

RES D 672 Direct Gold Restorations - Selective (2)

Lectures cover historical information and the technical requirements for commonly used direct gold restorations. Emphasis on the special requirements in cavity detail and insertion methods for successful accomplishment of direct gold restorations. Students will gain experience in the Class 1, Class 5, and Class 6 restorations. Additionally, didactic information will be presented in the Class 6, Class 2, and Class 3 restorations. Credit/no-credit only. Offered: W.

COLLEGE OF EDUCATION

CURRICULUM AND INSTRUCTION

EDC&I 351 Teaching as a Profession (5) I&S,

DIV Zeichner Helps students assess the profession of teaching. Explores what becoming a teacher means, assesses the organizational structure of teaching as a career and profession, examines social attitudes about education and the work of teachers, and thinks about teaching as social justice work.

EDC&I 352 Teaching to Change the World (5) I&S,

DIV F. Barajas Examines how value structures and political decisions affect systems of education. Considers particular inequalities based on race, class, and gender. Encourages students to see the course as both an academic exercise, and a vantage point for considering their own past and possible future experiences in education.

EDC&I 353 Teaching in the Elementary School (3)

Emphasizes selected teaching modes; lesson planning; classroom management procedures; grouping to accommodate pupils with special needs; utilization of learning resources; evaluation of teaching. Attention also given to school culture.

EDC&I 359 Second-Language Learning in Schools and Communities (5) DIV M. VARGHESE

What are the major theories of how languages are learned? How do people, especially children and adolescents, learn a second or third language? What are the major factors (individual, social, racial, cultural, political) affecting this process? Course explores how answers to these assist teachers and community educators. Offered: W.

EDC&I 424 Multiethnic Curriculum and Instruction

(3) I&S, DIV Primarily for preservice and in-service teachers who have little or no previous exposure to issues related to ethnicity and schooling. Designed to help teachers better understand the school's role in the ethnic education of students and acquire the insights, understandings, and skills needed to design and implement curricular and instructional strategies that reflect ethnic diversity.

EDC&I 438 Improvement of Teaching: Latin (5) VLPA

Offered: jointly with LATIN 475.

EDC&I 453 Immigration and Schooling (5) I&S, DIV A

A broad framework for understanding the historical, political, legal, policy, and cultural dimensions of schooling for immigrant students in the United States. A general introduction to the issues experienced by culturally and linguistically diverse students.

EDC&I 458 Content Area ESL Instruction (3)

Exposes students and engages them in how to support their English Language Learners in their content areas through sheltered instruction, specifically through the framework, Sheltered Instruction Observation Protocol (SIOP). Focuses specifically on the academic language needs of these students.

EDC&I 459 Workshop in Instructional Improvement: Literacy (1-6, max. 18)

Study of special topics in literacy with a focus on practical, classroom topics, and application.

EDC&I 460 Early Literacy Instruction (3)

Theory, research, and practice in early literacy acquisition including emergent literacy, phonemic awareness, word identification, comprehension, invented spelling, and writing. Emphasis on classroom instruction strategies for first and second language learners. Offered: A.

EDC&I 461 Materials for Teaching Reading: Children's and Young Adults' Literature (3)

Designed to provide acquaintance with materials used in the teaching of reading. Trade books and materials from content areas are examined.

EDC&I 462 Reading Comprehension Instruction in Elementary and Secondary School (3) I&S

Research-based practices for explicit teaching of reading comprehension of both fiction and content-area texts including issues of reading strategies, text difficulty, teacher modeling, guided reading, discussion, assessment, and adaptations for struggling students. Offered: W.

EDC&I 464 Educating Native-American Youth (3)

Assists students in understanding the North American Indian child from cultural, socioeconomic, and psychological points of view. Provides

opportunities for the student to apply knowledge and skills gained in other courses to prepare programs and learning aids relevant to the educational situation of the Indian child.

EDC&I 465 Social Studies Education: Elementary School Programs and Practices (3) Stresses curriculum patterns, instructional procedures, resource materials, and the selection of content in social studies. For elementary and middle school teachers and students in Teacher Education Program.

EDC&I 468 Workshop in Instructional Improvement: Social Studies (1-6, max. 15) Individual or group study projects on the improvement of instruction in social studies.

EDC&I 469 Teaching African American Students and Culture (3) I&S Examination of sociocultural and pedagogical factors that influence African American students' learning styles, opportunities, and outcomes; exploration of ways to reform teaching techniques to better accommodate cultural styles and experiences to improve the educational achievement of African American students. Offered: A.

EDC&I 471 Science Education: Secondary School Programs and Practices (3) Survey of the status and potential role of science in education; trends and their implications for the teaching of both biological and physical sciences in the junior and senior high schools; representative curricula and related teaching procedures; the psychology of concept formation and problem solving; and organization of science programs.

EDC&I 472 Environmental Education for Teachers (3) Status, selected problems, and role of environmental education in program of elementary, middle, and junior high schools. Opportunity to examine and receive instruction in use of existing environmental education instructional materials. Instruction is in the spirit of inquiry/discovery.

EDC&I 473 Workshop in Instructional Improvement: Science (1-6, max. 20) Individual or group study projects on the improvement of instruction in science.

EDC&I 474 Multi-Ethnic Studies: Methods, Content, and Materials (3) I&S, DIV Designed to help preservice and in-service teachers identify content and materials and devise methods for implementing ethnic studies programs and for incorporating ethnic content into regular K-12 social studies, language arts, and humanities curricula. Special attention is given to teaching about American Indians, Mexican Americans, African Americans, Asian Americans, Puerto Rican Americans, and white ethnic groups.

EDC&I 478 Special Topics in Mathematics for Teachers (2-9, max. 9) NW Study of selected areas of mathematics. Designed for the improvement of teachers of mathematics. Offered: jointly with MATH 497.

EDC&I 479 Workshop in Instructional Improvement: Mathematics (1-6, max. 20) Individual or group study projects for the improvement of instruction in mathematics.

EDC&I 480 Culturally Responsive STEM Teaching (4) I&S, DIV Culturally responsive teaching supports students' and teachers' multiple cultures, the culture of math and science, and the culture of school. Tied to these cultures are ways of thinking that are important for learning both in and outside of school. The challenge for teachers is recognizing mainstream culture while recognizing, respecting, and using students' identities and backgrounds as meaningful sources for optimal learning environments. Offered: A.

EDC&I 482 Educational Technology in Schooling (3) Introduction to the application of technologies (computers, telecommunications, interactive video) in schools. Designed primarily for pre- and in-service teachers, but of interest to anyone involved in technology in education.

EDC&I 485 Workshop in Instructional Improvement: Educational Communication and Technology (2-6, max. 20) Individual or group study projects on the improvement of instruction through use of educational communication and technology.

EDC&I 488 Educational Technology and Learning in Alternative Settings (3) How educational technology can be used to encourage learning in nonschool environments, such as museums, radio and television broadcasts, parks and recreation centers,

and distance education programs. Students investigate one of these areas and prepare a project.

EDC&I 494 Workshop in Improvement of Curriculum (1-6, max. 20) Stresses the application of procedures for curriculum development, maintenance, and evaluation. Opportunities furnished to develop and perfect strategies for program development with occasions given to utilize the strategies in master plan and materials preparation for simulated or real school situations. Specific focus of workshop is determined by instructor or by arrangement with district.

EDC&I 495 Workshop in Improvement of Teaching: Selected Topics, Issues, or Problems (1-6, max. 20) Individual or group projects to help teachers adapt instruction to selected topics, issues, or problems and to identify the approaches and instructional resources that provide the soundest learning experiences.

EDC&I 496 Workshop in Instructional Improvement (2-6, max. 20) Individual or group study projects on the improvement of instruction with attention to designing instructional plans.

EDC&I 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program.

EDC&I 500 Field Study (1-10, max. 20) Individual study of an educational problem in the field under the direction of a faculty member. Prerequisite: approved plan of study and permission of the instructor must be filed in the Office of Curriculum and Instruction in the College of Education.

EDC&I 503 Foundations of Curriculum and Instruction (4) Explores the core concepts and questions of curriculum and instruction: Which knowledge is of most worth? How can it best be taught and learned?

EDC&I 505 Seminar in Curriculum and Instruction (1-5, max. 20) Seminar on advanced topics in curriculum and instruction. Critical examination of current research and practice. Content varies.

EDC&I 506 Special Topics in Research Methods (1-6, max. 20) Features a special topic in research design and execution such as a particular method of data collection, data analysis, data interpretation, honing a conceptual framework, or reviewing a literature.

EDC&I 507 Methods for Teaching Culturally and Linguistically Diverse Exceptional Learners (3) Focuses on understanding and enacting instructional methods for teaching culturally and linguistically diverse exceptional learners. Prepares educators to teach students who are commonly known as English learners (ELs) with exceptional learning/behavior needs and how to integrate intervention, instruction, and service within general and special education classrooms. Offered: A.

EDC&I 508 Integrating the Arts in Teaching and Learning (2) Identify basic elements, principles, related concepts, and vocabulary of the creative arts. Islandwood students will be introduced to various media, lesson planning, and ways of integrating the arts into planning academic and multicultural curricula for K-8 classrooms. Serves as a foundation for integrating arts across the curriculum. Offered: W.

EDC&I 509 Advanced Instructional Strategies (3) Provides opportunities for action research among graduate instructors seeking to apply and refine their practice across a wide variety of educational settings. Students are refining their behavior management; assessment of prior knowledge and new learning; and engagement of students in their learning activities. Recommended: Two quarters of IslandWood's Education for Environment and Community program Offered: Sp.

EDC&I 510 Collaborative Projects in Educational Leadership (4) *J. Haskin* Challenges IslandWood graduate students to develop their leadership potential, either in educational organization leadership or in curriculum and teaching leadership. Emphasis in both strands is placed on collaborative skills and working for social and environmental justice. One strand emphasizes educational leadership and integrated curriculum design. The other emphasizes leadership within a nonprofit educational organization. Recommended: Seven months in IslandWood's Education for Environment and Community graduate certificate program. Offered: Sp.

EDC&I 517 Early Literacy Development and Instruction (3) *Roxanne F. Hudson* Theory, research, and practice in early literacy acquisition including emergent literacy, phonemic awareness, word identification, spelling, and writing. The focus of this class is on typical and atypical development of literacy and instructional methods appropriate to preschool and early elementary. Offered: A.

EDC&I 518 Critical Theories and Approaches in Educational Research (3) Explore range of ideas and tensions in critical theories in educational research and how they have been applied. Examine the work of theorists such as Bourdieu, Hall and theories such as Critical Race Theory and their applications in current educational studies.

EDC&I 519 Second Language Teacher Education and Identity (3) Focus on understanding the landscape of second language teacher education and identity. Chart the research and practice around the professional lives of their teachers and connect it to the academic and social experiences of bilingual/multilingual children and adults in the United States and globally.

EDC&I 520 Current Models in Early Childhood Education (3)

EDC&I 521 Problems and Issues in Early Childhood Education (3)

EDC&I 522 Practicum in the Training of Early Childhood Instruction Personnel (3)

EDC&I 523 Conceptions of Race, Equity, and Social Justice in Mathematics Education (4) Explores the most current theories shaping the teaching, learning, and schooling of mathematics education. Issues examined include race, equity, social justice, language, class, gender, culture, and power and their intersections with mathematics education.

EDC&I 524 Seminar in Teacher Education (3, max. 6) Focus on recent research, issues, and proposals for future development in teacher education, certification, and continuing professional growth. Alternate year offering focuses on either preservice or in-service issues.

EDC&I 525 Teacher Learning and School Change (3-4) Synthetic study of how researchers understand what enables teachers and schools to transform themselves. Examines how the fields of teacher learning and school change can inform each other in order to enrich research and development in professional and school learning.

EDC&I 526 Inside Teacher Communities (3-4) Examines different perspectives on professional communities, the roles of communities in teachers' learning, the challenges these communities face, and the possible ramifications of professional communities for students. Participants explore practical tools for studying, engaging in, and building professional learning communities in schools.

EDC&I 527 Pedagogies of Professional Education (3) Investigates the theories of learning, models of teaching, and contextual features that impact the design and enactment of a variety of pedagogies used in various professional education programs. Considers what particular pedagogies demand on the part of the professional educator.

EDC&I 528 Foundations of Language, Literacy, and Culture (4) Explores the nature of literacy by examining language acquisition and its impact on literacy; historical theories and research on reading and writing processes; and how recognition and appreciation of cultural variation has changed literacy instruction and curricula over the past decades. Draws on seminal historical and current research. Offered: A.

EDC&I 529 Reading and Writing Connections: Theories and Practices for Instruction (3) Explores the reciprocity of the reading and writing relationship. considers the connections to language development for young children and English language Learners (ELLs) , as well as how reading and writing develop for older students.

EDC&I 530 Approaches to Literacy Instruction (4) *Dixie Massey* Designed to aid experienced teachers who possess background in the teaching of literacy, and presents a variety of approaches and actual analysis of approaches. Offered: A.

EDC&I 531 Seminar: Critical Review of Literacy Materials (4) Students formulate and apply criteria for assessing materials, with emphasis on linguistic,

cultural, and psychological factors; instruction effectiveness, interest level; and educational objectives. Prerequisite: teaching experience and one basic course in the teaching of reading.

EDC&I 532 Seminar in Literacy Research (4, max. 12) Focuses on understanding scholarly research including various research methodologies (e.g. descriptive, correlational, experimental, quasi-experimental, qualitative) and the research questions they are designed to address. Prerequisite: permission of instructor.

EDC&I 533 Seminar: Conducting Research in Reading (3, max. 6) Students design and conduct original research studies in the field of reading. Emphasis on research rationale, choice of productive research types, and reporting of research results and implications. Prerequisite: EDC&I 532.

EDC&I 534 Reading Comprehension Instruction K-12 (4) *Dixie Massey* Focuses on research-based comprehension strategy instruction and text-based discussion of different types in K-12 classrooms. Examines various comprehension models, strategies for instruction, and assessments of comprehension. Prerequisite: one 400- or 500-level education curriculum and instruction course in reading or language arts or one graduate course in literature for children or young adults. Offered: W.

EDC&I 535 Doctoral Seminar in Literacy Research (1-2, max. 18) *H. HEBARD, R. HUDSON, D. MCCUTCHEN, S. VALENCIA* Discusses a literary topic of interest. Instruction and discussion focus on close reading of research from a variety of theoretical and research traditions. Prerequisite: EDC&I 534. Offered: AWSp.

EDC&I 536 Writing Instruction: Research, Theory, and Practice (4) *H. HEBARD* Provides a foundation in writing instruction theory, research, and practice that is relevant for teachers, specialists, curriculum developers, and researchers in literacy. Offered: WSps.

EDC&I 537 Classroom Discourse (4) *H. HEBARD* Introduction to theoretical and empirical works on the study of classroom discourse. Exploration of the ways in which classroom discourse can support or constrain opportunities to learn. Offered: A.

EDC&I 538 Discourse in the Mathematics Classroom (4) Examines ways of looking at discourse in mathematics classrooms as it relates to teaching practice and student learning. Includes reading both seminal and cutting-edge works in the study of discourse in the mathematics classroom, looking at multiple school contexts and across grade levels.

EDC&I 539 Students' Mathematical Thinking, Curriculum, and Pedagogy (4) Examines ways of understanding the development of students' mathematical thinking. Intensive study of classroom videos, mathematical curricula, and fieldwork enable students to study the relationship among students' mathematical thinking, curriculum, and pedagogy.

EDC&I 540 Immigrant Schooling (3) Educational needs of bilingual students: research findings, special programs, materials, and methodologies that bilingual-bicultural education can provide to meet those needs. Cultural combinations of bilingual populations in American culture; historical, social, and linguistic factors affecting their K-12 education.

EDC&I 542 Approaches to Assessing Second Language Students in K-12 Schools (3) Examines the multiple ways of assessing linguistically diverse students in K-12 schools, including standardized and alternative assessments of these students. Prerequisite: a course in ESL methods.

EDC&I 544 Immigration and Education: Immigrant Student Perspectives (3) Examines the multitude of factors that shape the immigrant student experience in U.S. schools. Takes an interdisciplinary perspective drawing on research from sociology, anthropology, and education, to understand teaching and learning from the perspective of immigrant students. Prerequisite: EDC&I 540 or equivalent.

EDC&I 545 Multilingual Socialization and Development (3) Explores the research base examining second language acquisition, in and out of school contexts. Focuses on the home language practices of linguistically diverse students with the purpose of understanding how these processes influence school learning.

EDC&I 547 Sociolinguistics (3) The study of language in its social context and the study of social life through language. Explores issues in the field of sociolinguistics and sharpens tools to explore

educational issues related to linguistic and cultural diversity.

EDC&I 548 Methods in Teaching English as a Second Language (4) Prepares teachers to teach English as a second language to students who are acquiring English in K-12 settings. Emphasizes the scaffolding of the development of the four language domains; listening, speaking, reading, and writing. Prerequisite: EDC&I 540 and EDC&I 545 or permission of instructor.

EDC&I 549 Practicum in Teaching English Learners in Context (3) Provides experiences in the field observing and working with an experienced ELL-endorsement teacher. Consists of observation; planning, teaching, and reflecting on at least two weeks worth of ELL-focused instruction lessons; and continued development of the methodological competencies needed to teach ELL students through seminar sessions at the practicum site.

EDC&I 550 Educational Technology Research (3) Analysis, critique, and practical experience with research studies of all types (experimental, ethnographic, evaluation) concerning questions of interest to educational technologists. Prerequisite: EDC&I 480, a research methods course, or permission of instructor.

EDC&I 551 Introduction to Instructional Design (3) An experimental course in analyzing, designing, developing, and formatively evaluating instructional products using the Instructional Systems Design (ISD) Mode. Also, discussion of how to successfully implement an instructional product/program within an organization using change management principles. Business and industry training focus.

EDC&I 552 Coaching and Mentoring Adult Learners (3) *Sylvia Bagley* Provides a foundation in coaching, mentoring, and other forms of peer-driven professional development in educational settings, grounded within research on adult professional learning and socio-cultural theories.

EDC&I 553 Collecting, Interpreting and Using Data for School Improvement (3) *Sylvia Bagley* Examines current trends in data use for school improvement. Explores the role of data in supporting and constraining equity in schools; current research on how teachers interact with data; essentials of data

literacy; opportunities for teacher learning through data use; and organizational structures found to support or constrain data use in schools. Recommended: Designed for current and emerging teacher leaders who have previous classroom teaching experience or other instructionally-related experience in schools or school districts. Also appropriate for graduate students who are studying teacher learning. Offered: Sp.

EDC&I 554 Bilingual Teaching Methods and Assessment (3) Examines methods and materials in primary language instruction and assessment. Candidates will learn methods for supporting language and content development in students home language. The course uses a target language as a medium of instruction and support in biliteracy development and language instruction in content areas.

EDC&I 556 Elementary School Curriculum (4) Study of elementary school curriculum, its design, rationale, and delivery. Current trends and issues affecting elementary school curriculum analyzed.

EDC&I 558 Secondary School Curriculum (4) Systematic analysis of current curriculum practices, with particular emphasis on the social and historical forces affecting secondary-school curriculum.

EDC&I 559 Principles and Procedures of Curriculum Development (3) Intensive study of basic principles and procedures utilized in development of curricula. Participants have opportunities to apply such procedures in class activities. Attention given to curriculum foundations.

EDC&I 560 Social Studies Education Programs and Practices (3) Stresses powerful instructional strategies, materials, and a selection of content in social studies education. For experienced teachers and non-social studies students in the Teacher Education Program.

EDC&I 561 Instruction for Under-Achieving Readers (2-10, max. 20) Covers instructional techniques addressing the comprehension, decoding, vocabulary, and fluency needs for under-achieving readers as well as strategies for assessing students' reading abilities and planning for instruction.

EDC&I 562 Literacy in the Content Areas (4) H. *HEBARD* Study of reading, writing, listening, and speaking in content area instruction. Offered: WS.

EDC&I 563 Topics in Adolescent Literacies (4, max. 8) H. *HEBARD* Provides an introduction to several important topics in adolescent literacies. Topics covered may change from year to year.

EDC&I 565 Seminar in Social Studies Education: Elementary Emphasis (3) Intensive study of the social studies curriculum, with particular emphasis on current literature and research. Prerequisite: EDC&I 465 or equivalent.

EDC&I 566 Seminar in Social Studies Education: Secondary Emphasis (3) Intensive study of the social studies curriculum, with particular emphasis on current literature and research.

EDC&I 567 Current Issues in Social Studies Education (1-3, max. 20) Discussion of problems and issues of current interest and importance in social studies education.

EDC&I 568 Youth Multiliteracies: Multimodality, Culture, and Identity (4) H. *HEBARD* Focuses on the role of multimodal literacies in the lives of diverse youth. Considers the implications of a rapidly changing communication landscape for teaching and learning literacies in schools.

EDC&I 569 Educating Ethnic Minority Youths (4) Intensive analysis and review of the research and curricular programs related to the social, psychological, and political factors that influence the school experiences of ethnic minority youths. Special attention given to instructional and curricular programs for African American, American Indian, Mexican American, Puerto Rican American, and Asian American students. Prerequisite: graduate standing or permission of instructor.

EDC&I 570 Seminar in Science Education: Elementary Emphasis (3) Investigation of curriculum and instruction in science at elementary-school levels, with particular emphasis on current literature and research. Prerequisite: EDC&I 470 or equivalent.

EDC&I 571 Ambitious Learning by Design in Science Classrooms (4) Explores the frontiers of research in

science learning environments that are both rigorous and equitable. Allows individuals to wrestle with the current problems of teaching and learning, including how to design opportunities for all students to participate in the discourses and practice of science. Prerequisite: EDC&I 471 or equivalent.

EDC&I 572 Current Issues in Science Education (1-5, max. 6) Discussion of topics and problems of current interest and importance in science education.

EDC&I 573 School Reform and Multicultural Education (3) Similarities and differences among the visions, goals, and strategies of proposals for school reform and multicultural education are analyzed; implications for practice in curriculum and instruction are deduced from these analyses. Prerequisite: one course in multicultural education or permission of instructor.

EDC&I 574 Race, Gender, and Knowledge Construction: Curriculum Considerations (3) Using historical and contemporary perspectives, considers ways in which knowledge related to race and gender has been and is constructed and the implications of ways in which knowledge is constructed for curriculum reform and teaching. Prerequisite: one course in ethnic studies, multicultural education, or women studies or permission of instructor.

EDC&I 575 Seminar in Mathematics Education: Elementary Emphasis (3) Investigation of curriculum and instruction in mathematics at the elementary-school level; review of research and preparation of proposals.

EDC&I 576 Seminar in Mathematics Education: Secondary Emphasis (3) Investigation of curriculum and instruction in mathematics at the secondary-school level; review of research and preparation of proposals.

EDC&I 577 Current Issues in Mathematics Education (1, max. 20) Discussion of problems and issues of current interest and importance in mathematics education.

EDC&I 578 Multicultural Education Across Nations: Policy and Curriculum Issues (3) J. *BANKS* Acquaints students with concepts, theories, research, and practices in multicultural education, diversity, and citizenship education in nations around the world.

Emphasis on how nations educate students for citizenship and balance unity and diversity. Completion of a major paper that examines diversity and citizenship within a nation outside of the United States. Offered: W.

EDC&I 579 Culturally Sustaining Pedagogies: Teaching and Learning for Justice in a Changing World (3) *Django Paris* Culturally sustaining pedagogy (CSP) offers a vision of school that seeks to perpetuate and foster linguistic, literate, and cultural pluralism as part of schooling for positive social transformation and revitalization. Reclaiming and reimagining schooling as a site to sustain Indigenous, Black, Latinx, Asian and Pacific Islander communities, including the ways these identities/memberships intersect multiple other identities.

EDC&I 580 Technology in Context (3) Focuses on development of appropriate methods and concepts for research on technology in schools, workplaces, and other naturalistic settings. Fieldwork exercises and reading exemplary studies from multiple disciplinary perspectives. Prerequisite: EDC&I 510, EDC&I 511.

EDC&I 581 Cognitive Systems Design (3) Covers the design of applied technology-based learning systems, informed by current views of learning, technology, and cognition. Emphasizes synthesizing students' knowledge of technology, learning and research in collaborative settings. Prerequisite: EDPSY 501 or permission of Instructor.

EDC&I 582 Design Experimentation and Implementation in Context (3) Introduces theoretical, methodological, and practical issues involved with studying the designed use of learning technologies in real world settings. Focuses on engaging in empirical study of the designed system through partnerships involving education researchers, educators, and technologists. Prerequisite: EDPSY 501 and a quarter of qualitative methods, or permission of Instructor.

EDC&I 585 Technology and the Culture of Education (3) Social impact of technology on education in the United States and elsewhere: social, political, and cultural factors affecting educational communication and technology; roles and relationships among instructors and learners; appropriate technology in

developing countries; technology's long-term influence on thought and values.

EDC&I 587 Design and Application of Interactive and Immersive Instructional Systems (3) Theoretical and empirical questions involved in design of interactive instructional systems using such technologies as virtual reality and CAI. Specific problems inherent in design of complex learning environments: immersion, control, structure, sequence of experiences, navigation, learner guidance. Educational uses of systems. Prerequisite: either EDC&I 583 or permission of instructor.

EDC&I 590 Seminar in Elementary Education (3) Exploration of the philosophy, history, purposes, curriculum, methods, and school organization of elementary education. Prerequisite: elementary-school teaching experience, EDC&I 556.

EDC&I 591 Seminar in Curriculum Research (3) Analysis of past and current empirical, historical, ethnographic research, and philosophical analysis of the curriculum field. Studies considered include research in curriculum development, the curriculum plan, contextual characteristics, and factors related to curriculum participants. Group and individual analyses focus on theory generation and practical applications of research. Prerequisite: EDC&I 559 or permission of instructor.

EDC&I 592 Seminar in Secondary Education (3) Research and study of secondary education. Primary focus on factors involving change in secondary-school curriculum and organization. Prerequisite: EDC&I 558.

EDC&I 593 Seminar in Curriculum: Theory and Practice (3) Investigation of curriculum theory and practice. Consideration is given to theoretical writings that address the relationships between various curricular variables. Theoretical positions are related to curricular practices and innovations. Prerequisite: EDC&I 559.

EDC&I 594 Seminar in Curriculum: Issues, Systems, Models (3) Emphasis on the current approaches to curriculum and curriculum innovation. Attention is given to major educational issues as they affect curricular activity. Prerequisite: EDC&I 559.

EDC&I 595 Seminar in Analysis of Teaching (3)

Investigation of the ways in which classroom teaching has been analyzed from a variety of disciplinary perspectives. Focus on methods, findings, and implications of research on teaching. Prerequisite: teaching experience.

EDC&I 596 Seminar in Strategies of Instruction (3)

Various instructional models applicable to all levels of schooling. Theoretical and philosophical bases for these instructional models are considered.

EDC&I 597 Curriculum Evaluation Seminar (3, max. 6)

Focuses on the evaluators' roles, evaluation theory and models, and selected curricular evaluations. Examples are drawn from the several disciplines commonly offered in the elementary and secondary schools. Students are expected to identify an evaluation problem and to develop an evaluation design that can be implemented as a practical solution to the problem. Prerequisite: EDC&I 559 and permission of instructor.

EDC&I 599 Independent Studies in Education (*)

Independent studies or readings of specialized aspects of education. Prerequisite: permission of instructor.

EDC&I 600 Independent Study or Research (*-)

Prerequisite: permission of instructor.

EDC&I 601 Internship ([1-10]-, max. 20)

Prerequisite: permission based on approval of proposal submitted during quarter preceding the internship. Credit/no-credit only.

EARLY CARE AND EDUCATION**ECE 201 Introduction to Early Care and Education**

(2) I&S Explores current and historical themes, research, and programs in the field of early care and education, offering students the opportunity to explore their own professional identities. Co-requisite: ECE 220.

ECE 220 Equity in Early Care and Education (3)

Drawing upon the history of multicultural education, social justice education, culturally responsive and sustaining pedagogies, critical perspectives in early childhood education, and anti-bias education, this course supports professionals serving young children

and families to develop skills needed to engage in equitable practices. Offered: A.

ECE 307 Early Childhood Curriculum I: From Observation and Assessment to Planning (10)

Fosters the knowledge and skills needed to promote learning and development for young children through creating curriculum, including child observation, assessment, and planning. Helps transfer learning to early care and education settings and situations. First in a two-quarter series.

ECE 308 Early Childhood Curriculum II: Engaging Interactions and Individualizing (10)

Fosters the knowledge and skills needed to promote learning and development for young children through creating and implementing curriculum, including engagements and individualizing for all learners. Helps students apply learning to early care and education settings and situations. Second in a two-quarter series. Prerequisite: ECE 307. Offered: Sp.

ECE 322 Engaging Interactions and Environments: Instructionally Supportive Interactions (4) I&S

Importance of equitable high-quality early childhood education. Specific types of environments and responsive instructional interactions that support children's thinking, language, and problem-solving. One of a two-part series. Recommended: child development course.

ECE 323 Engaging Interactions and Environments: Social and Emotional Support and Well-Organized Classrooms (3) I&S

Focus on importance of equitable high quality early childhood education, and specific types of environments and responsive instructional interactions that support children's social, emotional, and self-regulatory skills. Second of a two-part series. Recommended: child development course.

ECE 401 Introduction to Research in Early Care and Education (5) I&S, QSR

Focuses on the kinds of knowledge, ways of knowing, and modes of inquiry relevant to early care and education. Through identifying and reviewing substantive research in their areas of interest, students locate ideas for inquiry within the research literature in early care and education. Offered: A.

ECE 402 Social Policy in Early Care and Education (5) I&S

Seeks to deepen understanding of contemporary

social issues and problems that impact families and young children. Discusses legislation and other policies from a local, national, and global perspective. Explores the complex web of social, private, and governmental organization that impact families and young children. Offered: W.

ECE 419 Family and Community Engagement (5) I&S

Focuses on the key role that family and community contexts play in supporting development, as well as the key role early childhood programs can play in promoting family engagement. Participants examine interdisciplinary principles on how best to support a developing child's primary relationships through family engagement, and responsiveness to differences between families. Offered: S.

ECE 450 Professional Development for Early Childhood Educators (2)

Helps identify individual strengths, set professional goals, and practice necessary professional skills, such as job-searching, networking, and developing oral and written proficiency. Offered: A.

ECE 456 Senior Project (10) Synthesizes and demonstrates learning across the ECE major. Brings together research, theory, and hands-on practice in service learning in order to highlight overall degree competencies and promote development of a professional portfolio. Prerequisite: ECE 450. Offered: Sp.

EARLY CHILDHOOD AND FAMILY STUDIES

ECFS 200 Introduction to Early Childhood and Family Studies (3) I&S Explores current practices, programs, and research in the field of early childhood and family studies. Topics include: child development, early childhood education, parenting and family support, mental health, poverty, and other risk factors. Offered: AW.

ECFS 201 Introduction to Online Learning (2)

Introduction to the use of a variety of technologies necessary for completion of the ECFS online undergraduate degree, including video technologies, peer collaboration, and portfolio development. Prerequisite: ECFS 200.

ECFS 301 Early Childhood Curriculum (5) I&S

Focuses on developmental foundations and

theoretical and researched-based models of early childhood curriculum. Studies approaches to designing, organizing, and implementing early learning programs. Studies curricular content for supporting children's learning and development in physical development; social and emotional development; approaches to learning; cognition; and language and early literacy. Offered: W.

ECFS 303 Service Learning and Research I (1-6, max. 6)

Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. The seminar ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Prerequisite: ECFS 200 Offered: AWSp.

ECFS 304 Service Learning and Research II (1-6, max. 6)

Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. Ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Credit/no-credit only. Offered: WSp.

ECFS 305 Service Learning and Research III (1-6, max. 6)

Provides students with opportunities in community-based early childhood or family support settings. Includes a field experience and a once-a-week seminar. The seminar ties together research and practice demonstrating how research informs evidence-based decision-making in programs and services for young children and families. Credit/no-credit only.

ECFS 310 Early Childhood Education Lecture Series: Influential Scholars in the Field (2-5)

Lecture series featuring scholars in early childhood education presenting a variety of approaches to bridging research and practice as they underscore the importance of early learning across curriculum domains and in various contexts. Helps students interpret the conclusions and recommendations of scholarly contexts.

ECFS 311 Teaching from the Inside Out: Being a Resilient Educator (3) I&S

Equips students with skills and strategies to optimize their effectiveness as

early childhood educators. Students learn how to be as healthy as possible; possess the confidence to manage stressful situations; connect effectively with others; and focus on the positive aspects of life.

ECFS 312 Positive Behavioral Support in Early Childhood (3-5) *Joseph* Addresses the significance of social and emotional development in the early years. Discusses the adoption of models and evidence-based practice strategies that focus on promoting social-emotional development, providing support for children's appropriate behavior and preventing challenging behavior. Examines how adult resiliency and wellness relates to improved early care and teaching. Offered: AWSp.

ECFS 315 Parenting and Child Development: Influences of Poverty, Immigration, and Culture in the Earliest Years of Life (5) *DIV* Examines how complex social systems, including income inequalities, race/ethnicity, and immigration status contribute to parenting practices and family investment in child development, with a focus on young children from birth through age 8. Offered: W.

ECFS 320 Childhood in Cultural Context: Theory and Practice (5) *I&S, DIV* Focuses on preparing students to work and form reciprocal and meaningful relationships with children and families from diverse cultural backgrounds in the US and abroad by increasing understanding of how environmental factors can impact child development across cultures and increasing cultural responsiveness, including its application in evidence-based practices. Recommended: None Offered: A.

ECFS 321 Engaging Interactions and Environments (3) *I&S* Increases participants' knowledge about the importance of high quality early childhood education, and the specific types of environments and interactions that support the development of children's social-emotional, cognitive, and early academic skills. Offered: AWSp.

ECFS 330 Creative Thinking and Expression in Early Childhood Development and Learning (3) *VLPA L. Dietrich* We examine the critical role of creativity and creative expression in the social, emotional, and cognitive development of young children, discuss processes that encourage creative thinking, and consider the cultural context in which children learn and develop. Issues of equity regarding access to the

arts are considered as we explore ways to engage young children in creative thinking and as creators and consumers of the creative arts. Offered: Sp.

ECFS 399 Current Issues and Trends in Early Childhood and Family Studies (3-5, max. 10) *I&S* Explores current theory, research, policy, and practice in early childhood and family studies. Offered: AWSpS.

ECFS 400 Child Observation and Assessment (5) *I&S* Focuses on observation and methods used to study and understand young children in the context of families and society. Develops skills to understand children's behavior in learning environments. Examines approaches to and purposes for assessment and documentation of children's development and learning. Explores approaches to assessing early learning environments. Offered: A.

ECFS 401 Understanding Early Childhood and Family Studies Research (5) *I&S, QSR* Focuses on the kinds of knowledge, ways of knowing, and modes of inquiry relevant to early childhood and family studies. Through identifying and reviewing substantive research in their areas of interest, students locate ideas for inquiry within the research literature in early childhood and family studies. Prerequisite: EDPSY 302 and ECFS 303. Offered: A.

ECFS 402 Social Policy and Young Children and Families (5) *I&S* Seeks to deepen understanding of contemporary social issues and problems that impact families and young children. Discusses legislation and other policies from a local, national, and global perspective. Explores the complex web of social, private, and governmental organization that impact families and young children. Prerequisite: ECFS 401. Offered: W.

ECFS 403 Senior Capstone (2) Students in the Core pathway complete and present a senior project during the final quarter in the major. Provides advanced opportunity to synthesize research and policy perspectives about a topic of relevance to the field of early childhood education and present findings to a panel of peers and colleagues. Prerequisite: ECFS 401. Offered: WSp.

ECFS 410 Laying the Foundation for Reading: Supporting Language and Literacy Development in Preschool (5) *VLPA* Increases knowledge about

language and literacy developments between ages 3 to 5 and the ways in which these developments are critical precursors to the emergence of and success with formal reading skills, and to build participants' use of evidence-based language and literacy practices within the preschool classroom.

ECFS 411 Fostering the Development of Young Children's Mathematics and Science Knowledge and Skills (5) I&S/NW Increases knowledge about cognitive developments between ages 3 to 5 and ways in which these developments are critical precursors to emergence and success with later content and skills in mathematics and science. Learn to design and implement effective instructional practices and interactions with children that support their learning and development.

ECFS 412 Learning with Digital Media in Early Childhood (3) Addresses how young children learn basic literacy and mathematics skills, and develop an interest in science from engaging with digital media. Examines how teachers of young children need to be prepared in instructional practices that can enhance learning from media in a developmentally appropriate way.

ECFS 419 Family and Community Influences on the Young Child (5) I&S, DIV Develops an understanding of families of young children from different socio-cultural backgrounds, child socialization and development in family and community contexts (immigrant, refugee, indigenous, special-needs and vulnerable children), parenting across cultures, family processes, family systems theories, socio-cultural theories, and family-child collaborative partnerships using family and community strengths and resources. Prerequisite: EDSPE 304 or EDSPE 404 Offered: ASp.

ECFS 454 Senior Project I (2) First of a three-quarter sequence leading to the completion and presentation of the senior project during spring quarter. Provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs and research settings. Includes a weekly seminar to reflect on and expand on applied experiences. Offered: A.

ECFS 455 Senior Project II (2) Second of a three-quarter sequence leading to the completion and

presentation of the senior project during spring quarter. Provides advanced opportunities to integrate theory and practice in community-based early childhood or family support programs and research settings. Includes a weekly seminar to reflect on and expand on applied experiences. Prerequisite: ECFS 454. Offered: W.

ECFS 456 Senior Project III (2) Third of a three-quarter sequence leading to the completion and presentation of the senior project during the final quarter in the major. Provides advanced opportunities to integrate theory and practice in community-based learning and research experience continues during the quarter. Prerequisite: ECFS 454 and ECFS 455. Offered: WSp.

ECFS 480 Individualizing Teaching and Learning (5) I&S Introduction to effective practices that support the development of young children. Focuses on evidence-based, individualized instructional methods and strategies used in teaching and facilitation the development of young children in response to both their strengths and needs. Offered: AWSp.

ECFS 495 Advanced Seminar in Early Childhood and Family Studies (3, max. 9) Addresses current topics and critical issues in the field of early childhood and family studies in an advanced seminar format. Offered: AWSp.

ECFS 499 Undergraduate Research (*) Students conducting this research produce a report or a paper setting forth the results of their investigation which should be regarded as a basic part of the independent study plan. Credit/no-credit only. Offered: AWSpS.

EDUCATION

EDUC 170 Mathematics for Elementary School Teachers (5) NW Covers basic concepts of numbers and operations. Emphasizes problem solving, communication of mathematical ideas, and analysis of sources of difficulty in learning/teaching these concepts. Offered: AWSpS.

EDUC 171 Math for Upper Elementary and Middle Grades Teachers (5) NW Covers concepts of numbers and operations, measurement, geometry,

and statistics and probability typically taught in the upper elementary and middle grades. Emphasizes problem solving, modeling, communication of mathematical ideas, and analysis of sources of difficulty in learning these concepts.

EDUC 200 Special Topics in Education, Learning, and Society (3-5, max. 15) I&S *C. DAVIS, J. WILLIAMSON-LOTT* Critical examination of current research and practice in education, learning, and society. Offered: AWSpS.

EDUC 205 Selected Readings - An Introduction to Education in the United States (3-5, max. 15) I&S *C. DAVIS, J. WILLIAMSON-LOTT* Introduction to the United States education system, including the theoretical concepts of learning and historical framework that guide practice, policy, and teacher preparation. Explores issues and questions pertaining to United States schools through directed readings, dialogue, individual projects, and group projects. Offered: AWSpS.

EDUC 210 Current Issues in Education (5, max. 15) I&S Covers a current issue and provides the opportunity to read and discuss educational issues with other students and faculty and to learn of opportunities in the College of Education programs. Issues vary by term and faculty. Offered: AWSp.

EDUC 211 Political Philosophy of Education (5) I&S Discusses education as an instrument essential to the production of good lives for individuals as well as social structures capable of facilitating such lives. The driving assumption is that contemporary societies are alarmingly incapable of promoting happiness, and much of the discussion is dedicated to the role education might play in the social change needed to foster good lives for all. Offered: AWSp.

EDUC 215 Resilience and Wellness in College and Beyond (5) I&S *James J. Mazza* Students will learn skills to enhance their wellbeing in college and in their life in general. Particular focus will be given to skills that help people withstand common difficulties in life. Skills will include but will not be limited to mindfulness, emotion regulation, distress tolerance, and interpersonal effectiveness skills. Students will also learn about research underlying stress, resilience, and related skill areas. Offered: AWSp.

EDUC 216 Thriving on the Path to Happiness (5) I&S *Jaclyn Michelle Lally, James J. Mazza* Scientific theories for experiencing happiness. Develops behavioral strategies and skills for enhancing subjective well-being, interpersonal relationships, and opportunities for happiness. Continuation of the content in EDUC 215. Prerequisite: EDUC 215. Offered: AWSp.

EDUC 221 Education and the Playfield (3) I&S Examines the intersection of education and sport from early childhood to college experiences. Explores educational themes related to physical development, sport's influence on individual and community development, access to physical activities, equity and inclusion within the sports environment, and the role of sports in social change.

EDUC 225 Introduction to Language, Education and Society (5) Phillip L. Markley Introduces core issues involved in language usage in education and how it plays an important role in not only education but our lives in general. Provides a broad view of language in education. Discussions and topics explore the role of language, usage and structure, variations, how children learn and influences from policy. Examines myths about languages and language in education. Recommended: LING 200. Offered: A.

EDUC 231 Developing Youth through Sport and Physical Activity (5) I&S Exploration of the influence of sport and physical activity to positively impact the lives of young people. The concept of 'Sports-Based Youth Development' will be introduced and how educators and leaders can proactively utilize athletics and activities to effectively build social-emotional and bio-physical skills in participants.

EDUC 251 Seeking Educational Equity and Diversity (5) I&S, DIV *Jondou Chen* Introduces the need for and challenges in establishing educational equity and diversity. Discussions explore theories, historical trends, and ongoing debates. Readings draw from academic and popular sources, and class sessions include use of multimedia resources and experiential activities. Offered: AWSpS.

EDUC 260 The Dream Project: Introduction to Mentoring Strategies (1, max. 8) I&S Introduces equity, access and social mobility, in relation to educational access and post-secondary planning. Frames communication techniques and identity

reflection in the context of building skills for mentoring youth from diverse backgrounds. Students will learn about post-secondary planning basics including topics such as the financial aid process, editing personal statements, and writing resumes. Corequisite: EDUC 369. Credit/no-credit only. Offered: AWSp.

EDUC 280 Introduction to Education, Communities, and Organizations: Re-envisioning Education (3)

Introduction to the disciplinary fields that constitute the Education, Communities, and Organizations (ECO) major: Human development, learning theory, equity studies, organizational studies, and community engagement. Provides an overview of the ECO major, including core courses, learning objectives, faculty, and community partners. Offered: AWSpS.

EDUC 299 Education, Learning, and Society

Colloquium (1) Provides a common learning experience where students learn from researchers and practicing educators about current pedagogical projects and theories. Fosters self-reflexive projects to build understanding of learning pathways. Credit/no-credit only. Offered: AWSp.

EDUC 300 Special Topics in Education, Learning, and Society (1-5, max. 20) Critical examination of current research and practice in education, learning, and society.

EDUC 301 Introductory Practice in Community Service Activity (1-10, max. 10) Observation and participation in a variety of activities in a K-12 classroom. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required. Offered: AWSp.

EDUC 303 BI Leadership Academy II (1-2, max. 6) Second year leadership seminar for Brotherhood Initiative students. This course will serve as a critical examination of leadership theory and practice for civically engaged student leaders. Offered: AWSp.

EDUC 305 The Purpose of Public Schools in a Democracy (5) I&S Explores issues and questions pertaining to public schools in a democratic society through directed readings, dialogue, individual and group projects designed to engage students with a

series of crucial issues in public schools. Offered: AWSp.

EDUC 310 Current Issues in Education (5, max. 20)

I&S Covers a current issue and provides the opportunity to read and discuss educational issues with other students and faculty and to learn of opportunities in the College of Education programs. Offered: AWSp.

EDUC 315 Issues and Trends of Educational Theory, Research, and Practice (3-5, max. 15) I&S

C. Davis, J. Williamson-Lott Examines issues and trends in the past and present that have influenced or may have the potential to influence the field of education. Research, discussion, and reading assignments enable students to analyze and understand topics such as charter schools, accountability, privatization, national standards, and other topics. Offered: AWSpS.

EDUC 340 Culturally Sustaining Pedagogies:

Teaching and Learning for Justice in a Changing World (3) I&S, DIV *Django Paris* Culturally sustaining pedagogy (CSP) offers a vision of school that seeks to perpetuate and foster linguistic, literate, and cultural pluralism as part of schooling for positive social transformation and revitalization. Reclaiming and reimagining schooling as a site to sustain Indigenous, Black, Latinx, Asian and Pacific Islander communities, including the ways these identities/memberships intersect multiple other identities. Offered: W.

EDUC 351 Wellness and Education Achievement in Men of Color (5) I&S, DIV

J. LOTT Provides an overview of various factors that shape the lives of men of color along the educational pipeline. Includes discussions on the tensions, contradictions, and possibilities. Offered: AWSp.

EDUC 360 The Dream Project: Mentoring and Education Policy (1, max. 8) I&S

Discusses social justice topics in relation to mentoring high school students in the US public education system. Expands upon mentoring skills gained in EDUC 260 through focusing on other systems of oppression and guest speakers. Includes diverse perspectives from educators, community partners, and relevant research. Supports students' mentorship on college readiness and other postsecondary pathways. Corequisite: EDUC 369. Prerequisite: EDUC 260. Credit/no-credit only. Offered: AWSp.

EDUC 361 The Dream Project: Special Topics (1, max. 8) I&S *Taylor, Twitchell* Provides discussion and exploration of a single topic related to social mobility and access to higher education. Designed for students who have already completed EDUC or EDUC 360 who wish to examine a topic more closely. Corequisite: EDUC 369. Credit/no-credit only. Offered: AWSpS.

EDUC 369 The Dream Project: High School Visits - Field Experience (1, max. 8) Involves weekly travel to local high schools, mentoring students from diverse backgrounds on college readiness and other postsecondary pathways. Corequisite: either EDUC 260 or EDUC 360. Credit/no-credit only. Offered: AWSpS.

EDUC 370 Learning Within and Across Settings (5) Examines learning of disciplinary knowledge and practices, with attention to relations between the kinds of learning that happen within and across settings (outside of schools).

EDUC 375 Digital Media Literacy (3) VLPA *Jennifer Gawronski* Examines the role that media plays in our lives and communities and how digital technologies have impacted the media we consume, share, and create. Develops a personal framework for media literacy while also exploring how media literacy is taken up in a variety of learning settings. Offered: Sp.

EDUC 401 Practicum in Community Service Activity (1-18, max. 20) I&S Tutoring and teaching experiences in a school or community service organization. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required. Maximum of 20 credits from EDUC 401, EDUC 411, and EDUC 421 may apply towards graduation. Offered: AWSp.

EDUC 402 Practicum in Classroom Teaching and Management: Primary (1-18, max. 20) Tutoring and teaching experiences in a primary school setting (grades K-3). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 403 Practicum in Classroom Teaching and Management: Intermediate (1-18, max. 20)

Tutoring and teaching experiences in an intermediate school setting (grades 4-8). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 404 Practicum in Classroom Teaching and Management: Secondary (1-18, max. 20) Tutoring and teaching experiences in an intermediate school setting (grades 6-12). Placements made according to participant's interest and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions.

EDUC 411 Practicum in Community Service Activity (1-18, max. 20) VLPA Tutoring and teaching experiences in a school or community service organization. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required. Maximum of 20 credits from EDUC 401, EDUC 411, and EDUC 421 may apply towards graduation.

EDUC 421 Practicum in Community Service Activity (1-18, max. 20) VLPA/I&S Tutoring and teaching experiences in a school or community service organization. Placement made according to participant interests and needs. Participation on a predetermined schedule plus scheduled orientation and debriefing sessions are required.

EDUC 451 The Role of Sport in Social Justice and Change (5) Examination of diversity themes (race, class, gender, sexuality and physical ability) together with historical sport events through a social justice framework. The role and influence of sport in our society will be examined, with a focus on influences of power, institutions, and systems. Offered: W.

EDUC 472 Individuals, Groups, Organizations, and Institutions (5) I&S Examination of current research and practice in the field of individual, group, and organizational theory, with special focus on application to educational and community-based organizations.

EDUC 473 Community Based Research and Practice (5) Focuses on understanding the principles and practices required for effective and equitable

community-based research and practices in education. Prerequisite: EDUC 251.

EDUC 481 Community-Based Capstone I (5)

Prepares students for intensive community-based internship in EDUC 482 through creation of literature review and capstone project proposal. Prerequisite: EDUC 251; EDUC 370; EDUC 472; and EDUC 473.

EDUC 482 Community-Based Capstone II (5)

Intensive community-based internship experience, including the completion of a substantial product that contribute to the organization's mission and current initiatives. Prerequisite: EDUC 481. Offered: W.

EDUC 483 Community-Based Capstone III (5)

Culminating seminar to present community-based project, situate community work within course of study and prepare for graduate study and/or job market. Prerequisite: EDUC 482.

EDUC 502 Advanced Practicum in Classroom Teaching and Management (1-18, max. 20) In-depth classroom practicum experiences to certificated teachers working on additional endorsements. Arrangements must be made prior to enrolling with an adviser in the Teacher Education Office. Offered: AWSpS.

EDUC 700 Master's Thesis (*-) Prerequisite: permission of faculty adviser and Graduate Program Coordinator. Offered: AWSpS.

EDUC 750 Capstone Experience (2-10, max. 30) Provides advanced opportunities to integrate theory and practice through a capstone learning and research experience. Prerequisite: permission of faculty adviser and Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

EDUC 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee Chairperson and Graduate Program Coordinator. Offered: AWSpS.

EDUC 801 Practice Doctorate Project/Capstone (*-) Prerequisite: permission of Supervisory Committee Chairperson and Graduate Program Coordinator. Offered: AWSpS.

EDUCATIONAL LEADERSHIP AND POLICY STUDIES

EDLPS 302 Introduction to Education Policy: Research, Theory, and Practice (5) *M. Sun*

Introduces students to basic research, theory, and practice about educational policy and its influence on student educational outcomes, as well as longer-term outcomes such as future earnings. Discusses the ways in which educational inequalities seen in settings from early-childhood through university contribute to broad social and economic inequality. No prior knowledge or experience is required. Offered: Sp.

EDLPS 444 Constitution and American Public Education (3-6, max. 6) **I&S** Examines the relationships between the Constitution of the United States and the American system of public education, excluding higher education, in areas of constitutional freedom and legal controls, racial desegregation, and equal educational opportunity, including equal financing of the public schools. Credit/no-credit only. Offered: jointly with LAW 444.

EDLPS 458 Education in the Forming of American Society (5) **I&S** *Beadie* Covers the development of American education in cultural context; history of schools and non-school learning from colonial period to the twentieth-century; apprenticeship and learning societies; community and market-based schooling; liberal learning and the rise of the university; and schools as agencies of economic and political integration and mediators of culture and social status. Offered: jointly with HSTAA 458.

EDLPS 459 History of American Education Since 1865 (3) **I&S** Development of American education in cultural context: progressive education, recent criticism, continuing issues and trends. Offered: jointly with HSTAA 459.

EDLPS 479 Crucial Issues in Education (3) Selected educational issues, policies, and contexts. Evolution of the American education enterprise, legal issues, professionalism, finance, and other vital educational concerns.

EDLPS 496 Workshop: Education Programs and Problems (1-6, max. 10) Study of such topics as planning, development, supervision, organization,

operation, or evaluation of current or emerging programs or problems in education.

EDLPS 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program.

EDLPS 501 Introduction: Leadership Beyond the Classroom (3-6, max. 6) First course in principal certification program; explores Washington state laws, legal principles, context of public schools, multicultural issues, changing population. Essential skills of leadership: communication, human relations, strategies for shared decision making, and dealing with conflict. (Open only to students admitted to the Danforth Principal/Program Administrator Preparation Program.)

EDLPS 502 Leadership Core ([3-6]-, max. 6) Moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Principal/Program Administrator Preparation Program.

EDLPS 503 Leadership Core (-[3-6]-, max. 6) Moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Danforth Principal/Program Administrator Preparation Program.

EDLPS 504 Leadership Core (-[3-6], max. 6) Moral dimensions of leadership; modes of inquiry; organizational theory and change; instructional leadership and supervision; school-centered inquiry and decision-making; policy, planning, and program evaluation; issues on diversity and multicultural

education; American and Washington State school law; school finance and resource allocation; school-community relations. Instruction occurs in units and seminar throughout the academic year. Prerequisite: admission to Danforth Principal/Program Administrator Preparation Program.

EDLPS 505 Transition to Leadership (1-, max. 3) Designed for students in the Danforth Educational Leadership Program. Introduces students to applied educational research concepts; how to conduct inquiry project(s) within schools, with a focus on equity; and to write a research paper around the inquiry project. Prerequisite: admission to Danforth Principal/Program Administrator Program.

EDLPS 506 Intercollegiate Athletic Leadership: Foundations of Leadership (3) S. LOPEZ Focuses on theoretical frameworks and research used to explore athletic leadership within higher education and issues driving athletic department policies and practices. Students develop skills and strategies for leadership and decision-making that enhance student-athlete opportunities and enrich the role of athletics within the educational experience. Offered: S.

EDLPS 507 Intercollegiate Athletic Leadership: Coaching Philosophy and Pedagogy (3) S. LOPEZ Helps athletics coaches develop skills and strategies for decision-making that enhance student-athlete opportunities and enriches the role of athletics within the educational experience. In addition to examining coaching philosophy and mission, students learn and practice basic instructional techniques and coaching pedagogy. Offered: S.

EDLPS 508 Intercollegiate Athletic Leadership: Development and Fundraising in Higher Education (3) Covers the importance of a comprehensive development plan for the university and intercollegiate athletic department, along with the basic components of development including research, solicitation, stewardship, annual campaigns, and major gifts. Also explores marketing, promotions, sponsorships and communications departments. Offered: S.

EDLPS 509 Intercollegiate Athletic Leadership: Leadership and Management Capstone (2) Explores the breadth of athletic management through leadership lens. Explores organization mission and

culture, while examining their own leadership styles and practices. Participation in case studies, leadership training, crisis management exercises, and other activities designed to analyze and respond to real-world situations. Offered: S.

EDLPS 510 School Finance (3) *Margaret L Plecki*
Financial practices and problems in districts and schools considered, including state and federal support plans, school plant planning, school business management, resource allocation, and budgeting and educational accountability.

EDLPS 511 School-Community Relations (3)
Examines the dynamics of the interface between the public schools and the community. Special attention is given to the findings of research in relation to school-community power, types, and organizational influences.

EDLPS 512 Intercollegiate Athletic Leadership: Events and Facilities Planning and Management (3)
H. OLSON Athletic departments must plan and manage a variety of events including team practices, competitions, alumni activities, hosted tournaments, and outreach activities. Engages students in understanding the planning process and operations around event production, facilities management, staffing, scheduling, and other event services. Also examines capital planning. Offered: A.

EDLPS 513 Intercollegiate Athletic Leadership: Marketing and Communications in Intercollegiate Athletics (3) *GREGG GREENE* Participants learn the inner workings of a sports organization, gaining broad insight into the areas such as: media relations, public relations, sales, recruiting, branding, sponsorship, ticket sales, event promotions, the use of social media. Students strategize and practice communication an effective message delivery through a variety of mediums. Offered: A.

EDLPS 514 Intercollegiate Athletic Leadership: Informing Policy and Decision-Making with Data (3)
J. HOFFMAN Focuses on methods of assessment and evaluation with a focus on strategic planning and decision-making, accountability systems and assessment-driven decision-making. Students learn to use practical statistical skills, with an emphasis on the use and interpretation of data to guide decision-making. Offered: W.

EDLPS 515 Intercollegiate Athletic Leadership: Ethical Leadership in Collegiate Athletics (3)
Examination of procedures and techniques pertinent to the management of organizational conflict. Among the areas covered are collective bargaining, grievance procedures, mediation, fact finding, and arbitration.

EDLPS 516 Special Education and the Law (3) *Brown*
Overview of major state and federal laws affecting the operation and management of special education programs in public schools. Emphasis upon procedural and substantive rights of children with disabling conditions. Offered: jointly with EDSPE 504.

EDLPS 517 Intercollegiate Athletic Leadership: Physical Training and Preparation (3) Athletics coaches work to develop a student-centered training program that maximizes athlete performance and wellness. Students explore leadership, policy, and program planning and implementation based on human development theory and current issues with sport performance. Offered: A.

EDLPS 519 Special Topics in Educational Leadership ([0-10]-, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues of particular concern to K-12 administrators and other educators in leadership roles in districts and schools. Topics vary.

EDLPS 520 Education as a Moral Endeavor (3) *J. WILLIAMSON-LOTT* An exploration of fundamental questions that have faced educational leaders in the past and most likely will continue to face them in the future. Foundational studies in history, philosophy, and sociology provide the basis for discussion and writing about these fundamental questions.

EDLPS 521 Philosophy of Education (3) *D. KERDEMAN* Philosophy of education considered as a study of the conceptual basis for educational policy and practice. Emphasis on relationships between enduring educational problems and fundamental philosophic issues; concepts that feature centrally in educational discourse; and conceptual analysis as a means for clarifying decisions regarding educational policy and practice.

EDLPS 522 Social Science, Social Justice, and Qualitative Research (3) *D. KERDEMAN* Intensive

study of the writings of selected contemporary philosophers of education. Offered: WS.

EDLPS 524 Seminar in Philosophy of Education (3, max. 6) *D. KERDEMAN* Philosophical examination of ways in which education might be studied. Uses and limits of conventional scientific approaches in education inquiry. Consideration of alternatives. Offered: WS.

EDLPS 525 Educational Inquiry (3) *D. KERDEMAN* General survey of epistemological issues underlying the several schools of thought or families of inquiry. Overview of various methods used in conduct of educational inquiry, examples of ways those methods are typically used, and exploration of strengths and weaknesses of those methods. Discussion throughout is in terms of assumptions regarding the nature of knowledge and purposes of inquiry. Must be taken in sequence. Prerequisite: doctoral status in education. Credit/no-credit only. Offered: A.

EDLPS 526 Educational Inquiry (3) *D. KERDEMAN* General survey of epistemological issues underlying the several schools of thought or families of inquiry. Overview of various methods used in conduct of educational inquiry, examples of ways those methods are typically used, and exploration of strengths and weaknesses of those methods. Discussion throughout is in terms of assumptions regarding the nature of knowledge and purposes of inquiry. Must be taken in sequence. Prerequisite: doctoral status in education. Credit/no-credit only. Offered: W.

EDLPS 528 Current Issues in Graduate Education (3) *M. NERAD* Examines recurrent forces impacting U.S. graduate education including but not limited to research funding, intra-institutional pressure, student unions, and accountability. Analyzes the current literature from different perspectives: historical, psychological, sociological, economic, and educational to illuminate the complexities of graduate education.

EDLPS 530 History of Education (3) *N. BEADIE* Historical survey of education. Emphasis on relationship between idea and practice. Topics include education and colonialism, formation of state school systems, progressive education, equal educational opportunity, changes in textbooks and

curricula, education and social structure, and education in the history of cultures.

EDLPS 531 History of American Higher Education (3) Examination of the historical development of the American higher education enterprise, including pre-colonial origins. Includes attention to the colonial colleges, the rise of new institutions in the nineteenth century, and the further development of American colleges and universities in the twentieth century. Leaders in these developments are identified.

EDLPS 535 Historical Inquiry in Education Research (3, max. 6) *N. BEADIE* Methods and critique of historical research in education. Examination of landmark works in education history and historiography. Hands-on experience framing historical questions, finding historical sources, using historical evidence, substantiating historical claims, and addressing issues in the history of education.

EDLPS 536 Historical Problems in the Transfer of Culture (4) *N. BEADIE* Provides an analysis and interpretation of the history of education in its broadest sense: the transfer of culture across generations. Pays special attention to issues of cultural conflict, cultural change, and curricula as representations of culture. Examines problems of evidence and interpretation in exemplary historical works.

EDLPS 537 Perennial Debates in the History of Education (3) *J. WILLIAMSON-LOTT* Analysis of the historical underpinnings of debates about educational issues.

EDLPS 538 Education for Liberation (3) *J. WILLIAMSON-LOTT* Analyses of the different educational histories of American ethnic, social, gender, and religious groups and how they relate their own definitions of "education for liberation."

EDLPS 539 History of Urban Education (4) *Beadie* Examines the complex ways that race, class, real estate interests, the quest for social mobility, and a range of government policies have interacted to structure the social and spatial distribution of educational opportunity in cities historically. Includes a comparative historical analysis of urban case studies, including Seattle.

EDLPS 540 Sociology of Education (3) Examination of education and educational institutions by using the major conceptual tools of sociology. Emphasis on sociological thought and findings that have particular bearing on the understandings and judgments of educators.

EDLPS 542 Seminar in Educational Sociology (3) Application of sociological principles to school problems; individual problems and investigations. For teachers, administrators, and those using educational sociology as a field for advanced degrees.

EDLPS 544 Comparative Education: Introduction to Concepts and Methods (3) Introduction to research methods used in comparative education studies. Considers ways to study familiar and unfamiliar contexts, identifies the common pitfalls of international comparisons. Reviews ethnomethodological tools of interview construction, cross-cultural observation strategies, documentary analysis. Education policy and practice is primary focus; useful for comparing other public policy issues internationally.

EDLPS 545 Knowledge and Data in Relation to Action ([0/3]-, max. 3) Introduces Leadership for Learning (L4L) students to systematic inquiry - to fundamental ideas about knowing and knowledge, data and evidence, and to the applications of these ideas in settings that invite leadership action to address educational issues. Prerequisite: admission to the Leadership Learning program.

EDLPS 546 Leadership Inquiry I: The Design of Research on Local Problems of Practice ([0/3]-, max. 3) Examines evaluation design, action research, critical inquiry, and mixed method research. Equips L4L students to recognize and create viable, rigorous designs for action-oriented research into local problems of practice. Prerequisite: admission to the Leadership Learning program.

EDLPS 547 Inquiry and Data-Informed Leadership I ([0/3]-, max. 9) Deepens students' understanding of a cycle of inquiry approach to strengthen their leadership, with a particular emphasis on working with evidence from a systemic, equity, and excellence stance. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 548 Inquiry and Data-Informed Leadership II ([0/3]-, max. 9) Strengthens students' engagement with and application of cycle of inquiry approach to their leadership practice. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 549 Special Topics in Educational Studies (1-6, max. 20) Readings, lectures, and discussions pertaining to significant and enduring ideas in the philosophy, history and sociology of education. Specific topics are critically examined in light of contemporary problems in education. Topics vary.

EDLPS 550 The Dynamics of Educational Organizations (4) Exploration of the literature in organizational theory and leadership, the assumptions that underlie the development of various approaches to organizational theory and how these approaches are applied, and an acquaintance with different conceptual frames that can be used to determine how to improve and change organizations.

EDLPS 551 Organizational Theory and Educational Change (4) Introduces students to the interdisciplinary research literature on organizations and its applicability to the research and practice of educational organizations. Engages students in understanding and critiquing organizational research and using it to develop conceptual frameworks to guide educational research and practice.

EDLPS 552 Organizational Change in Education (3) Change and innovation in educational organizations. Theoretical approaches include sociopsychological, rational planning, political perspectives, and those associated with notion of organized anarchies. Specific topics related to change and innovation (e.g., roles of beliefs, symbols and norms, diffusion of innovations, and research issues) .

EDLPS 553 Human Resources in Educational Organizations (3) Analysis of factors involved in human resource problems related to operation of educational organizations. Motivation, perception, communication, role analysis, and dynamics of groups are studied through use of cases and seminal literature.

EDLPS 554 Professional Growth Planning I (5) Supports students' professional growth and development, as simultaneously builds a

professional culture and network among cohort members to maximize student success in the program. Prerequisite: Leadership for Learning EdD students only. Credit/no-credit only. Offered: S.

EDLPS 555 Professional Growth Planning II (5)

Supports students' professional growth and development, and scaffolds the internship and capstone portfolio processes within a professional culture and network that maximized student success in the program. Prerequisite: Leadership for Learning EdD students only. Credit/no-credit only.

EDLPS 556 Leadership for Equitable Systems I ([2-6]-, max. 9)

Supports students in taking a systemic approach to their leadership, regardless of their formal position. Major topics include resource allocation and an introduction to policy design and implementation. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 557 Leadership for Equitable Systems II ([2-5]-, max. 9)

Supports students in taking a systemic approach to their leadership, regardless of their formal position. Major topics include governance, collaborative decision-making, and the design and redesign of organizations. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 558 Introduction to Qualitative Research Methods in Education (3) *A. ELFERS* Provides a basic overview of qualitative research methods. Covers the purpose, design, and conduct of qualitative research.

EDLPS 560 Educational Policy Studies and Practice (3)

M. Sun An introduction to key policies, reforms, and issues in education, with a central focus on policy actors, instruments, and actions in promoting excellence and equity in education. We discuss theoretical frameworks and analytical models to examine research studies and practice in U.S. schools and beyond Offered: A.

EDLPS 561 Education Policies and Leadership in Political Context (3) Systematic consideration of the structure and function of educational policies and problems of research in political context.

EDLPS 562 American School Law (3) Examination of persistent legal issues, including an analysis of how these issues are manifest in public policy debates.

EDLPS 563 Education, The Workforce, and Public Policy (4)

Examination of policy issues involving education, training, the economy, and the development of the nation's human resources. Relationship between education, training, and work, and among the various levels of the education system, underutilized workers, race and gender issues, and the role of education and training in economic development. Offered: jointly with PUBPOL 571.

EDLPS 564 Seminar in Economics of Education (3)

M. PLECKI Current problems in school finance, including costs, ability to support schools, and financial implications of educational principles. The economics of public education. Problems of federal, state, and local school support. Financing capital outlay, research, and public relations.

EDLPS 565 Race, Equity, and Leading Educational Change (3)

An introduction to key leadership theories, research, and practice, with a central focus on issues of race, class, power and privilege in addressing educational inequities. Applies a leadership lens to examine research and problems of practice in organizational transformation in U.S. schools and educational organizations.

EDLPS 566 Education Policy Serving Disenfranchised Groups (3)

Examines programs and policies aimed at ameliorating conditions that face disenfranchised groups in contemporary K-12 schooling. Seminar members critically analyze the assumptions, design, and likely impact of these programs and policies on institutions and individuals. Designed for advanced doctoral students. Others admitted with permission of instructor.

EDLPS 567 Education Policy and the Improvement of Teaching and Learning (3)

Examines connections between policies and classroom practice, in P-12 and higher education settings. Of particular concern is the capacity of policy to improve the quality of curriculum and instruction. Students design and critique policies, drawing on research and feedback from policymakers.

EDLPS 568 Policy Evaluation in Education (3)

Examination of methods for evaluating educational policies across the educational continuum. Students design and conduct a policy evaluation which draws on the policy evaluation literature. Examination of

the uses of policy evaluation information in shaping organization-decision making is also included.

EDLPS 569 Issues in P-12 School Reform (3-5, max. 20) *Copland, Knapp* Offers rigorous ways to explore the meaning and action implications of contemporary reform movements in the P-12 public school system. Examines a different topic each quarter concerning reform at school, district, state, or federal levels through readings, discussion, projects, and analytical writing assignments. Offered: AWSp.

EDLPS 571 Instructional Leadership I ([0/3]-, max. 9) Strengthens students' ability to exercise instructional leadership across various roles inside and outside school systems. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 572 Instructional Leadership II ([2-5]-, max. 9) Strengthens students' ability to exercise instructional leadership across various roles inside and outside school systems with emphasis on bringing instructional leadership to scale at the district level. Prerequisite: Leadership for Learning EdD students only. Offered: AWSp.

EDLPS 573 Professional Learning and Instructional Renewal (2-4, max. 4) Investigates professional learning and how to support it, based on cognitive research, sociocultural theory, and scholarship on teacher education (preservice and inservice) . Offers system-level leaders ways to address the quality of teaching and learning in classrooms. Prerequisite: admission to the Leadership Learning program.

EDLPS 574 Mixed Methods in Educational Research (3) *M. PLECKI* Introduces the principles of mixed methods research design, whereby qualitative and quantitative components inform each other in sampling, data collection, and data analysis. Explores design issues and solutions primarily in the context of education policy research. Offered: W.

EDLPS 575 Education Policy Implementation (4) *M. HONIG* Analyzes influences on implementation outcomes. Focuses on how skilled use of theoretical frameworks can help reveal relationships between policy and practice and evidence-based decisions that may improve implementation. Credit/no-credit only. Offered: Sp.

EDLPS 579 Special Topics in Organizational and Policy Analysis ([0-6]-, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues related to the analysis of educational organizations, policies, and policy making. Topics vary.

EDLPS 580 The American College and University (4) Introduction to contemporary United States higher education, with special emphasis on emerging trends, roles of the several kinds of institutions, the composition and character of student bodies and faculty, and the state coordination of colleges and universities.

EDLPS 581 Principles and Practices of Adult and Continuing Education (3) History and development of adult and continuing education in the United States: component parts of the field; issues, theory, and research; program planning for adults; professionalization of the field.

EDLPS 582 Seminar in the History and the Organization of Higher Education (3) Advanced seminar in the history and organization of higher education.

EDLPS 583 Higher Education and the Law (3) Legal implications of university operations and an explanation of the legal and constitutional rights of students, faculty, and staff within the university. Special attention given to faculty employment and termination decisions; student protections, including due process; and university liabilities.

EDLPS 584 Academic Governance and Collective Bargaining in Higher Education (3) Explores the concept and operation of collective bargaining in higher education: its origin; the reasons for its growing popularity as a governance mechanism; the legal framework within which it operates; the rights, powers, and duties subsumed under its operation; and its relationship to the traditional form of faculty governance mechanisms.

EDLPS 585 Resource Allocation in Higher Education (3) After attention to the basic tools of economic analysis, focus is on application of those tools to specific topics in higher education (e.g., access, budgeting, finance and policies, and funding alternatives) .

EDLPS 586 Navigating the P-20 Pipeline (3) *J. MYERS TWITCHELL* Introduction to programs, policies, and challenges related to supporting students as they transition from K-12 schools to institutions of higher education. Exploration of localized/region-based efforts to decrease the post-secondary opportunity gap, including funding models, collaborations and networks, and data and measurement strategies to increase rates of post-secondary attainment. Offered: A.

EDLPS 587 Seminar in Teaching and Learning in Higher Education (3, max. 9) Theory and practice of instruction and learning in higher education.

EDLPS 588 Leadership and Management in Higher Education (4) *J. LOTT* Introduction to enduring and emerging philosophical and theoretical perspectives on leading and managing in college and university settings. Provides tools to be more explicit with the ways in which leaders and managers go about their work in higher education. Offered: W.

EDLPS 589 The Community College (3) Intensive study of the community college-its history and present and future status. Curriculum, instruction, financial, and governance issues are also discussed.

EDLPS 590 Student Populations and Experiences in Higher Education (3-4) Examines foundational literature on students in United States higher education. Focuses on student diversity, similarities and differences in their experiences, and the role of societal values, campus climate and structure, family, work, and peers on student access, engagement, well-being, and success. Offered: Sp.

EDLPS 591 Higher Education and Public Policy (3) Covers public policy processes affecting higher education. Issues examined vary, but typically include fiscal context of higher education policy, access, equity, distance learning, and accountability policies.

EDLPS 592 Higher Education Equity, Reform, and Policy (3) Develops the critical and analytical lens that students apply to public policy issues as they directly relate to higher education in the United States.

EDLPS 593 Assessment and Evaluation in Higher Education (3) Covers the key components of

evaluation design and implementation, particularly what researchers and practitioners define as good assessment and evaluation approaches. Develops competencies in planning assessment and evaluation strategies using these approaches.

EDLPS 594 Globalization and Internationalization of Higher Education (4) *M. NERAD* Impact of globalization on higher education and strategies used by higher-ed institutions to achieve internationalization. Conceptual frameworks linking higher education institutions to economic competitiveness in the global economy. Critically analyzes recent local (UW, community colleges), national, and international initiatives and activities to achieve internationalization of the institutions and global awareness of students, faculty, staff. Offered: AS.

EDLPS 596 Secondary Data Analysis (3-5) *Joe L. Lott II.* Introduces the conceptual and practical issues involved in conducting educational research using existing sources of data, commonly known as secondary data analysis. Covers several fundamental concepts in order to become an informed and competent researcher who uses secondary data. Prerequisite: basic understanding of educational statistics.

EDLPS 597 Advanced Secondary Data Analysis (3) *J. LOTT* Applied methods. Introduces the conceptual and practical issues involved in conducting educational research using existing sources of data, commonly known as secondary data analysis. Covers several fundamental concepts in order to become an informed and competent researcher who uses secondary data. Prerequisite: EDLPS 596.

EDLPS 598 Special Topics in Higher Education (1-6, max. 20) Readings, lectures, and discussions pertaining to significant topics of special and current interest to educators. Focus is on issues related to education in community colleges, four-year colleges, and universities. Topics vary.

EDLPS 599 Independent Studies in Education (1-10, max. 20) Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed, and which with permission of the instructor, must be filed with the Office of Leadership and Policy Studies in the

College of Education. Prerequisite: permission of instructor.

EDLPS 600 Independent Study or Research (*-)

Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed, and which with permission of the instructor, must be filed with the Office of Leadership and Policy Studies in the College of Education. Prerequisite: permission of instructor. Credit/no-credit only.

EDLPS 601 Internship ([1-4]-, max. 20) Name of faculty member responsible for supervising the student should be indicated on program of studies. Prerequisite: permission of Supervisory Committee Chairperson or Graduate Program Adviser. Credit/no-credit only.

EDUCATIONAL PSYCHOLOGY

EDPSY 302 Child Development and Learning (5) I&S

Uses readings, discussions, naturalistic observations, and "virtual" children to understand the different ways children develop - physically, cognitively, social-emotionally, in language and literacy, and in approaches to learning - during early childhood, the interplay between each of these domains and the environmental context, and the theories about the developmental mechanisms underlying these changes.

EDPSY 305 Applied Child Development and Learning (5) I&S

Examination of the latest research on brain development in early childhood and the application of this knowledge in the creation of learning environments that promote physical, language, cognitive, social, and emotional development. The roles of family, classroom, and community provide context to build relationships that support each child's development.

EDPSY 380 Adult Learning and Development (5) I&S

C. GLASS HASTINGS Examination of current research and practice in the field of adult education, learning, and development. Offered: AWSpS.

EDPSY 404 Adolescent Development (5) J. LOTT

Students use readings, discussion, and interview data to understand adolescent development. Discusses multiple domains of development, as well

as the contextually situated nature of adolescence. Highlights implications for educators, policy makers, and others who serve the needs of adolescents throughout the course. Offered: W.

EDPSY 405 Adolescents and Media: Challenges in the 21st Century Classroom (3) I&S

Encourages students to consider classrooms of the future while reflecting on their own classroom experiences. Examines adolescents' informal use of media today, some of the ways media can affect young people, and the implications of these effects in a classroom setting.

EDPSY 406 Learning and Teaching in our Changing World: Insights from Experience and Research (5) I&S

Human learning in the educational setting. Cognition, development, learning, motivation, affective processes, and socialization. Emphasis on skills in influencing classroom learning and discipline.

EDPSY 420 Bullying, Revenge, and Belonging: Cultural Perspectives on Social Power (4) I&S, DIV

Examines theories and research on bullying, revenge, and bystander behavior with a particular focus on cultural norms. Identifies the institutional, social, emotional, and ethical characteristics and processes that support exploitive relationships, revenge and their inclusive alternatives. Practical interventions are presented and evaluated.

EDPSY 425 Bullies, Victims, and Bystanders: Social Power In (4) I&S

EDPSY 431 Strategies for Classroom Research and Evaluation (5)

Techniques and strategies for the design and implementation of studies of classroom instruction. Directed toward classroom teachers as consumers of instructional research and as evaluators in their own classrooms. Credit/no-credit only.

EDPSY 447 Principles of Guidance (3)

Study of guidance programs in elementary and secondary schools. Attention is given to the roles of specialists with emphasis on the role of the classroom teacher in school guidance programs. Designed for teachers, administrators, and prospective teachers.

EDPSY 449 Laboratory in Educational Psychology (2-6, max. 6)

Special studies for counselors, teachers, administrators, and others concerned with student

personnel and psychological services in schools and colleges. Focuses on special topics that have either local or contemporary significance.

EDPSY 471 Educational Neuropsychology (5)

NW Berninger Covers brain systems underlying normal development and academic learning: sensory and motor, language, cognitive, social emotional, and executive-functions for self-regulation alone and interaction with the physical and social worlds in and out of school.

EDPSY 472 Teaching Reading, Writing, and Math with Brain in Mind (5) I&S

Students learn evidence-based guiding principles for designing and implementing instruction with brain in mind (developing mental worlds through other -regulated and self-regulated interactions with external physical and social environments that are multi-culturally sensitive and support learning that creates reading, writing, and math brains) . Prerequisite: EDPSY 471. Instructors: Berninger Offered: Sp.

EDPSY 490 Basic Educational Statistics (3) NW, QSR

Measures of central tendency and variability, point and interval estimation, linear correlation, hypothesis testing. Offered: AWSpS.

EDPSY 491 Intermediate Educational Statistics (3)

QSR Covers intermediate-level concepts in analysis of variance and regression methods. Emphasizes understanding appropriate use of methods, conducting analyses using software, and correctly interpreting statistical results. Includes SPSS/PASW software instruction. Prerequisite: EDPSY 490. Instructors: Abbott, Sanders Offered: W.

EDPSY 495 Introduction to Educational

Measurement (3) QSR Practical understanding of test reliability, validity, and derived scores as they apply to external educational assessments; concepts of criterion and norm-referenced testing; review of group administered norm-referenced and criterion-referenced tests and/or testing programs; test interpretation; issues and ethics in large scale assessment. Prerequisite: EDPSY 490. Offered: Sp.

EDPSY 499 Undergraduate Research (*)

Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program. Offered: AWSpS.

EDPSY 500 Field Study I: Academic Consultation (1-3, max. 6) K. MISSALL

Includes study and practice in methods of Tier II academic consultation within an MTSS framework. Prepares students to effectively work with other professionals to better meet the social-emotional and behavioral needs of students and improve the learning environment for students identified as behaviorally and academically 'at-risk'. Prerequisite: EDSPY 554. Offered: WSp.

EDPSY 501 Human Learning and Educational Practice (3)

Systematic examination of current research about human learning in educational settings, including the study of behavioral, information processing, social construction, and the developmental perspectives on learning. Offered: AWSpS.

EDPSY 502 Developmental Foundations of Early Learning (3)

Perceptual-motor, language, and overall cognitive development in children from birth through primary-school age. Emphasis on Piagetian and Vygotskian approaches to development with a special focus on the connections between learning and development. Field-based course projects may be required. Prerequisite: EDPSY 501 or permission. Offered: Sp.

EDPSY 503 Culture Learning and Development (4)

M. BANG Explores influential contemporary research and theory they view culture as foundational to learning and development. Considers these issues in a range of settings (classrooms, informal environments, families, early childhood to adult learners, etc.) and within specific domains (e.g. science, literacy, mathematics. Prerequisite: EDPSY 501 and graduate status in education or psychology. Credit/no-credit only. Offered: A.

EDPSY 504 Intercollegiate Athletic

Leadership: Athlete and Team Wellness (3) Polo

DeCano Explores the responsibility of athletics coaches to develop a team culture oriented toward the welfare of student-athletes. Discusses how psychological and physiological factors affect athlete performance and overall wellness. Explores strategies for team motivation, group cohesion, and resiliency. Offered: Sp.

EDPSY 505 Field Study II: Tier III Interventions (1-2, max. 3)

Individual study of an educational problem in the field under the direction of a faculty member.

Prerequisite: EDPSY 557 Credit/no-credit only.
Offered: AWSp.

EDPSY 506 Instructional Theory (3) Sources, current state, and utility of prescriptive instructional theories with emphasis upon theories having a potential for guiding the design of instruction. Prerequisite: EDPSY 501 or equivalent.

EDPSY 507 Reading, Writing, and Arithmetic: Educational Assessment and Consultation (5) Students administer and interpret tests of reading, writing, arithmetic, and related developmental skills; integrate test, observational, interview, and portfolio information in staffings and written reports; and consult with teachers regarding educational interventions. Prerequisite: graduate standing in the school psychology specialization and permission of instructor. Instructors: Cook Offered: A.

EDPSY 508 Advanced Practicum in Supervision and School Mental Health (2-6, max. 20) S. KING Advanced practicum in providing in counseling, consultation, and behavioral interventions in schools while also supervising field study students in providing basic interventions. Offered: A.

EDPSY 509 Educational Issues in Human Development (5) Human development theories and models. Educational implications of theory, methodology, and application. Current research complements the historical antecedents of current practice. Age range covered varies as function of current issues in professional literature. Prerequisite: 15 credits in educational psychology or psychology.

EDPSY 510 Cognition in the Context of the School Curriculum (3) Contemporary issues and trends in human learning, with a focus on reasoning within subject-matter areas such as mathematics, history, and science. Prerequisite: EDPSY 501 or equivalent. Instructors: Bell, McCutchen

EDPSY 511 Seminar in Applied Educational Psychology (1, max. 6) Designed for graduate students in educational psychology. Applications of theoretical constructs to particular problems encountered in school counseling, practice.

EDPSY 512 Classroom Assessment Strategies (3) Development and evaluation of traditional,

observational, essay, performance-based, portfolio assessments and grading models as they are used in classroom assessment; some review of current research on classroom-based assessment; classroom assessment ethics. Prerequisite: EDPSY 490 or equivalent.

EDPSY 513 Instrument Development (3) Instrument development techniques including construct development, test and item specifications, item writing, planning for reliability and validity studies; ethics in test administration and interpretation. Intended for doctoral or master's students to develop instruments for their own research. Prerequisite: EDPSY 490 or equivalent.

EDPSY 514 History of Educational Technology (3) Examines the role of technology in education through history. Early systems of instruction, advent of textbooks, models for school architecture, instructional devices and teaching machines, mediated and distance learning. Focuses on the interplay between designed educational approaches and contexts in which they were implemented, and consequent success for failure.

EDPSY 515 Current Issues in Technology and Education (3) Examines current genres of learning technology, novel approaches for integrating technology into curriculum and instruction, and recent theoretical perspectives that inform future work in educational technology.

EDPSY 516 Survey of Educational Technology Research (2-, max. 4) Critically examines active research projects in educational technology. Critiques of research practice.

EDPSY 518 Assessment and Diagnosis of Reading Disabilities (3) Techniques for individual assessment of students with reading difficulties (K-12) including formal assessment using standard assessment tools and informal diagnostic teaching. Appropriate for classroom teachers, reading specialists, and school psychologists. Includes conducting and analyzing case studies. Prerequisite: EDC&I 460, EDC&I 462, other reading courses, or permission of instructor. Instructors: Valencia

EDPSY 519 Vulnerable Children and Families in Comparative Perspective: Psychosocial Development Processes (3) *Jegatheesan* Research

and theory examining the effects of disability, poverty, trauma, and immigration and its impact on child development across cultures, effective interventions in educational and non-educational settings, and the consequences of critical issues in the context of psycho-social and development processes in different cultural and international contexts. Offered: Sp.

EDPSY 520 Psychology of Reading (3) Reviews current empirical research on cognitive processes in reading, including word and sub-word processes, syntax and comprehension, reading and perception, word recognition, concept development, and meaning in reading, psychology of reading interests, and skills. Prerequisite: EDPSY 501 or equivalent. Instructors: McCutchen Credit/no-credit only. Offered: WS.

EDPSY 521 Psychology of Writing (3) Examines writing as a cognitive process and reviews current empirical research on writing, emphasizing primarily studies from a psychological perspective. Explores both developmental differences and individual differences in writing skills, together with instructional implications. Prerequisite: EDPSY 501 or equivalent. Instructors: McCutchen Credit/no-credit only. Offered: WS.

EDPSY 522 Teaching Reading, Writing, and Math with Brain in Mind (5) Students learn evidence-based guiding principles for designing and implementing instruction with brain in mind (developing mental worlds through other -regulated and self-regulated interactions with external physical and social environments that are multi-culturally sensitive and support learning that creates reading, writing, and math brains) . Prerequisite: EDPSY 471, EDPSY 577, or permission of instructor. Instructors: Berninger Offered: Sp.

EDPSY 523 Foundations of Ethnographic Research (3) *Jegatheesan* Exploration of the main components of ethnographic endeavor. Students conduct ethnographic research including field entry, observing, listening, data analysis, and writing; typical issues and quandaries encountered in carrying fieldwork in a variety of settings, ethical issues, comprehension, intrusion, and access, experience and empathy, and power dynamics, and predicament.

EDPSY 524 Problem Solving and Critical Thinking in Education (3) Study of the classic and contemporary research literature concerned with human problem solving and critical thinking with emphasis upon applications to educational practice and further research. Prerequisite: EDPSY 501 or equivalent.

EDPSY 525 Creativity and Education (3) Study of the classic and contemporary research literature about creativity with emphasis upon applications to educational practice, evaluation of strategies to promote creativity in the schools, and further research. Prerequisite: EDPSY 501 or equivalent.

EDPSY 526 Seminar on Metacognition (3) Students read and discuss theoretical and research papers from the extensive literature on metacognition. Focuses on defining the concept of metacognition, establishing its range of applicability to educational matters, and becoming familiar with excellent examples of metacognitive research. Prerequisite: graduate status in education or psychology and permission of instructor. Instructors: Nolan

EDPSY 527 Transfer of Teaching (3) Students read and discuss a representative sample of theoretical and research papers from extensive literature on teaching to promote transfer of what students learn to non-teaching environments. Historical approach to the topic is followed by analysis of current writings on transfer. Prerequisite: EDPSY 501 and graduate status in education or psychology. Instructors: Bell, Shouse Credit/no-credit only.

EDPSY 528 Achievement Motivation in Education (3) Critical review of current research and major theories of achievement motivation in schools and other educational settings. Emphasis on the relationship of theories to the contexts and practice of education. Prerequisite: EDPSY 501 or permission of instructor. Instructors: Nolan Offered: WS.

EDPSY 529 Developmental Psychopathology and the DSM (2) *W. LAU* Provides an opportunity for advanced doctoral students to learn the basics of using the Diagnostic and Statistical Manual for Mental Disorders (DSM) for assessment and diagnosis in clinical practice; and learn about childhood disorders across the lifespan. Offered: A.

EDPSY 530 Vygotsky's Socio-Cultural Approach to Mind (5) Critical reading and discussion of the work

of L.S. Vygotsky as well as contemporary psychologists and educators who have investigated cognition in social context. Discusses the implications of these approaches for the design of learning environments. Prerequisite: EDPSY 501. Instructors: Herrenkohl Credit/no-credit only. Offered: W.

EDPSY 531 Socialization of School-Age Children (3)
Study of personal social development and behavior from preschool ages through adolescence. Developmental theory and research are reviewed on the socialization influences of parents and peers and on such topics as aggression, emotional regulation, and social cognition. Prerequisite: EDPSY 501 or equivalent.

EDPSY 532 Adolescence and Youth (3)
Developmental processes and patterns examined with major theoretical and current research themes from behavioral sciences as applied to middle school and senior high students. Educational issues, social problems associated with adolescence in Western culture. Prerequisite: EDPSY 501 or equivalent.

EDPSY 533 Current Research in Adolescence (3)
Contemporary trends and patterns of adolescent research are examined with emphasis upon theoretical foundations, contrasting methodologies, and implications for further research. Exemplary studies and integrative reviews of research on adolescence are featured. Prerequisite: EDPSY 532 and EDPSY 591 or equivalents.

EDPSY 534 School Problems of Adolescence (3)
Study of the classic, contemporary, and emerging school problems of school age youth with emphasis upon problem solving strategies for educators and associated youth service personnel. Includes problems of academic achievement, interpersonal relations, and social deviancy in the schools. Prerequisite: EDPSY 532 or equivalent.

EDPSY 535 Education and the Highly Capable Learner (3) *N. HERTZOG* Examination of major issues and problems in study and nurturance of highly capable children and youth in the educational setting. Emphasis placed on contributions of theory and research to educational problem solving for multiple aspects of advanced human capacity. Prerequisite: EDPSY 501 or equivalent.

EDPSY 536 Immigrant and Indigenous Children: Social Context of Learning (3) *Jegatheesan* Focuses on the broad context of family, school, and society of immigrant and indigenous young children in the United States. Introduces the complex interplay of socio-cultural and psychological factors that impact these children's learning. Offered: WS.

EDPSY 537 Teaching and Learning Science with Indigenous Students (3) *Megan Bang* Provides an overview of the opportunities and challenges in teaching science to Indigenous learners. Students develop relevant pedagogical frameworks to approach problems of practice and develop high-leverage instructional practices for Indigenous students. Focused on Indigenous students however is relevant to other under-achieving populations. Offered: Sp.

EDPSY 538 Multiple Regression (3) Quantitative methods for students in the social, behavioral, and health sciences. Focuses on understanding, estimating, interpreting, and reporting results for univariate multiple regression models for metrical and categorical outcomes, from a frequentist perspective. Prerequisite: EDPSY 490 or equivalent. Offered: Sp.

EDPSY 540 School Psychological Assessment (5)
Study of assessment of human intelligence with supervised training in the administration, scoring, and interpretation of individual intelligence tests. Prerequisite: admission to School Psychology program. Instructors: Jones Offered: A.

EDPSY 544 Counseling (4) *J. MAZZA* Competency-based skills training for beginning counseling and school psychology students. Covers attending, listening, focusing, and intervening behaviors for use with adults and children. Introduction to theories of helping. Prerequisite: admission to School Psychology program. Offered: W.

EDPSY 545 Prepracticum (3) Competency-based skills training for beginning counseling and school psychology students. Attending, listening, focusing, and intervening behaviors for use with adults and children. Introduction to theories of helping. Prerequisite: graduate standing in school psychology or permission of instructor. Offered: A.

EDPSY 546 Counseling Practicum (3-5, max. 20) J. MAZZA Supervised practice in counseling. Prerequisite: admission to School Psychology program; EDPSY 544. Offered: Sp.

EDPSY 548 Educational Implications of Personality Theory (5) J. MAZZA Study of personality development and personality theories with continuous attention to the meaning of these in educational practice, testing, and counseling. Prerequisite: admission to the School Psychology program. Offered: A.

EDPSY 549 Seminar in Consultation Methods (3) Theory and practice of process consultation in educational settings. Field practice in teams with clients. Prerequisite: admission to the School Psychology program. Instructors: Cook Offered: W.

EDPSY 550 Family Counseling (3) Introduction to family counseling theory and practice, emphasizing family dynamics and communication analysis. Prerequisite: graduate standing in school psychology or permission of instructor. Instructors: Jones Offered: W.

EDPSY 551 Group and Behavioral Intervention (3) Introduction to competency-based skills for beginning school psychology students. Includes basic processes of group management skills with children including group process in social skills training, problem-solving techniques, behavioral principles, and parent training. Prerequisite: admission to School Psychology program. Instructors: Cook Offered: Sp.

EDPSY 552 Multicultural Issues in School Counseling and School Psychology (3) Examination of multicultural issues as they relate to the delivery of services provided by school counselors and school psychologists. Theoretical and applied aspects emphasized and case study format utilized. Prerequisite: admission to School Psychology program. Offered: Sp.

EDPSY 553 School Psychology Services with Special Populations (3) Examines current issues in working with youth in special populations, as well as intervention strategies to help these students within the mainstream school environment. Prerequisite: admission to School Psychology program.

Instructors: Murphy Credit/no-credit only. Offered: W.

EDPSY 554 Introduction to Multi-Tiered Systems of Support (3) K. MISSALL Teaches the Multi-Tiered Systems of Support framework and provides instruction on how to conduct assessment, consultation, and evaluation intervention program effectiveness using both a direct service delivery as well as an indirect model (consultation) . Offered: A.

EDPSY 556 Applied Social Psychology: Implications for Education (3) Provides students with the knowledge and understanding of how social psychology is applied within school settings and how it can be used to help develop effective strategies for psychological services. Prerequisite: admission to School Psychology program. Instructors: Cunningham, Mazza Credit/no-credit only. Offered: W.

EDPSY 557 Tier III Interventions for School Psychologists (3) Provides school psychology students with a milt-tier framework in working with challenging students in schools. Provides explicit instruction on functional behavioral assessment, including content and training in how to work with youth who are at-risk or have engaged in self-harming and/or suicidal behavior. Prerequisite: admission to School Psychology program. Instructors: Cook, Mazza Offered: Sp.

EDPSY 558 Generalizability Theory (3) M. Li Focuses on various designs and applications used with the Generalizability theory framework to estimate the amount of score variation associated with a measurement procedure, approach the reliability and validity issues, and optimize the measurement procedure. Prerequisite: EDPSY 490; EDPSY 592; EDPSY 593 or equivalent; recommended: Introduction to educational statistics and measurement so that students are familiar with the basic concepts and procedures that we will continue working on in this course. Offered: W, odd years.

EDPSY 559 Validity Theory (3) M. Li Introduces students to different perspectives and theories of test validity and to the process of accumulating validity evidence for measures used in educational field. As an advanced measurement course, we will address the argument-based validation approach proposed by Kane, and analyze important technical

and philosophical aspects of test validity and validation. Prerequisite: EDPSY 490 and EDPSY 592; recommended: Understand the concepts of reliability and validity as well as the statistical procedures used to evaluate different types of validity claims under the classical test theory framework Offered: W, even years.

EDPSY 560 Advanced Practicum in Personality Assessment (3) Designed for doctoral-level school psychologists to learn advanced personality assessment for diagnosis of emotional and behavior disorders. Prerequisite: admission to School Psychology program; EDPSY 540; EDPSY 564. Open to doctoral students only. Instructors: Jones

EDPSY 562 Group Counseling in Schools (3) Provides students with the opportunity to co-facilitate groups in elementary, middle, and secondary schools, supplemented by weekly didactic presentations of counseling and guidance models. Prerequisite: EDPSY 561 or permission of instructor. Offered: W.

EDPSY 564 Practicum in School Psychology (1-6, max. 20) Practicum in assessment and consultation, emphasizing diagnosis of behavior and learning disabilities, and focusing on techniques acquired in EDPSY 507 and EDPSY 540. Prerequisite: admission to School Psychology program; EDPSY 507; EDPSY 540. Instructors: Jones, Lau Offered: W.

EDPSY 565 Advanced Practicum in Clinical Practice for Children and Adolescents with Psychopathology (4, max. 24) *J. Jones* Designed for doctoral level school psychologists to learn advanced skills in clinical practice for working with children and adolescents with a range of childhood psychopathologies, under the supervision of a licensed psychologist. Prerequisite: EDPSY 544 and EDPSY 546, or equivalent and advanced graduate standing in the school psychology program. Offered: AWSp.

EDPSY 566 Case Study Seminar (1-6, max. 20) Integrating theoretical concepts with practice/service issues. Cases selected for discussion represent a wide range of problems found in schools. Activities include group supervision and peer review. Prerequisite: graduate standing in school psychology. Instructors: Grady Offered: AWSp.

EDPSY 567 Applied Quasi-experimental Research in Education and other Social Sciences (3) *M. SUN* Introduces research designs and statistical models that are often applied to large-scale longitudinal data. These models include, but not limited to , instrumental variables, difference-indifferences, propensity score matching, regression discontinuity, and fixed-effect estimates. Offered: A.

EDPSY 568 Seminar in Professional Issues and Ethics (3) Professional ethics codes and cases, history of counseling or school psychology, legal problems, credentialing issues, conditions of practice, continuing education, publishing, and presenting research papers. Prerequisite: graduate standing in College of Education or permission of instructor. Instructors: Provenzano Credit/no-credit only. Offered: W.

EDPSY 569 Learning and the Interaction Order (3) *K. TAYLOR* Covers research methods course for students using video and/or audio recordings as data in studies of learning and teaching. Students learn how to make evidence-based inferences about people's learning or teaching as captured by video/audio recordings by content logging, selecting, transcribing, and analyzing moments of interaction. Offered: S.

EDPSY 570 Introduction to School Psychology (2, max. 20) *J. MAZZA* Current issues in professional psychology practice and research. Prerequisite: admission to School Psychology program. Offered: A.

EDPSY 571 Educating Individuals with Biologically Based Disabilities (5) Reviews the history of neural science and its interdisciplinary roots, brain imaging methods and web resources, basic terminology and concepts for microscopic and larger neurological structures, functions, organizing principles and chemical bases, with focus on application to diagnosing and teaching students with developmental, learning, psychiatric, neurological, and medical disorders. Prerequisite: graduate standing in school psychology or inst Offered: W.

EDPSY 572 Social-Emotional Assessment (3) Techniques in social-emotional assessment of school-aged children. Diagnostic systems presented in conjunction with assessment techniques. Emphasis on an integrative method for understanding social emotional assessment batteries

and reliability and validity of their test score interpretation. Prerequisite: admission to School Psychology program. Instructors: Cunningham
Offered: A.

EDPSY 573 Psychological Assessment of Preschool Children (5) Students learn to give and interpret tests of intellectual development to assess language, play, and social/emotional functioning, and to write psychological assessment reports for infants, toddlers, and preschoolers. Prerequisite: graduate standing in school psychology and permission of instructor. Instructors: Olson Offered: Sp.

EDPSY 575 Structural Equation Modeling (3) Theory and data analysis using linear structural equation models. Application to data in educational research. Prerequisite: EDPSY 594 or equivalent. Instructors: Abbott Offered: WS.

EDPSY 576 Hierarchical Linear Models (3) Theory and data analysis for research models where random factors are nested, such as multi-level data, growth curve analysis, and meta-analysis. Prerequisite: EDPSY 593 or equivalent. Instructors: Abbott Offered: WS.

EDPSY 577 Neuropsychology of Learning and Behavior Problems (5) Brings together our understanding of neuropsychology and specific behavioral and learning problems to provide a foundation for practitioners to consider neuropsychological contributors to problems observed in clinical and educational settings. Credit/no-credit only. Offered: Sp.

EDPSY 578 Educational Applications of Neuropsychology: Assessment and Intervention (5) Students observe and administer neuropsychological tests and plan and carry out educational interventions for children with neuropsychological disorders. Content focuses on various neuropsychological disorders for which school psychologists can provide assessment and consultation. Prerequisite: EDPSY 540 or equivalent course in individual testing, and EDPSY 577 or permission of the instructor. Instructors: Berninger

EDPSY 579 Advanced Practicum in Neuropsychological Assessment and Neurodevelopmental Intervention (2, max. 12) R. *Bernier, E. Olson* Provides advanced clinical training

in neuropsychological assessment and evidence-based interventions for children with neurodevelopmental and/or mental health disorders. Training includes supervised administration of neuropsychological assessments and delivery of interventions with individuals and/or groups in clinic settings that provide services to children with suspected neurocognitive disabilities. Offered: AWSp.

EDPSY 580 Seminar: The Emergence of Educational Psychology (3) Examination of documents by selected contributors to the field of educational psychology. Special focus on period from mid-nineteenth century to the later twentieth century.

EDPSY 581 Seminar in Educational Psychology (1-5, max. 20) Advanced seminar on selected topics in educational psychology. A critical appraisal of current research. Offered: AWSpS.

EDPSY 582 Seminar in Development and Socialization (3, max. 15) Advanced seminar on selected topics concerned with human development and socialization processes. Emphasis placed upon empirical research and its theoretical underpinnings in such areas as cognitive development, moral development and education, self-concept development, and related concerns. Prerequisite: graduate standing in College of Education or instructor permission. Instructors: Herrenkohl, Jegatheesan, Nolen, Kazemi

EDPSY 583 Seminar in Learning and Thinking (3, max. 15) Seminar in the psychology of learning language and language learning. Each seminar is offered with predesignated emphasis in one of the following topics: linguistics, phonology, pragmatics, psycholinguistics, semantics. Prerequisite: graduate standing in College of Education or instructor permission.

EDPSY 584 Seminar in Quantitative Methods (3, max. 15) Seminar on such topics as measurement techniques, research design, psychometrics, and statistics. Prerequisite: EDPSY 490 and instructor permission. Instructors: Li, Taylor

EDPSY 585 History, Systems, and Contemporary Issues in School Psychology (3) Covers the history, systems, and research relating to the contemporary issues relevant to research and practice of school

psychology. Meets APA and Washington state requirements for course in history and systems of psychology. Prerequisite: admission to School Psychology program. Instructors: Jones, Mazza
Credit/no-credit only. Offered: Sp.

EDPSY 586 Qualitative Methods of Educational Research I (4) Survey of various qualitative research methods from a variety of disciplinary perspectives (anthropology, sociology, applied linguistics, cognitive psychology, policy analysis, and evaluation) with intensive experience in collection, analysis, and reporting of data. Prerequisite: second-year doctoral standing and one course in statistics, and permission of instructor. Offered: A.

EDPSY 587 Qualitative Methods of Educational Research III (5)

EDPSY 588 Survey Research Methodology and Theory (3) Survey research, research, theory, and methodology. Probability theory, sampling, human subjects considerations, instrumentation, and analysis techniques. Review and critique by students of theoretical issues in survey research and development of a survey instrument. Prerequisite: EDPSY 490 or equivalent. Offered: W.

EDPSY 589 Scholarly Writing in Education and Psychology (3) Introduction to the demands and expectations for technical writing in education and psychology, including aspects of the culture of scholarship. Designed for competent writers. Does not address basic grammar and composition. Prerequisite: doctoral standing, and permission of instructor. Credit/no-credit only.

EDPSY 590 Computer Utilization in Educational Research (3) Computer utilization in solution of research problems, data reduction to forms amenable to computer solution, appropriate framing of problems for solutions by computer. Using an interactive system, editors, and program packages. Prerequisite: EDPSY 490.

EDPSY 591 Methods of Educational Research (3) Introduction to educational research. Primary focus on hypothesis development, experimental design, use of controls, data analysis, and interpretation. Prerequisite: EDPSY 490. Offered: WSp.

EDPSY 592 Advanced Educational Measurements (3) Theory of measurement; an examination of assumptions involved in test theory, errors of measurement, factors affecting reliability and validity, and item analysis and standards for educational and psychological tests. Prerequisite: EDPSY 490. Instructors: Li Offered: Sp.

EDPSY 593 Experimental Design and Analysis (5) Experimental design with emphasis on the analysis of variance. Prerequisite: EDPSY 490 or equivalent. Offered: W.

EDPSY 595 Item Response Theory Models of Testing (3) In depth exploration of IRT models and their roles in the development of large scale educational and psychological tests. Prerequisite: EDPSY 490 or equivalent, EDPSY 592, EDPSY 594.

EDPSY 596 Program Evaluation (3) Advanced course in evaluation research emphasizing nontraditional designs, especially those that impose severe ecological constraints on the evaluators. Prerequisite: EDPSY 593, EDPSY 594, EDC&I 597, or permission of instructor. Instructors: Mazza

EDPSY 597 Technical Requirements of Large Scale Tests (3) Theoretical and practical understanding of the quantitative aspects of large-scale tests, including: scaling, norms development, and the development of derived and interpretive scores, evidence for validity and reliability. Prerequisite: EDPSY 490 or equivalent, EDPSY 592, EDPSY 595.

EDPSY 599 Independent Studies in Education (*) Independent studies or readings of specialized aspects of education. Offered: AWSpS.

EDPSY 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AWSpS.

EDPSY 601 Internship (3-10, max. 30) Offered: AWSpS.

SPECIAL EDUCATION

EDSPE 304 Exceptional Children (3) I&S, DIV Covers the knowledge of the field of special education including laws, practices, procedures, and controversies. Focuses on information about

children with disabilities studied from the point of view of education. Offered: WSp.

EDSPE 414 Issues and Trends in Inclusive Early Childhood Education (3) I&S Integrates basic principles and practices of serving young children with disabilities and their families in homes, communities, and early learning programs. Through interactions with readings, videos, peers, and local experts, students examine real-world challenges related to high quality, inclusive experiences for young children and their families. Offered: Sp.

EDSPE 415 Foundations in Reading and Dyslexia (3) I&S, DIV *Roxanne F. Hudson* Provides an overview of theoretical foundations of reading and the characteristics, causes, and treatments of dyslexia. Addresses information about the history of dyslexia, perspectives of people with dyslexia, educational policies and laws related to dyslexia, and educational and technological supports for success in reading and writing text. Recommended: either EDSPE 304, or familiarity with children with disabilities from an educational perspective; and either EDPSY 302, or familiarity with the different ways children develop. Offered: A.

EDSPE 422 (dis) Ability, Education, and the Arts (5) VLPA, DIV Cultural perspectives on disability and education, as interpreted through arts-based inquiry.

EDSPE 427 Introduction to Applied Behavior Analysis (5) I&S/NW I. *SCHWARTZ* Presents an introduction to the science of behavior known as applied behavior analysis. Focuses on basic behavioral principles (e.g., reinforcement), defining behaviors, measuring behaviors, effective strategies to teach new skills, and the ethics involved in behavior change programs. Offered: WSp.

EDSPE 435 Introduction to Autism Spectrum Disorders (5) I&S, DIV Provides an overview of the characteristics, causes, treatments, and controversies about autism spectrum disorder (ASD). Addresses information about the history of the disorder, assessment strategies, and types of interventions. Offered: Sp.

EDSPE 460 Early Literary Instruction (3) Covers the theory and educational practices in early literacy including emergent literacy development, risk

factors for poor literacy outcomes, methods to promote language needed for literacy, phonemic awareness, word identification. Emphasizes instructional strategies useful in childcare settings, preschools, early intervention, and programs for students with developmental disabilities.

EDSPE 499 Undergraduate Research (*) Students developing studies under this rubric should be advised that a report or a paper setting forth the results of their investigations should be regarded as a basic part of the program. Offered: AWSpS.

EDSPE 500 Practicum ([1-6]-, max. 20) Practicum in the field under the direction of a faculty member. Prerequisite: enrollment in a special education program, approved plan of study, and permission of the instructor. Offered: AWSpS.

EDSPE 501 Foundations in Special Education (3) Comprehensive review of the field of special education, including historical perspectives, current best practices, legal issues, and current controversies. Offered: A.

EDSPE 502 Collaboration: Working with Parents and Professionals (3) Provides students with knowledge and skills for working collaboratively with other professionals, family members, and paraeducators. Focus is on the role of the special educator in forming and sustaining school, family, and community partnerships.

EDSPE 503 Classroom Management for Elementary School Educators ([1-3]-, max. 8) Examines how to set up effective classrooms to facilitate learning and the development of social behaviors. Focuses on strategies for effectively managing whole group (classroom) and individual behavior of students in the context of public schools. Offered: AWSpS.

EDSPE 504 Special Education and the Law (3) *Brown* Overview of major state and federal laws affecting the operation and management of special education programs in public schools. Emphasis upon procedural and substantive rights of children with disabling conditions. Offered: jointly with EDLPS 516.

EDSPE 505 Curriculum Development of Students with Moderate to Severe Disabilities (4) Addresses issues and practices in the development of appropriate curriculum, accessing the general

education curriculum, and meaningful assessment for students with moderate to severe disabilities in educational settings. Topics include: assessing general education curriculum, inclusion, and development of Individualized Educational Plans (IEPs), assessment using environmental strategies, and identifying students' needs for assistive technology.

EDSPE 507 Instructional Methods for Students with Moderate to Severe Disabilities (4) *Davis* Details a systematic instructional process for the education of students with moderate to severe or profound disabilities. Includes instructional methods and materials designed to promote the development of skills that are required in school, home, and community settings, and to reduce challenging behaviors.

EDSPE 510 Behavioral Measurement and Management in the Classroom (3) Response measurement in the classroom; use of data analysis for instructional decisions and behavior management for children with disabilities.

EDSPE 511 Methods of Applied Behavior Analysis Research (3) Characteristics of applied behavior analysis are presented: direct, daily measurement, and the systematic investigation of important variables. Representative studies from various applied situations are discussed in terms of dependent and independent variables, research design, reliability, validity, and data analysis. Prerequisite: EDSPE 571 or equivalent preparation.

EDSPE 513 Principles of Assessment (3) Focuses on the principles, administration, and interpretation of a variety of assessments. Includes opportunities to choose appropriate assessments; administer formal and informal assessments accurately; and interpret assessment results to inform instructional decisions. Offered: A.

EDSPE 514 Fundamentals of Reading and Writing for Students with Disabilities (4) *R. HUDSON* Emphasis on fundamentals of reading and writing processes, assessment, and instruction for students with disabilities. Helps students apply what is learned to their work with students with disabilities in classrooms. Prerequisite: EDC&I 460. Offered: W.

EDSPE 515 Problems and Issues in Special Education (3, max. 9) Intensive examination of the issues pertinent to special education, such as legislation, interdisciplinary functions, and the role of special education in general education and placement practices.

EDSPE 517 Practicum in Research Design and Analysis in Special Education (1-4, max. 24) Critical analysis of current research in special education and related fields serves as background for designing applied research projects. Projects are examined, evaluated, and revised in seminar discussion. Prerequisite: EDPSY 490 and EDSPE 591 or equivalent and permission of instructor. Offered: AWSpS.

EDSPE 518 Seminar in Special Education Research (1-4, max. 20) Designed for doctoral students in special education during their first year of residency. Each candidate selects a dissertation problem and submits a proposal. Topics such as the procurement of subjects, the reporting and communication of research findings, and the evaluation of research are stressed. The seminar leads to the evolution of a viable dissertation proposal. Credit/no-credit only. Offered: AWSp.

EDSPE 519 Strategies for Supporting Learners with Extensive Support Needs (3) Provides knowledge and skills necessary to manage extensive support needs for learners with moderate to severe cognitive, physical, or multiple disabilities. Emphasis on various strategies to develop, adapt, implement, and monitor student needs as they relate to communication, daily living, medical management, and positioning and handling. Offered: W.

EDSPE 520 Seminar in Applied Special Education (1-12, max. 20) Designed for graduate students in special education. Focus on contemporary topics relating to the application of the theoretical constructs to special education. Offered: AWSp.

EDSPE 522 Seminar on the Education of Students with Severe Disabilities (3) Advanced graduate seminar arranged to study and discuss the essential components of providing a comprehensive approach to the identification and education of infants, children, adolescents, and young adults with severe disabilities.

EDSPE 523 Fundamentals of Math for Children with Disabilities (3) Provides educators with basic elementary math content and techniques for teaching elementary students with disabilities in inclusive settings. Offered: Sp.

EDSPE 524 Functional Behavioral Assessment (3) Provides a solid foundation in the theory and practice of functional behavioral assessment (FBA). FBA is a required practice under special education law and considered a best practice for students with challenging behavior.

EDSPE 525 Autism and Other Social, Communication, and Developmental Disabilities (3) Focuses on the identification, etiology, education, and outcomes of individuals with Autism Spectrum Disorder and related social, communication, and developmental disorders. Offered: SpS, even years.

EDSPE 526 Techniques for Instructing Social Behaviors for Elementary Students with Mild Disabilities (3) Provides prospective and practicing teachers with foundational theory and knowledge to select specific techniques to promote social competency in elementary children with mild disabilities. Discusses research related to use of these techniques and interventions. Develops schoolwide, classroom, and individual plans for teaching social skills. Offered: Sp.

EDSPE 527 Application of Behavioral Principles (3) Presents principles of applied behavior analysis. Focuses on the use of principles in classroom, home, and community settings to influence learning. Emphasis on the use of data collection and progress monitoring the use of principles and outcomes for learning. Offered: A.

EDSPE 528 Inquiry and Methods in Writing Instruction (3) Covers methods of assessment and teaching written composition, spelling, and handwriting to children and youth with, and without, disabilities. Particular attention is given to how to establish a strong writing program in elementary classrooms and how to teach writing strategies. Offered: Sp.

EDSPE 529 Ethics and Professionalism in Applied Behavior Analysis (5) Examines ethical issues and responsibilities regarding service provision to people with disabilities. Prepares behavior analysts to be

ethical and professional practitioners. Prerequisite: enrolled in the ABA program, or permission of the instructor. Offered: S.

EDSPE 530 Advanced Readings in Applied Behavior Analysis (1, max. 20) *Schwartz* Provides opportunities to read and discuss core texts from applied behavior analysis (ABA). Covers the conceptual underpinnings of ABA and discusses examples of application of the principles. Offered: AWSp.

EDSPE 531 Planning Comprehensive Behavioral Interventions (3) Gives special educators the knowledge and skills they need to develop comprehensive behavior plans to address challenging behavior in children with disabilities in their classrooms. Offered: W.

EDSPE 532 A Tiered Approach to Inclusive Education (3) Prepares educators to work in inclusive educational environments. Explores evidence based instructional strategies, discusses ways to use behavior analytic strategies to promote inclusion, and explores strategies to collaborate with general education teachers. Students also learn how to write high-quality Individualized Education Plans.

EDSPE 533 Concepts and Principles in Applied Behavior Analysis - A (3) Teaches students to act and think as behavior analysts. Explores basic principles, procedures, and terminology of applied behavior analysis. Prerequisite: students must be enrolled in the ABA program or have permission of the instructor. Offered: A.

EDSPE 534 Concepts and Principles in Applied Behavior Analysis - B (3) Trains students to act and think as behavior analysts. Explores basic principles and procedures of applied behavior analysis. Prerequisite: students must be enrolled in the ABA program or have permission of the instructor. Offered: W.

EDSPE 535 History and Philosophy of Applied Behavior Analysis (3) Theory and philosophy of applied behavior analysis, including historical perspectives. How radical behaviorism serves as the philosophy of behavior analysis. Also, how applied behavior analysis serves as the applied science of behavior analysis. Prerequisite: either enrollment in

the ABA program, or permission of instructor.
Offered: A.

EDSPE 536 Assessment in Applied Behavior Analysis A (3) Addresses concepts of behavioral assessment in the classroom and applied settings. Topics include the rationale for using different types of indirect and direct assessment methods, understanding assessment application and interpretation, and current barriers and recommendations for striving toward culturally responsive assessments. Students learn to conduct behavioral assessments and analyze assessment results in order to create a treatment plan. Prerequisite: either enrollment in the ABA program, or permission of instructor. Offered: A.

EDSPE 537 Assessment in Applied Behavior Analysis B (3) Provides an overview of functional behavior assessment (FBA) of behaviors targeted for decrease using applied behavior analysis. Emphasis is placed on identifying the function(s) of behavior and the implementation of FBA procedures in applied settings. Provides graduate students with the practical skills needed to assess challenging behavior in order to support all learners in school, community, clinic and home settings. Prerequisite: either enrollment in the ABA program, or permission of instructor. Offered: W.

EDSPE 539 Ethics and Professionalism in Applied Behavior Analysis A (3) Examines ethical issues and responsibilities regarding service provision to people with disabilities. Prepares behavior analysts to be ethical and professional practitioners. First in a two-quarter sequence. Offered: Sp.

EDSPE 540 Fieldwork Seminar (1-2, max. 16) Provides an opportunity for self-evaluation and reflection on practice as well as assist students with working with children with disabilities and their families in the field. Linked to a required fieldwork experience in a special education setting. Offered: AWSp.

EDSPE 541 Education of Children with Behavior Disorders (3) Introductory course covering characteristics of and educational practices for children with emotional/behavioral disabilities. Reviews theory, definitional issues, models, assessment, and instructional methods for educating children with emotional and behavioral disorders. Students develop a working knowledge of

educational approaches for teaching students with emotional/behavioral disabilities. Offered: A.

EDSPE 545 Instructional Modifications for the Education of Children with Mild Disabilities (3) In-depth analysis and application of several modifications of instructional techniques necessary for the education of students with mild disabilities.

EDSPE 546 Seminar in Educating Children with Behavior Disorders (3, max. 9) Advanced-level seminars focus on contemporary research topics relating to the effective education of children with serious behavior disorders. Students analyze and review research pertinent to the chosen topics and prepare a scholarly manuscript for dissemination.

EDSPE 548 Special Topics in the Education of the Learning Disabled (3, max. 12) In-depth analysis of empirical findings in the specialty of learning disabilities with focus on the synthesis of research findings and their application to the educational environment. A paper suitable for publication required. Prerequisite: course in learning theory, introductory course in learning disabilities, or equivalent preparation.

EDSPE 549 Ethics and Professionalism in Applied Behavior Analysis B (3) Examines ethical issues and responsibilities regarding service provision to people with disabilities. Prepares behavior analysts to be ethical and professional practitioners. Second in a two-quarter sequence. Prerequisite: enrolled in the ABA program, or permission of the instructor. Offered: W.

EDSPE 552 Evidence-Based Instructional Strategies in Applied Behavior Analysis (3) Explores a wide variety of behavior change procedures to increase behaviors. Students will utilize behavior analytic concepts to increase behaviors for individuals with disabilities across a wide variety of settings, populations, and target behaviors. Students will also write comprehensive instructional programs across the four stages of learning and make data-based decisions to support behavior change. Prerequisite: students must be enrolled in the ABA program or have permission of the instructor. Offered: A.

EDSPE 553 Supervision in Applied Behavior Analysis (3) Provide students with an overview of supervision within the field of Applied Behavior Analysis.

Through readings, discussions, assignments and role plays, students will learn the critical components and importance of high quality behavior analytic supervision. In addition, students will have the opportunity create evidence based supervision plans and practice providing positive and constructive feedback. Offered: Sp.

EDSPE 554 Behavior Analysts in the Schools (3)

Applied behavior analysts work in a number of settings, including public schools. There is a special set of knowledge and skills that behavior analysts must acquire to improve their ability to work collaboratively in schools. Issues around school law, policy, school culture, instruction, school based behavioral assessment and the most effective strategies to collaborate with professionals in public schools will be addressed. Recommended: prior knowledge about ABA. Offered: W.

EDSPE 560 Early Learning in Home, School, and Community (3) Successful early childhood education (birth to age 8) depends upon partnerships with children's families and communities. This course delves deeply into formal and informal learning environments (e.g., home, child care, after school programs) to understand environmental influences on children's development, learning, and well-being and practices and policies that better support family and community engagement and children's positive outcomes. Offered: W.

EDSPE 561 Educational Assessment of Young Children with Special Needs (3) Special standardized and educational measurement and evaluation procedures for use with young children with a variety of disabling conditions. Observation, ecological assessment, and programming strategies are discussed in combination with practical application of the skills within an educational framework.

EDSPE 562 Curriculum and Assessment for Young Children with Disabilities (3) Examines recommended practices and meaningful curricula for young children with disabilities. Covers theoretical models and approaches to curricula for preschoolers with disabilities. Includes discussion of definitional issues, theoretical frameworks, curriculum models, and application of recommended instructional and assessment practices within an early childhood educational framework. Offered: W.

EDSPE 563 Collaborating with Families and Educational Teams (4) *Meeker* Explores issues, theories, models, research, and recommended practices related to family-professional partnerships and collaborative teaming in education. Explores the dynamics of interactions with families and other team members including roles and responsibilities, decision-making, communication, and collaboration. Focuses on families and teaming in special education. Prerequisite: students must be enrolled in the ABA program or have permission of the instructor. Offered: AW.

EDSPE 564 Infants and Toddlers with Disabilities and Other Special needs (3) *Sandall* Examines early intervention policies, programs, and practices for infants and toddlers with disabilities and other special needs. Topics include theoretical, philosophical, and learning and research base for early intervention. Offered: W.

EDSPE 565 Approaches to Early Childhood Education (3, max. 9) Provides an overview of basic early childhood content in math, science, social studies, physical education, and the arts. Includes active exploration and demonstration of ways to adapt and embed these concepts into thematic units and early childhood classroom routines. Offered: Sp.

EDSPE 566 Current Research in Early Childhood Special Education (2, max. 6) Explores theory, research, and practice in early intervention with infants, toddlers, and their families. Topics include typical and atypical development, assessment, curriculum, and intervention strategies.

EDSPE 571 Measurement in Applied Behavior Analysis (3) Addresses concepts of behavioral measurement and data-based decision making in applied settings. Students learn how to choose behaviors for measurement, write observable and measurable behavior objectives, design discontinuous and continuous measurement systems, graph practical data using an AB design, visually analyze data using proposed decision-making rules, and make data-based decisions about interventions. Prerequisite: enrolled in the ABA program or permission of instructor. Offered: A.

EDSPE 599 Independent Studies in Education (*) Independent studies or readings of specialized aspects of education. Registration must be

accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed. Offered: AWSpS.

EDSPE 600 Independent Study or Research (*-)

Registration must be accompanied by a study prospectus endorsed by the appropriate faculty adviser for the work proposed. Offered: AWSpS.

EDSPE 601 Internship (1-10, max. 20) Prerequisite: graduate standing and permission based on prearrangement of internship placement and approval by adviser. Offered: AWSpS.

TEACHER EDUCATION PROGRAM

EDTEP 501 Community-Based Field Experience (1-10, max. 15) Field experience and group discussions accompanying the first quarter of study in an Elementary Teacher Education Program. Field experience in community based organizations or school settings. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 502 Second Quarter Field Experience - Elementary (2-10, max. 15) Field experience accompanying the second quarter of study in an Elementary Teacher Education Program. Observe school-year opening full-time in late August through September; field experiences during the quarter in supervised school placements. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 503 Third Quarter Field Experience - Elementary (2-6, max. 12) Field experience and use of reflective process in small group discussions accompanying third quarter of study in an Elementary Teacher Education Program. Field experiences during the quarter in supervised school placements. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 505 Capstone Project: Tools for Reflection - Elementary ([1-3]-, max. 3) Group discussions fostering integration of coursework, field experience, and teaching experiences through documentation and reflection on first year teaching experiences. Using certification standards for teachers, students illustrate their learning through multiple forms of evidence. Final capstone project is

presented to an audience. Prerequisite: elementary TEP student. Credit/no-credit only.

EDTEP 511 School and Society (3) Exploration of issues regarding schooling and society, such as matters of value and value tension in American schools. Consideration of social values such as equality, opportunity, pluralism, and community; historical and contemporary evidence of values in schooling; and how values can conflict in policy and practice. Prerequisite: elementary TEP student.

EDTEP 515 Instructional Practice and Performance I (4) Focuses on supporting teacher candidates to plan for, enact, and reflect on productive learning experiences for K-12 students where discussion is a central component and learning experience. First in a three-course series.

EDTEP 516 Instructional Practice and Performance II (4) Supports candidates to plan for, enact, and reflect on a variety of assessment opportunities presented to K-12 students. Candidates analyze K-12 students' learning through investigation of a variety of assessment data points as evidence. Second in a three-course series.

EDTEP 517 Instructional Practice and Performance III (4) Supports teacher candidates to plan for, enact, and reflect on productive learning experiences for K-12 students where engaging in rigorous content instruction is a central component and learning experience. Third in a three-course series.

EDTEP 521 Teaching and Learning in Numeracy I (4) Focus on mathematics from the perspective of the learner and on the meaning of understanding a mathematics concept. Examination of cultural aspects of the development of these concepts. Prerequisite: elementary TEP student.

EDTEP 522 Teaching and Learning in Numeracy II (3) Focus on pedagogy of mathematics. In conjunction with field experience, students extend understanding of mathematics and successfully integrate mathematics as a tool for learning science and art. Prerequisite: elementary TEP student.

EDTEP 523 Teaching and Learning in Science (3) Science teaching in a manner consistent with how young children learn science concepts and skills. Opportunities are provided for work on science

activities similar to those used with elementary school children and to experience many of the problems and successes of preadolescents. Prerequisite: elementary TEP student.

EDTEP 524 Physical Education and Health in the Schools (2) Techniques and procedures for teaching physical education and health in elementary and secondary schools. For students in Teacher Education Program. Credit/no-credit only.

EDTEP 531 Teaching and Learning in Literacy I (3) Investigation of the multiple natures of literacy development. Students study the impact of culture and family on literacy development by reading and discussing a variety of texts while also experiencing the development of their own learning through literature study, the writing process, and oral presentations. Prerequisite: elementary TEP student.

EDTEP 532 Teaching and Learning in Literacy II (4) Introduces participants to the content and process of literacy learning in elementary school. Study of abilities needed for effective literacy use, instructional strategies to help children acquire these abilities, and assessment strategies to evaluate student progress. Prerequisite: elementary TEP student.

EDTEP 533 Teaching and Learning in Literacy III (3) Introduces participants to the content and process of literacy learning in elementary school. Study of abilities needed for effective literacy use, instructional strategies to help children acquire these abilities, and assessment strategies to evaluate student progress. Prerequisite: elementary TEP student.

EDTEP 541 Dilemmas of Teaching and Learning in Elementary School ([2-4]-, max. 4) Covers human learning in the elementary school setting with emphasis on discipline-specific cognition and cognitive development. Prerequisite: elementary TEP student.

EDTEP 543 Teaching and Learning in Social Studies. (4) Strategies for teaching social studies and the arts through integrated thematic units of curriculum and instruction. Prerequisite: elementary TEP student.

EDTEP 544 Differentiated Instruction (1-4, max. 20) Introduction to the concepts and practice of

differentiated instruction for children with diverse developmental, linguistic, and cultural characteristics. Prerequisite: elementary TEP student.

EDTEP 551 Multicultural Teaching (3) Concepts, theories, and strategies that constitute major dimensions of multicultural education. Focus on racial and ethnic groups, social class, and gender. Dimensions of multicultural education examined include content integration, knowledge construction process, prejudice reduction, equity pedagogy, and empowering school culture and social structure. Prerequisite: TEP student.

EDTEP 552 Assessment in Elementary Education ([1-2]-, max. 3) Emphasis on methods of assessment that reinforce understanding of the various disciplines. Includes performance assessments, assessments of student projects and papers, traditional exams, and observational exams. Prerequisite: elementary TEP student.

EDTEP 555 Understanding Indigenous Perspectives: Implications for Teaching and Learning (1) *M. Bang, D. Stevens* Provides participants a pedagogical approach in working with Native learners, families, and communities. It's designed to enhance and engage students in understanding contemporary Native American history emphasizing local Pacific Northwest tribes and fulfilling HB 5433. Content focuses on incorporating Native knowledge and building beneficial relationships in curriculum development. Credit/no-credit only. Offered: WS.

EDTEP 560 Teaching for Learning in Secondary School (3) Studies human learning in an educational setting, with an emphasis on learning of school subjects. Topics include nature of learning, knowledge and teaching, motivation, culture, and cognition. First in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 561 Teaching and Learning for Secondary Schools II (2) Study of human learning in an educational setting, with an emphasis on learning of school subjects. Topics include nature of learning, knowledge and teaching, motivation, culture, and cognition. Second of a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 562 Adolescent Development and Education I (-2)

Overview of trends and issues of adolescent development and behavior in relation to contemporary secondary schooling. Examines psychological perspectives on adolescent identity, interpersonal relationships, academic engagement, and social deviancy in schools. First in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 563 Adolescent Development and Education II (-2)

Overview of trends and issues of adolescent development and behavior in relation to contemporary secondary schooling. Examines psychological perspectives on adolescent identity, interpersonal relationships, academic engagement, and social deviancy in schools. Second in a two-course sequence. Prerequisite: secondary TEP student.

EDTEP 564 Working in Schools (1-2, max. 20)

Explores the organizational, personal, and interpersonal aspects of working as a teacher in schools. Preparation for membership and leadership in a professional learning community and for continuing professional growth. Prerequisite: TEP student Credit/no-credit only.

EDTEP 566 Creating Classrooms for All Students (2-4, max. 4)

Provides middle and high school teachers with an understanding of how to organize their classrooms so as to encourage and teach civility and be familiar with the needs of special education students.

EDTEP 571 Topics and Tensions in School and Society (4)

Exploration of issues of value and value tension in American schools. Consideration of social values of equality, opportunity, pluralism, and community, historical and contemporary evidence of values in schooling, and how values can conflict in policy and practice. Prerequisite: secondary TEP student.

EDTEP 573 Assessment in Secondary Education (4)

Strong emphasis on methods of assessment that reinforce understanding of the various disciplines, including performance assessments, assessments of student projects and papers, traditional exams, and observational exams. Prerequisite: secondary TEP student.

EDTEP 575 Working with English Language Learners and Literacy Across the Curriculum (4)

Prepares pre-service secondary teachers to meet the needs of culturally and linguistically diverse students in the mainstream secondary classroom. Emphasis on second language acquisition, critical literacy issues, and integration of language and literacy into academic content areas for adolescent learners.

EDTEP 580 Teaching English and Language Arts in Secondary School I (5-)

Teaching of English and language arts in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 581 Teaching English and Language Arts in Secondary School II (-3)

Teaching of English and language arts in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 582 Teaching Mathematics in the Secondary School I (5-)

Teaching of mathematics in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 583 Teaching Mathematics in the Secondary School II (-3)

Teaching of mathematics in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 584 Teaching Social Studies in the Secondary School I (5-)

Developing, teaching, and evaluating social studies courses on the middle, junior, and senior high school levels. Prerequisite: secondary TEP student.

EDTEP 585 Teaching Social Studies in the Secondary School II (-3)

Developing, teaching, and evaluating social studies courses on the middle, junior, and senior high school levels. Prerequisite: secondary TEP student.

EDTEP 586 Teaching Science in the Secondary School I (5-)

Teaching of science in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 587 Teaching Science in the Secondary School II (-3)

Teaching of science in middle, junior, or senior high school. Prerequisite: secondary TEP student.

EDTEP 588 Teaching World Languages I (5-)

Introduction to currently used foreign language teaching methods and approaches, including learning and teaching strategies and techniques for the four skills - reading, writing, speaking, listening - and culture. Current and future trends in pedagogy and technology. Prerequisite: secondary TEP student.

EDTEP 589 Teaching World Languages II (-3)

Introduction to currently used foreign language teaching methods and approaches, including learning and teaching strategies and techniques for the four skills - reading, writing, speaking, listening - and culture. Current and future trends in pedagogy and technology. Prerequisite: secondary TEP student.

EDTEP 591 First Quarter Field Experience -

Secondary (2-5, max. 10) Field experience accompanying the first quarter of study in the Secondary Teacher Education Program. Observe and assist weekly during the quarter in supervised school placements. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 592 Second Quarter Field Experience -

Secondary (2-5, max. 10) Field experience accompanying the second quarter of study in the Secondary Teacher Education Program. Supervised placements in summer school program. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 593 Third Quarter Field Experience -

Secondary (2-5, max. 10) Field experience accompanying third quarter of study in Secondary Teacher Education Program. Four weeks full-time plus daily part-time in supervised school placements. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 595 Capstone Project: Tool for Reflection -

Secondary ([1-3]-, max. 3) Group discussions fostering integration of coursework, field experience, and teaching experiences through documentation and reflection on student teaching experiences. Using certification standards for teachers, students illustrate their learning through multiple forms of evidence. Final capstone project is presented to an audience. Prerequisite: secondary TEP student. Credit/no-credit only.

EDTEP 600 Independent Study or Research (*-)

Registration must be accompanied by a study prospectus endorsed by a Director of Teacher Education and the faculty adviser for the work proposed. Credit/no-credit only.

EDTEP 601 Fourth Quarter Field Experience (2-10,

max. 15) Field experience during the fourth quarter of study in a Teacher Education Program. Full-time student teaching in supervised school placements. Prerequisite: TEP student. Credit/no-credit only.

COLLEGE OF ENGINEERING

AERONAUTICS AND ASTRONAUTICS

AERONAUTICS AND ASTRONAUTICS

A A 101 Air and Space Vehicles (5) NW

A A 198 Special Topics in Aeronautics and Astronautics (1-5, max. 10) NW *Knowlen* Introduces the field of Aeronautics and Astronautics. Topics include aircraft flight, rocket propulsion, space travel, and contemporary space missions. May include hands-on activities. For non-majors.

A A 210 Engineering Statics (4) NW Applies vector analysis to equilibrium of rigid body systems and subsystems. Includes force and moment resultants, free body diagrams, internal forces, and friction. Analyzes basic structural and machine systems and components. Prerequisite: minimum grade of 2.0 in either MATH 126 or MATH 136; minimum grade of 2.0 in PHYS 121. Offered: AWS.

A A 260 Thermodynamics (4) NW Introduction to the basic principles of thermodynamics from a macroscopic point of view. Emphasis on the First and Second Laws and the State Principle, problem solving methodology. Prerequisite: minimum grade of 2.0 in either CHEM 140, CHEM 142, CHEM 144, or CHEM 145; minimum grade of 2.0 in either MATH 126, MATH 129, or MATH 136; minimum grade of 2.0 in PHYS 121. Offered: SpS.

A A 299 Undergraduate Research (1-5, max. 10) Research on special topics under the supervision of a faculty member. Application of fundamentals learned in the classroom to real problems in research. Credit/no-credit only. Offered: AWSpS.

A A 301 Compressible Aerodynamics (4) Covers aerodynamics as applied to the problems of performance of flight vehicles in the atmosphere; kinematics and dynamics of flow fields; thin airfoil theory; compressible fluids; one-dimensional compressible flow; and two-dimensional supersonic flow. Prerequisite: A A 311. Offered: W.

A A 302 Incompressible Aerodynamics (4) Aerodynamics as applied to the problems of

performance of flight vehicles in the atmosphere. Kinematics and dynamics of flow fields; incompressible flow about bodies. Thin airfoil theory; finite wing theory. Prerequisite: PHYS 123; A A 311; and either AMATH 351, MATH 136, or MATH 307. Offered: Sp.

A A 310 Orbital and Space Flight Mechanics (4) Newton's law of gravitation. Two-body problem, central force motion, Kepler's laws. Trajectories and conic sections. Position and velocity as functions of time. Orbit determination and coordinate transformations. Rocket dynamics, orbital maneuvers, Hohmann transfer. Interplanetary trajectories, patched conics. Planetary escape and capture. Gravity assist maneuvers. Prerequisite: M E 230. Offered: A.

A A 311 Atmospheric Flight Mechanics (4) Applied aerodynamics, aircraft flight "envelope," minimum and maximum speeds, climb and glide performance. Range and endurance, take-off and landing performance, using both jet and propeller power plants. Longitudinal and dynamic stability and control, wing downwash, stabilizer and elevator effectiveness, power effects. Lateral and directional stability and control. Prerequisite: M E 230; and A A 260. Offered: A.

A A 312 Structural Vibrations (4) Vibration theory. Characteristics of single and multi degree-of-freedom linear systems with forced inputs. Approximate methods for determining principal frequencies and mode shapes. Application to simple aeroelastic problems. Prerequisite: A A 310 and A A 311. Offered: W.

A A 320 Aerospace Instrumentation (3) Hands-on laboratory experience for understanding the design and function of electronic circuits and instrumentation utilized in aerospace engineering. Topics include Ohm's law, Kirchoff's laws, DC and AC circuits, passive and active components, op-amps and comparators, sensors, signal conditioning, electromechanical systems and actuators, digital systems, and data acquisition. Prerequisite: PHYS 123. Offered: A.

A A 321 Aerospace Laboratory I (3) The design and conduct of experimental inquiry in the field of aeronautics and astronautics. Laboratory experiments on supersonic flow, structures, vibrations, material properties, and other topics. Theory, calibration, and use of instruments, measurement techniques, analysis of data, report writing. Prerequisite: A A 311; and A A 320 Offered: W.

A A 322 Aerospace Laboratory II (3) Design and conduct of experimental inquiry in the field of aeronautics and astronautics. Student groups propose, design, build, and conduct laboratory experiments in one of the following broad topic areas: aerodynamics, structures, propulsion, or energetics. Results are presented in written and oral reports. Prerequisite: minimum grade of 1.7 in A A 321. Offered: Sp.

A A 331 Aerospace Structures I (4) Analysis and design of aerospace structures. Reviews concepts of stress, strain, and equations of elasticity. Plane stress and plane strain. Application to aerospace structural elements including general bending and torsion of rods and beams, and open and closed thin-walled structures and box beams. Prerequisite: CEE 220. Offered: W.

A A 332 Aerospace Structures II (4) Shear flow in multi-cell thin walled sections. Bending of rectangular and circular plates. Buckling analysis of beams and plates. Energy principles in elasticity. Introduction to the finite element method. Elements of fracture mechanics and fatigue. Prerequisite: minimum grade of 1.7 in A A 331. Offered: Sp.

A A 395 Undergraduate Seminar (1, max. 4) Lectures and discussions on topics of current interest in aviation and space technology by guest speakers. Topics vary. Credit/no-credit only. Offered: A.

A A 402 Viscous Fluid Mechanics (3) Introduction to fluid mechanics, dimensional analysis, effects of gravity on pressure, kinematics, conservation of mass and momentum, control-volume method, conservation of energy, vorticity and viscosity, viscous effects, Navier-Stokes solutions, and boundary layers. Prerequisite: MATH 324; A A 301. Offered: A.

A A 405 Introduction to Aerospace Plasmas (3) Development of introductory electromagnetic theory including Lorentz force and Maxwell's equations. Plasma description. Single particle motions and drifts in magnetic and electric fields. Derivation of plasma fluid model. Introduction to plasma waves. Applications to electric propulsion, magnetic confinement, and plasmas in space and Earth's outer atmosphere. Prerequisite: PHYS 123; MATH 324. Offered: A.

A A 406 Electric Propulsion (3) Core concepts in the field of electric space propulsion, including plasma formation via strong electric fields, characterization using electric probes, and performance measurements. Includes required lab sections. Co-requisite: A A 405. Offered: A.

A A 410 Aircraft Design I (4-) Conceptual design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight and balance, and performance. Satisfaction of stability, control, and handling qualities requirements. Prerequisite: A A 322; A A 332; A A 447; and A A 460 Offered: W.

A A 411 Aircraft Design II (-4) Preliminary design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight and balance, and performance. Satisfaction of stability, control, and handling qualities requirements. Prerequisite: A A 410. Offered: Sp.

A A 419 Aerospace Heat Transfer (3) Fundamentals of conductive, convective, and radiative heat transfer with emphasis on applications to atmospheric and space flight. Prerequisite: PHYS 123; MATH 307. Offered: W.

A A 420 Spacecraft and Space Systems Design I (4-) Design of space systems and spacecraft for advanced near-Earth and interplanetary missions. Astrodynamics, space environment, space systems engineering. Mission design and analysis, space vehicle propulsion, flight mechanics, atmospheric entry, aerobraking, configuration, structural design, power systems. thermal management, systems integration. Oral presentations and report writing. Design topics vary. Prerequisite: A A 322; A A 332; A A 447; and A A 460 Offered: W.

A A 421 Spacecraft and Space System Design II (-4)

A continuation of A A 420. Course content varies from year to year and is dependent on the design topic chosen for A A 420. Prerequisite: A A 420. Offered: Sp.

A A 447 Control in Aerospace Systems (4) Overview of feedback control. Dynamic models for control systems design including ODE, transfer function, and state-space. Linearization of nonlinear models. Analysis of stability, controllability, observability, time/frequency domain techniques. Frequency of response design techniques. Design of control systems via case studies. Prerequisite: a minimum grade of 1.7 in A A 312; and MATH 308. Offered: Sp.

A A 448 Control Systems Sensors and Actuators (3) Overview of feedback control. Study of control systems components and formulation of their mathematical models. Discussion and analysis of amplifiers, DC servomotors, magnetic-actuators, accelerometers, potentiometers, shaft encoders and resolvers, proximity sensors, and force transducers. Experimental determination of component models and model parameters. Includes hands-on laboratory component. Prerequisite: A A 447. Offered: A.

A A 449 Special Topics in Controls (3-5) Topics of current interest in controls. Offered: Sp.

A A 460 Propulsion (4) Study of the aero- and thermodynamics of jet and rocket engines. Air-breathing engines as propulsion systems. Turbojets, turbofans, turboprops, ramjets. Aerodynamics of gas-turbine engine components. Rocket vehicle performance. Introduction to space propulsion. Prerequisite: a minimum grade of 1.7 in A A 301; and a minimum grade of 1.7 in A A 302. Offered: A.

A A 461 Air Breathing Propulsion (3) Examines gas turbine engine design methodology. Covers aerodynamics or gas dynamics of air breathing engine components: inlets, compressors, turbines, and nozzles. Studies the on-design and off-design performance of gas turbine engines. Includes combustion, emissions, noise, and advanced air breathing propulsion systems. Prerequisite: A A 460. Offered: W.

A A 462 Rocket Propulsion (3) Covers the physical and performance characteristics of chemical rocket

propulsion systems. Includes rocket equations, mass ratios, staging, flight performance, nozzle theory and design, combustion thermochemistry, propellant categories, fuels, oxidizers, monopropellants, rocket system components and materials and rocket design principles. Prerequisite: A A 260. Offered: W.

A A 470 Systems Engineering (4) Concepts of system approach, system hierarchies, functional analysis, requirements, trade studies, and other concepts used to define and integrate complex engineering systems. Introduction to risk analysis and reliability, failure modes and effects analysis, writing specifications, and lean manufacturing. Offered: jointly with IND E 470; Sp.

A A 490 Space Law and Policy (5) I&S Saadia M. Pekkanen Law and policy foundations of outer space activities. Essential origins, sources, and role of space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with ESS 488/JSIS B 444.

A A 498 Special Topics (1-5, max. 15) Topics of current interest in the Department of Aeronautics and Astronautics.

A A 499 Undergraduate Research (1-5, max. 10) Research on special topics under the supervision of a faculty member. Application of fundamentals learned in the classroom to real problems in research. A maximum of 6 credits may be applied toward senior technical electives. Offered: AWSpS.

A A 501 Advanced Gas Dynamics (3) Equilibrium kinetic theory; chemical thermodynamics; thermodynamic properties derived from quantum statistical mechanics; reacting gas mixtures; applications to real gas flows and gas dynamics. Offered: Sp, odd years.

A A 503 Continuum Mechanics (3) Reviews concepts of motion, stress, energy for a general continuum; conservation of mass, momentum, and energy; and the second law; constitutive equations for linear/nonlinear elastic, viscous/inviscid fluids, and general materials; and examples/solutions for solid/fluid materials. Offered: jointly with M E 503; A.

A A 504 Compressible Fluid Mechanics (3) Reviews the fundamentals with application to external and internal flows; supersonic flow, 1D and Quasi-1D, steady and unsteady flow, oblique shocks and expansion waves, linearized flow, 2D flow, method of characteristics; and transonic and hypersonic flow. Offered: A.

A A 506 Vortex-Dominated Flows (3) Examines the vorticity equation, baroclinic torque, solenoidality, Biot-Savart's formula, diffusion of vorticity, Burger vortex, system of vortices, Kelvin-Helmholtz instability, effects of density, shear, and surface tension on instability, swirling flows, and other special topics. Offered: Sp, even years.

A A 507 Incompressible Fluid Mechanics (3) Covers inviscid and viscous incompressible flows, exact solutions of laminar flows, creeping flows, boundary layers, free-shear flows, vorticity equation, and introduction to vortex dynamics. Offered: jointly with M E 507; W.

A A 508 Turbulence (3) The phenomena of turbulence; transition prediction; Reynolds stresses; turbulent boundary-layer equations. Approximate methods for turbulent boundary layers. Prerequisite: A A/M E 507 or permission of instructor. Offered: Sp, odd years.

A A 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with CHEM E 510/E E 510/M E 510.

A A 516 Stability and Control of Flight Vehicles (3) Static and dynamic stability and control of flight vehicles in the atmosphere. Determination of stability derivatives. Effects of stability derivatives on flight characteristics. Flight dynamic model. Responses to control inputs and external disturbances. Handling qualities. Control system components, sensor characteristics. Stability augmentation systems. Prerequisite: A A 440 or permission of instructor. Offered: W.

A A 523 Special Topics in Fluid Physics (3) Offered: AWSp.

A A 524 Aeroacoustics (3) Reviews the fundamental concepts of acoustics which include sound measurements, reflection, resonance, transmission, radiation, scattering, diffraction, ray acoustics, wave guide, turbo-machinery noise, sound suppression, jet noise, and airframe noise and acoustic problems in rockets and other propulsion systems. Offered: A, odd years.

A A 525 Advanced Airbreathing Propulsion (3) Reviews the fundamental concepts of advanced airbreathing engines including advanced gas turbines, ramjets, scramjets and variants, detonation engines, flow with chemical energy release, shock dynamics, Chapman-Jouguet, ZND model, and multi-cellular and spinning detonation. Offered: A, even years.

A A 527 Space Power Systems (3) Explores the theoretical background and technology of power systems for satellites, space science missions, and planetary and lunar outposts. Focuses on photovoltaic, solar-thermal, and nuclear systems, as well as chemical systems for storage. Addresses thermal management. Offered: A, even years.

A A 528 Spacecraft Dynamics and Control (3) Examines spacecraft dynamics and control. Includes basic orbital mechanics - the restricted three body problem, Hill's theory, perturbation theory, orbit determination, rigid body kinematics and dynamics, attitude control, and spacecraft formation flying. Prerequisite: MATH 307; MATH 308. Offered: W, odd years.

A A 529 Space Propulsion (3) Nucleonics, and heat transfer of nuclear-heated rockets. Electrothermal, electromagnetic, and electrostatic thrusters. Power/propulsion systems. Prerequisite: permission. Offered: Sp, odd years.

A A 530 Mechanics of Solids (3) General concepts and theory of solid mechanics. Large deformations. Behavior of elastic, viscoelastic, and plastic solids. Linear theory of elasticity and thermoelasticity. Wave propagation in solids. Offered: A.

A A 531 Quasibrittle Fracture Mechanics and Scaling (3) Foundations of linear elastic and

nonlinear fracture mechanics and cohesive modeling. Effects of damage in the Fracture Process Zone with emphasis on the scaling of structural strength. Finite Element simulations for scaling of quasibrittle structures. Prerequisite: A A 530 or permission of instructor. Offered: Sp, odd years.

A A 532 Mechanics of Composite Materials (3)

Analysis and design of composite materials for aerospace structures. Micromechanics. Anisotropic elasticity. Laminated plate theory. Thermo-viscoelastic behavior and fracture of composites. Prerequisite: coursework in mechanics of materials or permission of instructor. Offered: A.

A A 535 Advanced Composite Structural Analysis (3)

Covers advanced stress analysis methods for composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A A 532. Offered: jointly with M E 500; Sp, odd years.

A A 538 Introduction to Structural Optimization (3)

Includes the formulation of engineering design problems as optimization problems, gradient based numerical optimization methods, design oriented structural analysis, structural sensitivity analysis, approximation concepts, and introduction to multidisciplinary design optimization. Prerequisite: coursework in structural analysis; finite elements; and computer programming; or permission of instructor. Offered: A, odd years.

A A 540 Finite Element Analysis I (3) Formulation of the finite element method using variational and weighted residual methods. Element types and interpolation functions. Application to elasticity problems, thermal conduction, and other problems of engineering and physics. Offered: W.

A A 541 Finite Element Analysis II (3) Advanced concepts of the finite element method. Hybrid and boundary element methods. Nonlinear, eigenvalue, and time-dependent problems. Prerequisite: A A 540 or permission of instructor. Offered: Sp, even years.

A A 543 Computational Fluid Dynamics of Compressible Flows (3) Examines numerical discretization of the inviscid compressible equations

of fluid dynamics; finite-difference and finite-volume methods; time integration, iterative methods, and explicit and implicit algorithms; consistency, stability, error analysis, and properties of numerical schemes, grid generation; and applications to the numerical solution of model equations and the 2D Euler equations. Offered: W.

A A 544 Computational Fluid Dynamics of Incompressible Flows (3)

Examines numerical discretization of the incompressible Navier-Stokes equation; projection method, introduction to turbulence; Reynolds Averaged Navier-Stokes equations; algebraic, one-equation, and two-equation turbulence models; large-eddy simulation; direct numerical simulation; and applications to the numerical solution of laminar and turbulent flows in simple geometries. Offered: Sp, even years.

A A 545 Computational Methods for Plasmas (3)

Develops the governing equations for plasma models - particle, kinetics, and MHD. Applies the governing equation to plasma dynamics through the PIC method and integration of fluid evaluation equations. Examines numerical solution to equilibrium configurations, and linear stability by energy principle and variational method. Prerequisite: A A 405 or A A 557. Offered: Sp, odd years.

A A 546 Advanced Topics in Control System Theory (3)

Topics of current interest for advanced graduate students with adequate preparation in linear and nonlinear system theory. Prerequisite: permission of instructor.

A A 547 Linear Systems Theory (4) Linearity, linearization, finite dimensionality, time-varying vs. time-invariant linear systems, interconnection of linear systems, functional/structural descriptions of linear systems, system zeros and invertibility, linear system stability, system norms, state transition, matrix exponentials, controllability and observability, realization theory. Cannot be taken for credit if credit received for EE P 547. Prerequisite: E E 510/A A 510/CHEM E 510/M E 510. Offered: jointly with E E 547.

A A 548 Linear Multivariable Control (3)

Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer

design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 548/M E 548.

A A 549 Estimation and System Identification (3) Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with E E 549/M E 549.

A A 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Offered: jointly with E E 550/M E 550.

A A 554 Aeroelasticity (3) Static and dynamic aeroelasticity, unsteady aerodynamics, aeroservoelastic modeling, and active control. Offered: A, even years.

A A 556 Space and Laboratory Plasma Physics (3) Discussion of waves, equilibrium and stability, diffusion and resistivity, basic plasma kinetic theory, and wave-particle interactions. Prerequisite: ESS 415, or equivalent, or permission of instructor. Offered: jointly with ESS 576; Sp, odd years.

A A 557 Physics of Fusion Plasmas (3) Review and comparison of single particle and fluid descriptions of plasmas. MDH equilibrium, flux surfaces, and basic toroidal description. Collisional processes including physical and velocity space diffusion. Introduction to island formation, stochasticity, and various plasma instabilities. Prerequisite: A A 405 or GPHYS 505. Offered: W, even years.

A A 558 Plasma Theory (3) Equilibrium, stability, and confinement. Classical transport, collisionless and resistive skin depths. Ideal MHD equations formally derived and properties of plasmas in the ideal limit are studied. Straight and toroidal equilibrium. Linear

stability analysis with examples. Taylor minimum energy principle. Prerequisite: either A A 405, A A 556, A A 557, ESS 576, or GPHYS 537. Offered: Sp, even years.

A A 559 Plasma Science Seminar (1, max. 30) Current topics in plasma science and controlled fusion with presentations by invited speakers, on-campus speakers, and students. Students expected to give a seminar once or twice a year with instructor reviewing the method of presentation and material used for the presentation. Credit/no-credit only. Offered: AWSp.

A A 560 Plasma Diagnostics (3) Discusses plasma measurement methods including material probes and optical methods. Covers techniques for making measurement in a high electrical noise environment. Presents methods for measuring electron and ion temperatures, density, impurities, magnetic fields, fluctuations, and neutrals. Prerequisite: A A 405 or equivalent. Offered: W, odd years.

A A 564 Kinetic Theory/Radiative Transfer (3) Boltzmann and Collisionless Boltzmann (Vlasov) equations. Instabilities in homogeneous and inhomogeneous plasma, quasi-linear diffusion, wave-particle interaction, collisional (Fokker-Planck) equation. Introduction to radiative non-equilibrium, scattering and absorption processes. Integral equation of radiative transfer. Prerequisite: A A 501 or permission of instructor. Offered: Sp, even years.

A A 565 Fusion Reactor Fundamentals (3) Introduction to basic engineering features of fusion power plants. Brief description of basic fusion physics and discussion of power plants for leading thermonuclear concepts. Engineering problems; blanket, shield neutronics; materials, thermal hydraulics; tritium, superconducting systems. Prerequisite: completion of or concurrent enrollment in A A 405 or permission of instructor. Offered: W, even years.

A A 578 Convex Optimization (4) Basics of convex analysis: Convex sets, functions, and optimization problems. Optimization theory: Least-squares, linear, quadratic, geometric and semidefinite programming. Convex modeling. Duality theory. Optimality and KKT conditions. Applications in signal processing, statistics, machine learning, control communications, and design of engineering systems.

Prerequisite: A A 510, CHEM E 510, E E 510, or M E 510. Offered: jointly with CSE 578/E E 578/M E 578; W.

A A 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems. Offered: jointly with E E 580/M E 580; Sp, even years.

A A 581 Digital Control System Design (4) *M. BERG* Digital control system design by classical methods. Discrete-time systems and the z-transform. Modeling sampled-data systems. Frequency response of discrete time systems and aliasing. Nyquist stability criterion and gain and phase margins. Discrete-time control law determination by direct z-plane root locus and loop shaping methods. Includes hands-on-with-hardware projects. Prerequisite: AA/EE 447 or ME 471. Offered: jointly with E E 581/M E 581; W.

A A 582 Introduction to Discrete Event Systems (3) Modeling DES with automata and Petri nets. Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets. Prerequisite: A A 447/E E 447/ M E 471. Instructors: Berg Offered: jointly with E E 582/M E 582; Sp, even years.

A A 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with E E 583/M E 583; A.

A A 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Offered: jointly with E E 585/M E 585.

A A 589 Special Topics in Solid Mechanics (4) Offered: AWSp.

A A 590 Space Law and Policy (5) *Saadia M. Pekkanen* Law and policy foundations of outer space activities. Essential origins, sources, and role of space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with ESS 584/JSIS B 544; Sp.

A A 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with CHEM E 591/E E 591/M E 591.

A A 593 Feedforward Control (3) Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actuators. Prerequisite: A A 547/E E 547/M E 547. Instructors: Devasia Offered: jointly with E E 593/M E 593; Sp, even years.

A A 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 594/M E 594; Sp, odd years.

A A 595 Global Integrated Systems Engineering ([4/5]-, max. 9) Covers systems engineering, project management, finance and economics in a global environment. Offered: jointly with IND E 595; AW.

A A 596 Global Integrated Systems Engineering Project (3) Project-based systems design course.

Prerequisite: A A/INDE 595. Offered: jointly with IND E 596; Sp.

A A 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include network models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with E E 597/M E 597.

A A 598 Special Topics in Aeronautics and Astronautics (1-5, max. 30) Introduction of special topics in the field of aeronautics and astronautics. Topics introduced by regular and guest speakers and includes a variety of information that is of current interest in aeronautics and astronautics. Offered: AWSp.

A A 599 Special Projects (1-5, max. 30) Investigation on a special project by the student under the supervision of a faculty member. Offered: AWSpS.

A A 600 Independent Study or Research (*-)
Offered: AWSpS.

A A 700 Master's Thesis (*-) Offered: AWSpS.

A A 800 Doctoral Dissertation (*-) Offered: AWSpS.

AEROSPACE ENGINEERING

A E 501 Analytical Methods for Aerospace Engineering (4) Applications of analytical and mathematical methods for aerospace engineering, including: ordinary differential equations, partial differential equations, linear algebra, vector calculus, integral theorems, complex analysis, optimization, and probability. Prerequisite: permission of instructor. Offered: A.

A E 510 Linear Systems Theory (4) Covers theoretic methods for state-space linear systems including linearization of nonlinear systems, time-varying and time-invariant linear systems, discrete time and continuous time representations, canonical state space representations, linear system stability, time

evolution of systems, controllability, and observability. Prerequisite: A E 501. Offered: W.

A E 511 Classical Control Theory (4) Covers theoretic methods for linear systems in the frequency domain including nonlinear and linear systems; linearization of nonlinear systems; stability, controllability, and observability of linear systems; linear system representations in frequency and time domains; dynamic system response in time and frequency domain; and frequency domain control design. Prerequisite: A E 501. Offered: Sp, odd years.

A E 512 Dynamics, Stability, and Control of Vehicles (4) Covers stability derivatives; effects of stability derivatives on flight characteristics; dynamics of rigid bodies in air, space and underwater applications; responses to control inputs and external disturbances; handling qualities; control system components; sensor characteristics; stability augmentation systems; guidance and navigation; human factors; effects of limited communication; and multivehicle systems. Prerequisite: A E 501. Offered: Sp, even years.

A E 513 Multivariable Control (4) An introduction to control of systems with multiple inputs and multiple outputs. Topics to be addressed include: successive single loop design comparison; Lyapunov stability theory; full state feedback controller design; linear quadratic regulator (LQR) and linear quadratic Gaussian (LQG) methods (development, incorporation of noise, design, analysis); separation principle; stability robustness; introduction to H-infinity control. Prerequisite: A E 510 Offered: A, odd years.

A E 514 Estimation Theory (4) Development of computational tools for estimation and filtering of state variables from sensor measurements. Methods are presented for both linear and nonlinear systems. Topics include discrete and continuous system structures for both linear and nonlinear dynamical systems with noise; rigid body dynamics; least squares; Bayesian estimation; Kalman filtering; extended Kalman filtering; unscented Kalman filtering; particle filtering; smoothing. Prerequisite: A E 510 Offered: A, even years.

A E 519 Special Topics in Aerospace Engineering: Controls (4, max. 8) Current research and advanced

special topics in the area of aerospace engineering - controls. Prerequisite: A E 501.

A E 520 Fundamentals of Fluid Dynamics (4) Flow kinematics and dynamics, inviscid and viscous flows, incompressible and compressible flows, shock-waves, boundary layers, vorticity, and turbulence. Prerequisite: A E 501. Offered: Sp.

A E 521 Aircraft Propulsions (4) Aircraft propulsion (propellers, turboprop, turbojet, turbofan, ramjets) . Aerodynamics of gas-turbine/air breathing engine components (inlets, compressors, turbines, afterburners, nozzles) . Engine design methodology and measurement (ground vs flight, thrust/drag accounting) . Prerequisite: A E 520 Offered: A, odd years.

A E 522 Rocket Propulsion (4) Covers rocket propulsion (nozzle gas dynamics, non-ideal flow effects) ; rocket vehicle performance; chemical rockets (solid, liquid propulsion, components and design) ; physical; and performance characteristics of rockets; and mission requirements; Introduction to electric thrusters. Prerequisite: A E 520. Offered: W, even years.

A E 523 Aircraft Noise (4) Covers noise characterization; federal aircraft noise regulation; interrelationship between the engine types and noise; aircraft noise generation, propagation, and radiation; noise measurements; and methods for noise reduction. Prerequisite: A E 520. Offered: A, even years.

A E 524 Computational Aerodynamics (4) Panel methods, finite volume method, grid generation, CFD and its applications to aerodynamics. Prerequisite: A E 520 Offered: W, odd years.

A E 529 Special Topics in Aerospace Engineering: Fluids (4, max. 8) Current research and advanced topics in the area of aerospace engineering - fluids. Prerequisite: A E 501.

A E 540 Mechanics of Solids (4) Covers general concepts, theory, and application of solid mechanics; mechanical behavior of elastic, plastic and viscoelastic solids; fracture of aerospace structural materials. Prerequisite: A E 501. Offered: Sp.

A E 541 Finite Element Analysis (4) Covers theory and application of the finite element methods; element types, stiffness matrix and solution procedures; and solution of elasticity, thermal conduction, and other practical problems in aerospace engineering. Prerequisite: A E 540. Offered: W, odd years.

A E 542 Fatigue and Fracture in Aerospace Structures (4) Covers theory of failure for metallic aerospace structures; fatigue properties, fatigue load spectrum, fatigue crack propagation, fracture mechanics, damage tolerance, fretting and corrosion fatigue, design applications, and case studies. Prerequisite: A E 540. Offered: A, even years.

A E 543 Structural Vibrations (4) Foundations of linear structural dynamics and vibrations of continuous and discrete systems: Physical phenomena, equations of motion, analytical and numerical solution methods, test methods. Prerequisite: A E 540 Offered: A, odd years.

A E 544 Additive Manufacturing (4) Introduction to Additive manufacturing (AM) , development of AM technology, generalized AM process chain, designing for AM vat photopolymerization process, powder bed fusion, extrusion-based systems, sheet lamination process, composite laminates, automatics tape laying, designing laminated composites. Project-based examination of model parameters and designing and building an aerospace structure. Prerequisite: A E 540. Offered: W, even years.

A E 549 Special Topics in Aerospace Engineering: Structures (4, max. 8) Current research and advanced special topics in the area of aerospace engineering - structures. Prerequisite: A E 501.

A E 550 Mechanics of Composite Materials (4) Covers the analysis and design of advanced composite materials for aerospace structures including material properties, micromechanics, anisotropic elasticity, theory of laminated plates, bending and buckling, and fracture of composites. Prerequisite: A E 501. Offered: W.

A E 551 Aerospace Composite Design I (4) Introduction to advanced stress analysis methods of composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling

analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A E 550. Offered: A, even years.

A E 552 Aerospace Composite Design II (4)

Introduction to concepts of certification by analysis supported by test evidence in aircraft structures, emphasizing regulatory agency requirements and industry approaches. Subjects include allowable approach, bolted and bonded joints, damage resistance and tolerance, specialized test methods, and inspection techniques. Prerequisite: A E 550. Offered: Sp, odd years.

A E 553 Advanced Composite Structural Analysis (4)

Covers advanced stress analysis methods of composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A E 550. Offered: A, odd years.

A E 554 Manufacture of Aerospace Composites (4)

Fundamentals of composite materials manufacturing and processing, emphasizing modern aviation industry practices. Discussions of auto and out-of-the-autoclave processing of carbon fiber composites, test methods, tooling, secondary processing, commercial processes, and several other topics related to manufacturing of composites. Emphasis on aircraft structures, but applicable to all high-performance lightweight structures. Prerequisite: A E 550. Offered: Sp, even years.

A E 559 Special Topics in Aerospace Engineering: Composites (4, max. 8) Current research and advanced special topics in the area of aerospace engineering - composites. Prerequisite: A E 501

A E 598 Aerospace Engineering Colloquium (1, max. 30) Covers the latest research in aerospace engineering. Includes current trends in professional aerospace engineering (e.g., manufacturing, systems, etc.) and professional development for aerospace engineers (e.g., project management, job searches, etc.). Lectures and discussions led by guest speakers. Credit/no-credit only. Offered: AWSp.

CHEMICAL ENGINEERING

CHEMICAL ENGINEERING

CHEM E 299 Undergraduate Research (1-3, max. 9)

Research or special topics under the supervision of a faculty member. Offered: AWSpS.

CHEM E 301 Leadership Seminar (1) *Schwartz Forum*

for industrial, academic, and government leaders to share their experiences and insights with students. Includes topics related to leadership in the chemical engineering profession including career planning, management skills, interpersonal skills, effective planning, entrepreneurship, ethics, and strategic decisions. Credit/no-credit only. Offered: A.

CHEM E 309 Creativity and Innovation (2) *VLPA G. ALLAN*

Understanding creativity and creative thinking; its challenges and dynamics through knowledge, judgment, planning, and observation. Techniques of creative thinking. Design and development of creative games. Computer-aided creative thinking. Creation, protection, and exploitation of a useful idea, including bargaining and negotiations. Offered: jointly with BSE 309; Sp.

CHEM E 310 Material and Energy Balances (4)

Chemical and physical process calculations: steady- and unsteady-state material and energy balances with specific examples in vapor-liquid contact operations and multiphase extraction, and introductory thermochemistry. Prerequisite: PHYS 122 and MATH 307. Offered: Sp.

CHEM E 325 Energy and Entropy (4)

Introduction to the basic principles of thermodynamics from both microscopic and macroscopic points of view. Emphasis on equilibrium phenomena, and the trade-off of energy and disorder in determining structure and properties. Applications of thermodynamics in process design and analysis. Prerequisite: CHEM E 310. Offered: A.

CHEM E 326 Chemical Engineering Thermodynamics

(4) Phase equilibria and chemical equilibria in multicomponent systems; theories of solution; chemical reaction analysis. Prerequisite: CHEM E 325. Offered: W.

CHEM E 330 Transport Processes I (5) Diffusive transport of momentum, heat, and mass; general

aspects of fluid flow; the Navier-Stokes equations; one-dimensional flow with engineering applications. Prerequisite: CHEM E 310; either MATH 136 or MATH 307. Offered: A.

CHEM E 340 Transport Processes II (4) Heat transfer, basic principles, and applications. Conduction, convection, and radiation. Prerequisite: CHEM E 330. Offered: W.

CHEM E 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with ENVIR 341/M E 341; A.

CHEM E 355 Biological Frameworks for Engineers (3) For engineers with no prior experience in the biological sciences. Hands-on, project-based course covers fundamental concepts and language of biology, from an engineering perspective. Topics include functions of life, information processing, proteins, DNA, genetic variability, control loops, energetics, tissues, organisms, ecosystems. Prerequisite: either CHEM 142 or CHEM 145; PHYS 123; either MATH 307 or AMATH 351. Instructors: Shen Offered: W.

CHEM E 375 Chemical Engineering Computer Skills (2) *Pfaendtner* Use Excell, Matlab, and AspenPlus to solve typical chemical engineering problems. Solve realistic problems and explore alternatives that would be inaccessible for hand calculations. Includes equations of state, chemical equilibrium of simultaneous reactions, phase equilibria, plug flow reactors, heat transfer in 1-D, and time-dependent heat transfer. Offered: W.

CHEM E 434 Physiological Processes in Engineering Nanomedicine (3) *Elizabeth Nance* Provides an understanding of the physiological principles that influence the use of nanoscale systems in the human body. Prerequisite: CHEM E 330; recommended: BIOEN 490/CHEME 490; NME 221; NME 321; and NME 421. Offered: Sp.

CHEM E 435 Transport Processes III (4) Mass transfer, basic principles, and applications to equipment design. Physical separation processes. Prerequisite: CHEM E 326; CHEM E 340. Offered: A.

CHEM E 436 Chemical Engineering Laboratory I (3) Lectures on statistics, experimental design, instrumentation, laboratory safety, and report writing; laboratory experiments on fluid mechanics and heat transfer. Emphasis on teaming, experimental planning, procedures, report writing, and oral presentations. Prerequisite: CHEM E 326; CHEM E 340 which may be taken concurrently; HCDE 231. Offered: ASp.

CHEM E 437 Chemical Engineering Laboratory II (3) Continuation of CHEM E 436. Laboratory investigation of chemical engineering principles applied to equipment design with emphasis on mass transfer operations and chemical reactors. Prerequisite: CHEM E 435; CHEM E 436; CHEM E 465. Offered: W.

CHEM E 440 Energy Materials, Devices, and Systems (3) *David S. Ginger* Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Prerequisite: either PHYS 431, E E 421, MSE 311, MSE 312, MSE 313, MSE 351, MSE 352, CHEM E 456, CHEM 455, or CHEM 475, any of which may be taken concurrently. Offered: jointly with CHEM 466/MSE 466; A.

CHEM E 442 Renewable Energy (4) NW *P. MALTE* Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either M E 323, CHEM E 325, A A 260, or E E 351. Offered: jointly with M E 442; W.

CHEM E 445 Fuel Cell Engineering (3) Introduction to electrochemical fuel cells for use in transportation and stationary power applications. Topics covered include types of fuel cells, single cell operation, stack engineering, overall system design, and safety, with emphasis on proton exchange membrane and solid oxide fuel cells. Prerequisite: CHEM E 330. Instructors: Stuve

CHEM E 455 Surface and Colloid Science Laboratory (3) *Berg, Pozzo* Laboratory techniques, equipment,

and underlying fundamentals in surface and colloid science. Experiments in the measurement of surface tension, adsorption, wetting and spreading, colloid properties, emulsion preparation and stability, electrophoresis, and interfacial hydrodynamics. Offered: ASp.

CHEM E 457 Principles of Molecular Engineering (3)

Covers the basic aspects of statistical mechanics, focusing primarily on the canonical ensemble. Develops and applies a set of tools to regular liquid solutions, phase formation, spinodal decomposition, adsorption, polymer thermodynamics, chemical kinetics, and physical kinetics. Prerequisite: CHEM E 310; CHEM E 325; CHEM 455. Instructors: Hillhouse Offered: Sp.

CHEM E 458 Surface Analysis (3) D. Castner

Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials, science wear, and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger) : ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with BIOEN 492; Sp.

CHEM E 460 Polymer chemistry Laboratory (3) C.

DEFOREST Laboratory techniques, equipment, and underlying fundamentals in polymer chemistry, synthesis, and design. Quantitative understanding of polymerization reaction engineering will be developed through careful examination of kinetics and structure-property relationships. Selection of laboratory polymerization and characterization techniques, as well as recent innovations in polymer research, will be highlighted. Prerequisite: CHEM 238. Offered: Sp.

CHEM E 461 Electrochemical Engineering (3)

Schwartz Explores role of thermodynamics, charge transfer kinetics, and mass transfer on behavior of electrochemical systems. Includes cell thermodynamics, faradaic and non-faradaic rate processes, ionic transport, nucleation and growth theories. Applications to chemical sensors, batteries, corrosion, thin film deposition. In-class demonstrations to illustrate concepts.

CHEM E 465 Reactor Design (4) Application of chemical kinetics and transport phenomena to the design of chemical reactors; characterization of

batch and continuous-flow reactors in homogeneous and heterogeneous systems. Prerequisite: CHEM E 326; CHEM E 340. Offered: A.

CHEM E 467 Biochemical Engineering (3) F. BANEYX

Application of basic chemical engineering principles to biochemical and biological process industries such as fermentation, enzyme technology, and biological waste treatment. Rapid overview of relevant microbiology, biochemistry, and molecular genetics. Design and analysis of biological reactors and product recovery operations. Prerequisite: CHEM E 340; either CHEM 223, CHEM 237, or CHEM 335. Offered: jointly with BIOEN 467; W.

CHEM E 480 Process Dynamics and Control (4)

Dynamics of process units and systems; instrumentation and control system design and analysis. Includes weekly laboratory. Prerequisite: CHEM E 435; CHEM E 465. Offered: W.

CHEM E 481 Process Optimization (3) Holt

Concepts and techniques of optimizing chemical engineering processes and systems, including classical and direct methods of search, linear and nonlinear programming, dynamic programming, statistical experimental design, and evolutionary operation. Offered: A.

CHEM E 482 Advanced Topics in Process Control (3)

Current topics in process control design and analysis. Possible topics include robustness analysis and design, time delay compensation, modern frequency response techniques, discrete control, adaptive control, model-based control, and nonlinear control. Prerequisite: CHEM E 480. Instructors: Holt, Ricker

CHEM E 484 Electronic and Optoelectronic

Polymers (3) Covers the chemistry, physics, materials science, and engineering applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 237, CHEM 455, CHEM E 340, or MSE 310. Instructors: Jenekhe Offered: A.

CHEM E 485 Process Design I (4) Applied economics in chemical engineering design and operations;

measures of profitability; capital and operating cost estimates; introduction to design and design strategies. Prerequisite: CHEM E 480 which may be taken concurrently. Offered: W.

CHEM E 486 Process Design II (5) Comprehensive design of a specific process or product, including economic feasibility studies, utilization of market survey and plant location studies, process equipment design and optimization, and overall plant integration and layout. Prerequisite: CHEM E 485. Offered: Sp.

CHEM E 490 Engineering Materials for Biomedical Applications (3) *J. Bryers* Combined application of principles of physical chemistry and biochemistry, materials engineering, to biomedical problems and products. Applications include implants and medical devices, drug delivery systems, cell culture processes, diagnostics, and bioseparations. Offered: jointly with BIOEN 490; A.

CHEM E 491 Controlled-Release Systems (3) *S. PUN* Mechanisms for controlled release of active agents and the development of useful drug delivery systems for this purpose. Release mechanisms considered include diffusive, convective, and erosive driving forces. Delivery routes include topical, oral, and in vivo. Some special case studies covered in detail. Offered: jointly with BIOEN 491; W.

CHEM E 493 Advanced Surface Analysis (3) Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 458 or BIOEN 492. Offered: jointly with BIOEN 493; W.

CHEM E 497 Special Projects in Chemical Engineering Design ([1-6]-, max. 12) Chemical engineering design instruction and experience in special projects, such as industrially motivated, timely, or interdisciplinary projects. Project subject and content varies. Majors only. Prerequisite: CHEM E 340.

CHEM E 498 Special Topics in Chemical Engineering (1-4, max. 12) Topics of current interest in the field. Subject matter changes from quarter to quarter.

CHEM E 499 Undergraduate Research ([1-6]-, max. 12) Independent research projects in chemical engineering. Offered: AWSpS.

CHEM E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with A A 510/E E 510/M E 510.

CHEM E 511 Biomaterials Seminar (1, max. 18) *D. CASTNER, L. GAMBLE* Presentation of student research results. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with BIOEN 511.

CHEM E 512 Methods of Engineering Analysis (3) Applications of mathematics to problems in chemical engineering; vector calculus; properties and methods of solution of first and second order partial differential equations; similarity transforms, separation of variables, Laplace and Fourier transforms. Prerequisite: MATH 308, MATH 307 or AMATH 351, MATH 324, or permission of instructor. Offered: A.

CHEM E 514 Advanced Chemical Engineering Laboratory (3) *Q. YU* Instrumentation and laboratory techniques for chemical, biological, clean energy, and nano technologies. Experiments include surface modification, thin film formation, nanoparticle synthesis, micro/nanoscale fabrication, protein adsorption, microorganism identification, and photovoltaic device fabrication/evaluation using advanced instrumentation. Offered: W.

CHEM E 515 Experimental Methods in Chemical Engineering Research (3) *Baneyx, Berg, Jiang* Lecture and laboratory studies in current research methods of chemical engineering. Includes surface science, biochemical engineering, colloidal chemistry, light scattering, and nanoscience techniques. Offered: A.

CHEM E 523 Seminar in Chemical Engineering (0-1, max. 30) Topics of current interest in chemical engineering. Credit/no-credit only. Offered: AWSp.

CHEM E 525 Chemical Engineering Thermodynamics (4) Review of principles of thermodynamics. Applications to problems in multiphase and multicomponent systems; theories of solutions. Prerequisite: undergraduate thermodynamics. Offered: A.

CHEM E 530 Momentum, Heat, and Mass Transfer I (4) Derivation of the differential equations for mass, energy, and momentum transport. Principles of fluid mechanics; creeping flow, turbulence, boundary-layer theory. Offered: A.

CHEM E 531 Momentum, Heat, and Mass Transfer II (3) Continuation of CHEM E 530. Flows of fluid-particle systems; convective heat transfer, natural convection. Prerequisite: CHEM E 530.

CHEM E 534 Physiological Processes in Engineering Nanomedicine (3) *Elizabeth Nance* Provides an understanding of the physiological principles that influence the use of nanoscale systems in the human body. Prerequisite: either CHEM E 330, or related fluid mechanics course; and introductory biology course. ; recommended: BIOEN 490/CHEM 490; NME 221; NME 321; and NME 421. Offered: Sp.

CHEM E 535 Nanomaterials Chemistry and Engineering (3) *V. Holmberg* Rigorous overview of fundamental chemical and physical concepts important to nanomaterials science and engineering. Focus on luminescent, plasmonic, magnetic nanomaterials. Students will learn basic concepts prevalent in the nanomaterials literature, and develop rigorous mathematical understanding of fundamental principles that govern many of the advanced materials that are currently under development in the field. Prerequisite: CHEM 455, MATH 307, CHEM E 326; recommended: Classical physics, quantum mechanics, thermodynamics, and ordinary and partial differential equations Offered: jointly with CHEM 587; Sp.

CHEM E 540 Energy Materials, Devices, and Systems (3) *D. Ginger Jr* Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using

instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Offered: jointly with CHEM 566/MSE 566; A.

CHEM E 545 Data Science Methods for Clean Energy Research (3) *Jim Pfaendtner* Survey of modern data science methods taught in the context of materials for clean energy (e.g., batteries and solar energy) . Covers data visualization, statistics, machine learning and data management. Instruction, homework and term project are implemented using Python. Offered: jointly with CHEM 545/MSE 545; W.

CHEM E 546 Software Engineering for Molecular Data Scientists (3) *Jim Pfaendtner* Introduces basic principles of scientific software development in the Python in the context of Molecular Data Science. The course covers command line tools, Python from the perspective of molecular data science methods, software development and collaboration principles, e.g. version control. Grades are based on homework and group projects. Offered: jointly with CHEM 546/MSE 546; W.

CHEM E 547 Data Science Capstone Project (3) *David A. C. Beck* Involves teams of graduate students from molecular, materials or clean energy focused disciplines working on Data Science oriented research and engineering projects solicited from internal and external partners. Employ modern team-based software engineering principles and cutting edge Data Science methods, including but not limited to machine learning, statistics, visualization and data management. Prerequisite: CHEM E 545 and CHEM E 546; recommended: prior exposure to data science fundamentals and software development. Offered: jointly with CHEM 547/MSE 547; Sp.

CHEM E 554 Nanoscale Science I: Contact Mechanics and Rheology on the Nanoscale (3) *Overney* Introductory nanoscale science with emphasis on contact mechanics, principle and concept of forces, scanning force microscopy, tribology (friction, wear, lubrication) , rheology, ultrathin organic films, physical properties of polymers, and computer simulation. Offered: W.

CHEM E 556 Colloidal Systems (3) *Berg, Pozzo*

Examines the unique properties and application of colloidal materials, i.e., dispersions of micro- or nano-sized particles in various media are described. Explores their inherent instability, and their kinetic, phoretic, electric, optical, and rheological properties. Offered: W.

CHEM E 558 Surface Analysis (3) *D. Castner*

Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials science, wear and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger) ; ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with BIOEN 592.

CHEM E 560 Reactions at Solid Surfaces (3)

Fundamental studies of adsorption and reactions on metallic and non-metallic surfaces with emphasis on heterogeneous catalysis and electrochemistry, including fuel cells. Topics include gas phase and liquid phase surface reactions, analyzed both experimentally and computationally. Prerequisite: undergraduate level course in kinetics or catalysis. Instructors: Stuve

CHEM E 565 Kinetics and Catalysis (3)

Homogeneous and heterogeneous systems with emphasis on chemical engineering principles applied to industrial reactor design. Prerequisite: CHEM E 525. Instructors: Stuve

CHEM E 580 Topics in Chemical Engineering Design (3, max. 9)

Lectures and seminars on current design methods in chemical engineering, including technical and economic feasibility of processes, design and optimization of process equipment, and environmental and social constraints. Prerequisite: undergraduate chemical engineering design, admission to chemical engineering master's program, or permission of instructor.

CHEM E 584 Electronic and Optoelectronic

Polymers (3) Covers the chemistry, physics, materials science, and engineering applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film

transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 237, CHEM 455, CHEM E 340, or MSE 310. Instructors: Jenekhe Offered: A.

CHEM E 588 Research in Applied Microbiology (1, max. 30)

Weekly research seminar and discussion of scientific literature pertaining to applied microbiology. Prerequisite: permission of instructor. Instructors: Lidstrom Credit/no-credit only. Offered: jointly with MICROM 588; AWSpS.

CHEM E 590 Advanced Topics in Biomaterials (3)

Major, controversial issues in application of synthetic materials to medical problems. Blood compatibility, bioadhesion, intraocular lenses, contact lenses, polyurethanes, biodegradation, protein adsorption, corrosion, bone fixation, new materials, artificial heart, medical device regulation. Prerequisite: BIOEN 490 or CHEM E 490. Offered: jointly with BIOEN 590.

CHEM E 591 Robotics and Control Systems

Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/E E 591/M E 591.

CHEM E 593 Advanced Surface Analysis (3) D.

CASTNER Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 558 or BIOEN 592. Offered: jointly with BIOEN 593; W.

CHEM E 599 Current Topics in Chemical Engineering (1-5, max. 12)

Readings or lectures and discussions of topics of current interest in the field of chemical engineering. Subject matter changes from year to year. Prerequisite: permission of instructor.

CHEM E 600 Independent Study or Research (*-)

Offered: AWSpS.

CHEM E 700 Master's Thesis (*-) Offered: AWSpS.

CHEM E 800 Doctoral Dissertation (*-) Offered: AWSps.

NANOSCIENCE AND MOLECULAR ENGINEERING

NME 220 Introduction to Molecular and Nanoscale Principles (4) NW Introduction to theories and concepts of molecular and nanoscale systems to raise awareness of technological and societal transformations anticipated through progress in nanotechnology. Prerequisite: either CHEM 142, CHEM 144, or CHEM 145; either MATH 126 or MATH 136; PHYS 121.

NME 221 Nanoscience and Molecular Engineering Seminar I (1) Introduces nanoscience and molecular engineering, and offers the opportunity of a first intellectual and interdisciplinary forum with interactions with members of research groups in the field. First in a series of three. Prerequisite: NME 220, which may be taken concurrently. Instructors: Overney Credit/no-credit only.

NME 321 Nanoscience and Molecular Engineering Seminar II (1) *Overney* Demonstrates how to tackle research challenges, put results into the framework of the open literature, and present and interpret data. Discusses contemporary societal and ethical aspects in nanoscience and molecular engineering. Second in a series of three. Credit/no-credit only.

NME 421 Nanoscience and Molecular Engineering Seminar III (1) Provides students with the opportunity to present their research results obtained during undergraduate research studies. Assessing the work of their peers and receiving feedback on their work, students further refine their ability in conducting and presenting research. Third in a series of three. Prerequisite: NME 321. Instructors: Overney Credit/no-credit only.

NME 498 Special Topics in Nanoscience and Molecular Engineering (1-4, max. 12) *Overney* Topics of current interest in the field.

CIVIL AND ENVIRONMENTAL ENGINEERING

CIVIL AND ENVIRONMENTAL ENGINEERING

CEE 101 Amazing Infrastructure, its Impacts and the Roles of Civil and Environmental Engineers (1) This seminar course will cover an overview of world infrastructure and the roles for civil and environmental engineers perform in planning, design and construction. Offered: A.

CEE 102 Civil and Environmental Engineering and Careers--Companies and Agencies (1) This seminar course will cover an overview of companies and agencies that employ civil and environmental engineers including specific examples of roles. A different type of company or agency will be covered each week. Offered: W.

CEE 103 Engineering for Natural and Human Caused Disasters (1) This seminar course will cover natural and human caused disasters: why they occur and how they can be prevented or mitigated. The role of prevention or mitigation played by civil and environmental engineers will be featured. Offered: Sp.

CEE 220 Introduction to Mechanics of Materials (4) NW Introduction to the concepts of stress, deformation, and strain in solid materials. Development of basic relationships among loads, stresses, and deflections of structural and machine elements such as rods, shafts, and beams. Load-carrying capacity of these elements under tension, compression, torsion, bending, and shear forces. Prerequisite: minimum grade of 2.0 in A A 210. Offered: AWSp.

CEE 250 Environmental Processes and flows (3) NW Introduces the concepts of environmental materials and energy balance within the context of Pacific Northwest case studies, in particular nutrient loading, eutrophication, hypoxia/fish kills, water treatment, and global climate change and its regional impacts on water resources and hydrologic cycles. Prerequisite: either MATH 120, or MATH 124. Instructors: Brett Offered: Sp.

CEE 291 Introduction to AutoCAD for Civil Engineers (2) NW Provides an introduction to engineering

drafting and graphical communication. Includes application of drafting standards and structure as well as creating and modifying basic drawings in 2D and 3D drafting in AutoCAD. Introduces reading plan sets and creating portions of plan sets applied to civil and environmental engineering fields. Prerequisite: MATH 124 or MATH 112. Offered: AWSp.

CEE 297 Foreign Study (3-5, max. 15) For participants in approved foreign-study programs. May not be used to satisfy upper-division major requirements.

CEE 298 Special Topics in Civil and Environmental Engineering (1-5, max. 10) Explores special topics in civil and environmental engineering.

CEE 299 Independent Project (1-5, max. 10) Research on special topics under supervision of a faculty member. May not be used to satisfy upper-division major requirements. Offered: AWSpS.

CEE 307 Construction Engineering (5) Introduces construction engineering including construction methods, engineering economics, contracts, project delivery methods, plan and specifications, scheduling, estimating, productivity, environmental regulations, safety and green construction. Uses scheduling and estimating software tools and emphasizes communication engineering information. Offered: AW.

CEE 317 GeoSurveying (5) Measurement and digital mapping techniques; integration of surveying methods and techniques, monitoring of structures; spatial data collection and integration with surveying data; adjustment of measurements, concepts of error; surveying control; coordinate systems, transformation; highway vertical curves; Earthwork, leveling and datum consideration, photogrammetry, GPS, GIS, remote sensing, cadastral and construction surveys, digital mapping. Prerequisite: either MATH 126, MATH 134, MATH 135, or MATH 136. Offered: A.

CEE 327 Transportation Engineering (5) Studies vehicular transportation fundamentals including vehicle dynamics, geometric design, pavement design, traffic flow concepts, level of service analysis, intelligent transportation systems, travel demand prediction methods, freight logistics, and management of transportation systems. Includes a

review of relevant vehicle operating characteristics. Prerequisite: PHYS 121; either MATH 126, MATH 134, MATH 135, or MATH 136. Offered: WSp.

CEE 337 Construction Materials (5) General treatment of physical and mechanical properties and engineering behavior of metallic and nonmetallic materials. Steel, aluminum, aggregates, portland cement concrete, bituminous materials, asphalt concrete, wood. Laboratory testing, instrumentation, and investigation into macro-behavior. Sustainability issues including recycling, energy requirements, and greenhouse gas production associated with the materials. Prerequisite: CEE 220. Offered: ASp.

CEE 347 Introduction to Fluid Mechanics (5) *Jessica D Lundquist, Jim Thomson, Alexander R Horner-Devine* Introduces the mechanics of incompressible fluids and their applications. Hydrostatic pressure forces. Kinematics, potential flows, and the Bernoulli equation. Conservation of mass, momentum, and energy. Laminar and turbulent flows. Flow in pipes, pipe networks, and open channel flows. Prerequisite: CEE 220 and PHYS 122. Offered: AW.

CEE 348 Hydrology and Environmental Fluid Mechanics (4) *A. HORNER-DEVINE, E. ISTANBULLUOGLU, J. LUNDQUIST* Introduction to the physical processes that govern transport and mixing in the environment. The course uses fluid mechanical principles to understand flow in the atmosphere, river basins, groundwater, lakes and estuaries with implications for the movement of water, contaminant and other tracers through the environment. Prerequisite: CEE 347 and PHYS 123. Offered: Sp.

CEE 349 Case Studies in Environmental Engineering (3) Case studies are used to introduce fundamental environmental engineering concepts with a focus on engineering approaches that consider the interconnectedness of human and environmental systems. Prerequisite: CHEM 162. Offered: A.

CEE 350 Mass and Energy Balances in Environmental Engineering (4) Introduces concepts of mass balance, energy balance, and mass transport, and movement of water, chemicals, and energy through natural and engineered environmental systems, with application to water treatment, global elemental cycles, the earth's

energy balance. Credit cannot be applied toward graduation for both CEE 350 and CHEM E 310
Prerequisite: CHEM 162; PHYS 122; and either AMATH 351 or MATH 307.

CEE 352 Introduction to Microbial Principles in Environmental Engineering (5) Introduction to microbiological processes occurring within natural and engineered systems. Fundamentals of microbial classifications/processes and their impacts on ecological and human health, and roles in engineered applications and global cycling of such elements as carbon, oxygen, and nitrogen.
Prerequisite: BIOL 180

CEE 354 Introduction to Chemical Principles in Environmental Engineering (5) Introduction to chemical processes occurring within soil, water, and air in natural and engineered environmental systems. Includes identification of inorganic and organic chemicals; fundamental thermodynamics and kinetics of chemical processes; examination of chemical processes in environmental and engineered systems; and impacts of chemicals and chemical processes on ecological and human health.
Prerequisite: CHEM 162

CEE 356 Quantitative and Conceptual Tools for Sustainability (4) Conceptual and quantitative tools are introduced that incorporate sustainability principles into environmental engineering. It uses a systems analysis perspective to address critical issues in environmental engineering. Topics include life cycle analysis and long-term system mass balances that facilitate decision making and process optimization at generational time scales. Offered: Sp.

CEE 357 Environmental Engineering (5) Describes water and air resources, parameters that characterize their quality, and how their use alters their properties. Elements of hydrology. Mass and energy balances as applied to environmental systems. Global environmental change. Basics of aquatic chemistry and microbiology applied to municipal water and wastewater treatment operation. Groundwater contamination and treatment. Prerequisite: CHEM 142, CHEM 143, or CHEM 145 Offered: WSp.

CEE 367 Geotechnical Engineering (5) Fundamental engineering properties of soil and rock; depositional

processes and physical characteristics, hydro-conductive properties and advective flow; volume change characteristics including short- and long-term deformation; shear strength properties; and applications of basic concepts to practical problems such as foundation design and slope stability.
Prerequisite: CEE 347. Instructors: Arduino, Kramer, Wartman Offered: WSp.

CEE 377 Introduction to Structural Design (5) *Berman, Eberhard, Reed, Roeder* Introduces the concepts, approaches, procedures, and codes for the structural design. Characterization of structural loads. Structural systems and system behavior. Analysis of statically determinate structures and introduction to analysis of statically indeterminate structures including approximate methods. Introduction to the behavior and design of fundamental structural member. Prerequisite CEE 220. Offered: AW.

CEE 378 Structural Analysis (5) Fundamental analysis and modeling of civil structural systems. Equilibrium, kinematics, and constitutive relations; formal solution procedures emphasizing element-based stiffness methods; computer-based and manual techniques; verification and interpretation of results; case studies involving real structures; introduction to finite element analysis of 2D continua. Prerequisite: CEE 377. Offered: Sp.

CEE 401 Pavement Design for Roads (1) Pavement design and construction to include both low and high-volume roads; both gravel and bituminous-surfaced pavements. Pavements as a critical element for infrastructure projects. Aids student ability to participate in a variety of road projects, including design and construction. Offered: AWSp.

CEE 402 Energy Infrastructure (1) Energy infrastructure, focusing largely on balance of plant topics. Includes elements of site selection, design, and construction. Electrical production facilities and transmission. Emphasis on renewable energy facilities. Aids student ability to participate in a variety of projects involving energy infrastructure. Offered: AWSp.

CEE 404 Infrastructure Construction (4) *S. MUENCH* Basic concepts of large transportation infrastructure construction projects including planning, scheduling, life-cycle cost analysis (LCCA), construction cost,

logistics, productivity and, where applicable, traffic impacts. Term project is designed around a large-scale I-5 pavement reconstruction project involving construction, traffic, and the interaction between the two. Involves presentations on local transportation infrastructure projects. Prerequisite: CEE 307. Offered: W.

CEE 405 Traffic Simulation (3) In-depth discussion of microscopic traffic simulation models. Will provide engineering and planning students the information on how to develop and operate traffic simulation models and evaluate and present results from simulation models. Hands-on course projects and labs will be used for this course. Prerequisite: CEE 327

CEE 408 Sustainable Roadway Design and Construction (3) *Steve Muench* The holistic concept of sustainability and how it applies to roadway infrastructure. Provides context and methods for applying sustainability ideas to roads and quantifying them in a meaningful way. Includes (1) introduction to sustainability, (2) roadway sustainability best practices, (3) current industry practice, and (4) sustainability assessment using the Greenroads Rating System and related tools. Prerequisite: CEE 307 and CEE 327.

CEE 409 Engineering Rome: Study Abroad (5) *Muench* Covers Roman civil engineering over 3,000 years from Ancient Rome to the present day. Introduces civil engineering topics reinforced by practical engineering calculations, local experts, and site visits. Provides international and historical perspective on engineering and the contributions of engineers to infrastructure and society.

CEE 410 Traffic Engineering Fundamentals (3) General review of the fundamentals of traffic engineering, including their relationship to transportation operations management and planning, with emphasis on calculations and procedures in the Highway Capacity Manual; field surveys and data analysis. Prerequisite: CEE 327. Offered: W.

CEE 412 Transportation Data Management and Visualization (3) *Yinhai Wang* Modern concepts, theories, and tools for management, visualization, and analysis of transportation data. Applications of software tools to large data sets, such as highway

sensor data, real-time traffic and mobility service data, spatial data, probe vehicle and mobile device data. Addresses information retrieval, storage, knowledge discovery, data exchange, online sharing, visualization, communication, system optimization, and decision support. Prerequisite: CEE 327. Offered: W.

CEE 416 Urban Transportation Planning and Design (3) Brief review of major issues in urban transportation planning. Planning process discussed and transportation models introduced. Uses a systems framework, including goals and objectives, evaluation, implementation, and monitoring. A design term project, individual or small groups, utilizes material presented on a contemporary problem. Prerequisite: CEE 327. Offered: A.

CEE 420 Engineering with Developing Communities (3) *DIV* Introduces key technologies, theories, and challenges of infrastructure design for development. Covers technologies for energy, water, sanitation, and disaster response in low-resource contexts. Explores development theory and cross-cultural communication as they pertain to global infrastructure design.

CEE 421 Pavement Design and Construction (4) *J. Mahoney, S. Muench, J. Yamaura* Structural design and construction processes associated with bituminous and concrete pavements. Covers theory, practice, and software tools for structural thickness design and layered elastic analysis; as well as construction methods, materials, and logistics. Includes small group case-study work on actual paving projects and state-of-the-art mobile project inspection software use. Prerequisite: CEE 337. Offered: Sp.

CEE 422 Energy and Transportation (3) *T. LARSON, J. MAHONEY* Introduces climate change; vehicles, energy requirements and pollution; transportation fuels; energy and power plant terminology; traditional fossil fuel, nuclear, and renewable energy plants; permitting power plants and projects. Prerequisite: CEE 327. Offered: Sp.

CEE 424 GIS for Civil Engineers (3) GIS in civil engineering applications. Geographic and spatial data types and acquiring considerations. Data models and structures. Projections and transformations. Attribute-based operation, spatial

operations. Surfaces and near neighbors. Training on Arc GIS software. Prerequisite: CEE 317. Offered: AS.

CEE 425 Reinforced Concrete Construction (3) D.

JANSSEN Processes in constructing reinforced concrete structures. Identification and development of solutions to potential constructability problems. Lectures augmented with industry speakers and a field trip to a building under construction. Requires senior or graduate standing in Civil Engineering or Construction Management and familiarity with reinforced concrete design/construction. Prerequisite: either CEE 291 or AutoCAD experience; a minimum grade of 2.5 in either CEE 428 or CEE 452. Offered: Sp.

CEE 428 Lightweight Cementitious Composites ([0-2]-, max. 2)

Janssen Introduces the process of designing within constraints and introductory experimental design. Covers the importance of proper laboratory documentation. Examines the characteristics of cementitious binders and elementary composite behavior. Considers constructability. Interprets pre- and post-cracking elastic behavior. Includes organization and production of technical report the documents work performed. Offered: A.

CEE 429 Sustainability in Building Infrastructure (3)

Provides an overview of how to plan, design, construct, and manage high performance building infrastructures. Topics include integrated project delivery, green building rating systems, green building design codes and energy standards, measurement and verification of building performance, and retrofitting existing building through building energy audit. Prerequisite: CEE 307. Offered: A.

CEE 432 Advanced Remote Sensing and Earth Observation (4) NW, QSR

David E. Butman Covers the theory and application of satellite remote sensing as a tool for environmental science. Topics include the fundamentals of electromagnetic radiation, reflection and absorption, black body radiation, use of the Planck Function, satellite and sensor technology, map projections, integration of GIS data, and digital image analysis. Practical training with advanced image processing software (ENVI and open source) . Recommended: GIS; statistics; and basic physics. Offered: jointly with ESRM 432; W.

CEE 433 Temporary Structures (3) Focuses on the design and analysis of temporary structure systems used on heavy civil projects. Covers design, analysis, and construction means and methods for scaffolding, formwork, shoring, and falsework systems. Prerequisite: CEE 307; CEE 337; and CEE 377; recommended: CEE 291. Offered: AS.

CEE 434 Project Estimating (3) Presents the basic principles of estimating the time and cost of construction projects. Focuses on the thought process that is required for construction engineers to analyze job conditions and assess the required labor, equipment, and methods of construction necessary to perform the work. Prerequisite: CEE 307 and CEE 337. Offered: WS.

CEE 436 Foundation Design (3) Design considerations for foundations and retaining structures. Subsurface investigations and determination of soil properties for design. Design of shallow and deep foundations and retaining structures. Foundations and soil considerations for waterfront structures. Prerequisite: CEE 367. Offered: AW.

CEE 440 Professional Practice Studio (2)

Fundamentals of integrated civil engineering design, professional services marketing, project management, team dynamics, total quality management, value engineering, professional liability, and applied ethics in engineering practice. Emphasis on written and oral communications and on ethical, social, and economic factors. Offered: W.

CEE 441 Transportation and Construction Capstone Design Project (5)

Comprehensive design project focusing on planning, design, and construction of a transportation project such as highways, transit, and airports. Prerequisite: CEE 307; CEE 327; and CEE 337. Offered: Sp.

CEE 442 Structural Geotechnical Capstone Design Project (5)

Comprehensive team design project focusing on structural and geotechnical engineering. Requires design drawings, written reports, and oral presentations interfacing with related fields such as aesthetics and architecture, mechanical systems, traffic, environmental planning. Prerequisite: CEE 367 and CEE 377; either CEE 451 or CEE 452; and one additional course from CEE 436, CEE 451, CEE 452, CEE 453, CEE 454, CEE 456, or CEE 457. Offered: Sp.

CEE 444 Water Resources and Hydraulic Engineering Capstone Design Project (5)

Opportunity to effect design solutions for projects or major project components in such representative areas as reservoirs and associated systems for flood control, water supply, irrigation, and hydroelectric power, surface water control systems, fisheries related projects, small harbors, and coastal engineering problems. Prerequisite: either CEE 345 or CEE 347; and either CEE 475, CEE 476, CEE 482, CEE 483, or CEE 484. Offered: Sp.

CEE 445 Environmental Engineering Capstone Design Project (5)

Individual and group design studies addressing environmental engineering problems such as stormwater management, water and wastewater treatment facilities, and residual processing. Prepare proposals, engineering reports, and alternative evaluations; process equipment design, present reports on selected design problems. Prerequisite: either CEE 345 or CEE 347; and either CEE 473, CEE 475, CEE 476, CEE 481, CEE 482, CEE 483, or CEE 484. Offered: Sp.

CEE 451 Design of Metal Structures (3) *J. BERMAN, C. ROEDER* Introduction to the design and behavior of metal structures using LRFD concepts. Application of design methods and codes to columns, beams, frames, connections, and tension members. Prerequisite: CEE 377. Offered: A.

CEE 452 Design of Reinforced Concrete Structures (3) *D. LEHMAN, D. REED, J. STANTON* Fundamentals of design of buildings in reinforced concrete in accordance with current codes and practices. Prerequisite: CEE 377. Offered: AS.

CEE 453 Prestressed Concrete Design (3) Analysis, design, and construction of prestressed concrete structures. Prerequisite: CEE 452. Instructors: Eberhard, Stanton Offered: W.

CEE 454 Design of Timber Structures (3) Includes the design and construction of timber structures, using elements made of sawn wood, glued-laminated wood, and manufactured wood products. Prerequisite: CEE 377. Instructors: Berman, Reed Offered: W.

CEE 455 Structural Unit Masonry (3) Structural behavior and design of reinforced brick, tile, and unit concrete masonry structures. Prerequisite: CEE 377.

Instructors: Tawresey Offered: jointly with ARCH 426.

CEE 456 Structural Analysis (5) Fundamental analysis and modeling of civil structural systems. Equilibrium, kinematics, and constitutive relations; formal solution procedures emphasizing element-based stiffness methods; computer-based and manual techniques; verification and interpretation of results; case studies involving real structures; introduction to finite element analysis of 2D continua. Prerequisite: CEE 377. Instructors: Berman, Eberhard, Lowes Offered: Sp.

CEE 457 Advanced Structures I (3) *L. LOWES* Introduction to the finite element method for modeling civil structures. Formulation of line and continuum elements using virtual work and the principal of minimum potential energy. MATLAB programming of the finite element method. Use of commercial software to model real structures. Prerequisite: CEE 456. Offered: W.

CEE 462 Applied Limnology and Pollutant Effects on Freshwater (3) *NW* Principles of aquatic ecology that relate to causes and effects of water quality problems in lakes and streams. Population growth kinetics, nutrient cycling, eutrophication; acidification, oxygen/temperature requirements, and effects of various wastes on aquatic animals. Offered: W.

CEE 463 Limnology Laboratory (2) *NW* Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with BIOL 474/FISH 474; A.

CEE 465 Data Analysis in Water Sciences (4) *J. Lundquist* Covers fundamental topics related to data analysis, including statistical inference testing and error estimation, linear and quantile-based regression models, Monte Carlo simulation, time series analysis, Bayes theorem, and data visualization using modern computer techniques. Applications to water sciences, but techniques are applicable to any area. Prerequisite: IND E 315; either AMATH 301 or CSE 142; recommended: Basic stats and computer programming (or matlab) Offered: A.

CEE 473 Coastal Engineering I (3) Linear theory of water waves, wave transformations near shore, sediment motion, and elementary tidal theory; shoreline protection methods; and applications illustrated by selected case histories. Prerequisite: CEE 347. Instructors: Thomson

CEE 474 Hydraulics of Sediment Transport (3) A. *HORNER-DEVINE* Introduction to sediment transport in steady flows with emphasis on physical principles governing the motion of sediment particles. Topics include sediment characteristics, initiation of particle motion, particle suspension, bedforms, streambed roughness analysis, sediment discharge formulae, and modeling of scour and deposition in rivers and channels. Prerequisite: CEE 347. Offered: Sp.

CEE 475 Analysis Techniques for Groundwater Flow (3) R. *NEUMANN* Presents the fundamentals of subsurface flow and transport, emphasizing the role of groundwater in hydrologic cycle, the relation of groundwater flow to geologic structure, and the management of contaminated groundwater. Concepts are applied to well-known hydrogeologic sites. Prerequisite: CEE 347. Offered: W.

CEE 476 Physical Hydrology (3) Global water picture, data sources and data homogeneity, precipitation and streamflow hydrography analysis; calculation of surface runoff, evapotranspiration, and groundwater recharge. Hydrologic data frequency analysis and probability theory. Hydrologic design: flood mitigation, drainage. Introduction to deterministic and stochastic models. Prerequisite: CEE 347. Instructors: Istanbuluoglu Offered: A.

CEE 477 Open-Channel Flow (3) Water flow in natural and engineered channels, rivers, and streams. Analysis and design of channels (lined, vegetated), flow controls (weirs, spillways), and structures affecting fish passage (culverts). Prediction of water surface profiles. Introduction to river mechanics. Design-oriented problems. Prerequisite: CEE 347. Instructors: Jessup. Offered: W.

CEE 478 Water Systems Management and Operations (3) J. *Lundquist* Overview of past and future water management and policy issues related to current water resources projects. Through readings, writing, guest speakers, and class discussion, considers both technical and social

aspects of water resource system management and operations. Topics include federal water policy, regional water planning, expansion of existing water supplies, stream flow forecasting, planning with climate change, and more. Offered: Sp.

CEE 480 Air-Quality Modeling (3) NW Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Emphasis on models used for air pollution permits. Emphasizes current problems. Prerequisite: MATH 125. Offered: jointly with ATM S 480; W.

CEE 481 Hydraulic Design for Environmental Engineering (3) *Erkan Istanbuluoglu* Introduction to the theory and the practice of planning and design of urban water supply distribution, pump stations, sewage and storm-water collection systems, and green stormwater infrastructure. Engineering methods and computer programs are applied for designing basic system elements. Prerequisite: CEE 347; and either CEE 350 or CEE 357. Offered: W.

CEE 482 Wastewater Reuse and Resource Recovery (3) Introduces wastewater treatment and systems, emphasizing fundamental biological, chemical, and physical processes related to protection of public health environmental quality and water reuse. Process analysis of the configuration and sizing of major types of treatment processes for various sizes of plants and effluent requirements. Prerequisite: CEE 350 or CEE 357. Offered: A.

CEE 483 Drinking Water Treatment (3) Studies scientific, engineering, and regulatory principles underlying drinking water treatment; development of conceptual models for how and why treatment processes work and mathematical models describing their performance under various design and operating scenarios; field trips to water treatment systems. Prerequisite: CEE 350 or CEE 357. Offered: A.

CEE 484 Decentralized and On-Site Wastewater Management and Reuse (3) Design and performance of on-site and decentralized wastewater treatment. Determination of appropriate alternatives based on endpoints of water reuse, economics, policy, management, water quality, and ecological considerations. Meeting sanitation and water reuse for situations including, individual homes, rural areas, developing countries,

and high density urban dwellings. Prerequisite: CEE 350 or CEE 357.

CEE 488 Hazardous Waste Engineering (3)

Classification of hazardous wastes; resource conservation, Recovery Act regulations; characteristics and behavior of toxic organics; superfund; groundwater contamination, solutions. Hazardous waste site remedial action; case histories; sampling; landfill design. Stabilization and processing technologies, including incineration, carbon adsorption, emerging techniques. Prerequisite: CEE 350 or CEE 357. Offered: Sp.

CEE 489 Water and Air Quality Sampling (2) Samples collected from lakes, streams, precipitation, and air. Resulting (and supplemental) data interpreted for cause-effect and statistical inference. Design for water and air quality monitoring programs. Prerequisite: CEE 462.

CEE 490 Air-Pollution Control (4) Fundamental concepts of air pollution Control including emission sources, atmospheric dispersion, ambient concentrations, and emission standards, with emphasis on processes and equipment for controlling emissions. Offered: jointly with ENV H 461; ASp.

CEE 491 Deterministic Systems (3) Development of quantitative methods for mathematical problem solving with emphasis on computer applications. Linear programming, mathematics of the simplex algorithm, sensitivity analysis, dynamic programming, systems simulation, and goal programming. Class project required. Offered: A.

CEE 495 Sustainability and Design for Environment (3) *Cooper* Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with ENVIR 415/M E 415.

CEE 496 Fate and Transport of Chemicals in the Environment (3) *Neumann* Presents a general introduction to the fundamental physical, chemical, and biological processes governing the movement and fate of chemicals in surface water and

groundwater. Provides basic literacy in environment transport and fate processes, creating a solid foundation for accessing and synthesizing material on these topics. Offered: A.

CEE 497 Engineering Jordan: Water in an Arid Land Study Abroad (5) *DIV H. Gough* Examines impacts of a hot dry climate on water engineering systems by studying the engineered water cycle in Jordan including: water cycles and sources in Jordan; drinking water treatment and desalination; wastewater treatment and reuse; decentralized and on-site treatment; and ancient water engineering. Offered: S, even years.

CEE 498 Special Topics (1-5, max. 12) Special topics in civil engineering offered as course with lecture or laboratory.

CEE 499 Independent Study/Research (1-5, max. 12) Individual undergraduate research project.

CEE 500 Civil and Environmental Engineering Seminars (1, max. 3) Prerequisite: graduate standing in Civil and Environmental Engineering. Credit/no-credit only.

CEE 521 Seepage and Consolidation (3) Confined and unconfined seepage through porous media, flow net solutions, consolidation, settlement, numerical solution of seepage, and consolidation problems. Prerequisite: CEE 367 or equivalent.

CEE 522 Shear Strength and Slope Stability (3) Shear strength of cohesive and granular soils and slope stability analysis of natural and man-made slopes. Prerequisite: CEE 367 or equivalent.

CEE 523 Advanced Foundation Engineering (3) Design of shallow and deep foundations for bearing capacity and settlement. Construction considerations. Prerequisite: CEE 522 and CEE 527.

CEE 529 Foundation Soil Improvement (3) Analysis and design of physical and chemical treatment techniques commonly applied to problem foundation soils for civil engineering structure. Prerequisite: CEE 523.

CEE 531 Rock Engineering (3) Engineering classification, physical and mechanical properties of

rocks, failure modes and initial stresses in rocks, laboratory and field testing of rocks, rock slope engineering, underground openings, foundations on rocks. Prerequisite: CEE 437 or permission of instructor.

CEE 576 Water Resources Planning (3) Engineering, social, and economic factors involved in water resource development and management; water policies, programs, and administration; use relationships and conflicts; considerations for regional water resource systems.

CEE 599 Special Topics in Civil and Environmental Engineering (1-5, max. 20) Special topics in civil and environmental engineering offered occasionally by permanent or visiting faculty members.

CEE 600 Independent Study or Research ([1-5]-) Topics covered depend on faculty and student interest. Prerequisite: permission of instructor.

CEE 601 Internship (2, max. 6) Internship in an established program between industry, government, and the University. Prerequisite: permission of Graduate Program Coordinator and committee chair.

CEE 700 Master's Thesis (*-) Prerequisite: permission of adviser.

CEE 800 Doctoral Dissertation (*-) Prerequisite: permission of adviser.

CONSTRUCTION, ENERGY, AND SUSTAINABLE INFRASTRUCTURE

CESI 501 Distributed Renewable Power Systems (3) Electrical distributed renewable generation. The depth of coverage is suitable for civil engineers and their role as project managers. Topics covered include: (1) microgrids, (2) renewable generation fundamentals, (3) utility economics, and (4) energy planning and simulation. Prerequisite: Graduate Standing Offered: Sp.

CESI 502 Geomatics in Energy Infrastructure (3) Overview of basic techniques for location measurements in energy construction projects using traditional surveying techniques, recently developed technologies for surface creation, and data

management and analysis using GIS. Prerequisite: Graduate Standing Offered: A.

CESI 503 Operation of a Power Plant (3) Explores power plant operations. Topics include plant operating principles, regulatory permitting, maintenance requirements, and plant design and upgrades. Prerequisite: Graduate Standing Offered: Sp.

CESI 504 Buildings, LEED, and Energy Use (3) Overview on how to plan, design, construct and manage high performance building infrastructures. Topics include integrated project delivery, green building rating systems, building energy modeling, indoor environmental qualities, and green building economics. Prerequisite: Graduate Standing Offered: S.

CESI 505 Air Pollution Control and Occupational Safety and Health (3) Overview on the fundamental air pollution issues involved in construction and operation of energy facilities and the management of large vehicle fleets. Topics include emission estimation, control technology assessment, ambient air impacts, and technology specific issues of worker safety and health. Prerequisite: Graduate Standing Offered: W.

CESI 506 Management of Site Remediation, Hazardous Waste, and On-Site Treatment (3) Covers the project management practices to ensure protection of human health and the environment when handling sites contaminated with hazardous waste generated by traditional and renewable energy sources. It includes identification of hazards, communication of risks and introduces alternatives for hazardous waste clean-up. Prerequisite: Graduate Standing Offered: Sp.

CESI 508 Accounting and Finance for Construction (3) Introduction to construction oriented financial management. Explains why construction financial management is different than financial management in other industries. Describes how to account for a company's financial resources and how to build a company's accounting system. Prerequisite: Graduate Standing Offered: W.

CESI 509 Engineering Rome: Study Abroad (5) *Muench* Covers Roman civil engineering over 3,000 years from Ancient Rome to the present day.

Introduces civil engineering topics reinforced by practical engineering calculations, local experts, and site visits. Provides international and historical perspective on engineering and the contributions of engineers to infrastructure and society.

CESI 510 Electric Grids (1) Overview of utility design, operation and construction including an electrical grid's system components and functions. This includes generation, transmission, sub-transmission and distribution. These grid components will be explained as to how they are operated by a utility. Credit/no-credit only. Offered: A.

CESI 511 Grid Integration of Variable Sources of Generation (1) Overview of the advantages and challenges associated with the integration of variable sources of generation into the electric grid and distribution systems. It will focus on weather-driven renewables such as wind, solar, and hydropower. Credit/no-credit only. Offered: W.

CESI 512 Regulating Electric Utilities (1) Overview on how state utility commissions function including how they regulate utilities, influence permitting and participate in grid management and regional electric markets. Credit/no-credit only. Offered: Sp.

CESI 513 Operation and Maintenance of a Wind Farm (1) Operation and maintenance associated with a wind and solar project owned and operated by a major utility in Washington State. Included is an overview of the project including construction aspects, how it is managed and the major maintenance issues. Credit/no-credit only. Offered: W.

CESI 514 Hydroelectric Project Relicensing (1) Relicensing of a hydroelectric project in Washington State and includes an overview of the project and the issues faced by the owner in applying for an extension to its federal operating license. This includes the design and construction of a floating fish enhancement structure. Credit/no-credit only. Offered: S.

CESI 519 Trends and Applications in E-Construction (1) Developments in eConstruction. The focus will be heavy construction such as bridges, pavements and energy infrastructure. Specific content will be on eConstruction inspector tools and related construction applications. Emphasis will be placed

on the use of mobile multi-platform tools and devices. Credit/no-credit only. Offered: Sp.

CESI 520 Electricity Fundamentals (1) Refresher for engineers as to the basics associated with electricity as it relates to power production and distribution. Credit/no-credit only. Offered: A.

CESI 521 Introduction to AutoCAD and Bluebeam (1) Introduction to engineering drafting and graphical communication. Includes application of drafting standards and structure as well as creating and modifying basic drawings in AutoCAD and Bluebeam software. It should only be taken by those without prior knowledge of this topic area. Credit/no-credit only. Offered: W.

CESI 522 Introduction to AutoTURN (1) Focus on AutoTURN which is used to analyze road and site design projects including vertical and horizontal curves, intersections, haul roads and vehicle clearances and turning maneuvers. The software is commonly used in energy infrastructure design and construction activities. Credit/no-credit only. Offered: Sp.

CESI 524 Statistical Methods for Construction (1) Overview of basic statistical measures used in construction and materials decision-making including data distributions, hypothesis testing, regression analysis, sampling and quality control/assurance. Credit/no-credit only. Offered: A.

CESI 525 Wind Turbine Analysis (1) Wind turbine assessments, including hardware and software for performing such assessments. Includes load testing, power performance, and blade and tower bending. Prerequisite: Graduate standing. Credit/no-credit only. Offered: SpS.

CESI 526 Ropeway Transportation (1) Overview of ropeway transportation system fundamentals. Focuses on basic principles for achieving an understanding of the currently available types of technology, their characteristics and limitations, as well as construction and operation considerations and their economics. "Ropeway transportation" is a generic name for cable car transportation. Prerequisite: graduate standing; recommended: CEE graduate status. Credit/no-credit only. Offered: W.

CESI 527 Energy Infrastructure Fundamentals (1)

This course will cover an overview of energy infrastructure fundamentals and focuses on basic principles associated with power plant steam and combined cycles, heat transfer and economics. This results in an overview of a selection of power plant operating principles and costs. Prerequisite: Graduate enrollment; recommended: Graduate status in CEE. Credit/no-credit only.

CESI 528 Pavement Design for Project Roads (1)

This course will cover an overview on methods used to design and construct pavement structures. The types of pavements will range from gravel surfaced to bituminous surface roads and parking lots and focus on energy infrastructure applications. Prerequisite: Graduate enrollment; recommended: Graduate status in CEE. Credit/no-credit only. Offered: S.

CESI 529 Supplemental Pavement Topics (1)

Covers topics in pavement design. Includes pavement responses and layered elastic analysis; rehabilitation by use of HMA overlays; rigid pavement design; and pervious pavement design and construction. Prerequisite: Graduate enrollment; recommended: Graduate status in CEE. Credit/no-credit only. Offered: S.

CESI 534 Transmission Construction (1)

Overview of the high-voltage electric transmission system, and how this infrastructure is constructed. Focuses on project planning, substation construction, transmission line construction, quality control/quality assurance, operations, and safety. Prerequisite: graduate standing; recommended: Civil and Environmental Engineering graduate status. Credit/no-credit only. Offered: Sp.

CESI 552 Environmental Regulations (3) I&S

Principal emphasis on regulations pertaining to construction site stormwater runoff, including regulatory background and requirements, how to analyze potential site problems and prepare plans to solve them, and specifying practices to avoid or reduce water pollutant releases. Briefer coverage of regulations concerning air pollutions, wetlands, hazardous wastes, and endangered species.

CESI 588 Energy Infrastructure and the Environment

(3) *Larson, Mahoney* Focuses on energy infrastructure, including site selection, permitting, design, construction, and maintenance. Includes

electrical production facilities as well as transmission, focusing on permitting and construction of renewable energy facilities. Covers renewable energy infrastructure, emphasizing wind, solar, and geothermal. Offered: A.

CESI 592 Statistical Fundamentals for Construction and Materials Applications (3)

S. Muench Overview of statistical measures used in various construction and materials decision-making processes. Subjects include data distributions, hypothesis tests (making decisions with statistics), regression analysis, sampling, quality control and assurance, and experimental design. Uses construction data to illustrate these measures. Offered: Sp.

CESI 594 Computer-Aided Construction (3)

Application of information technology to construction management and cost estimating. Topics include, but not limited to, computerized construction, fundamentals of computer hardware, construction management software tools, web publishing, GPS application, and construction data management. Offered: S.

CESI 595 Construction Materials (3)

Mahoney Examines the use of aggregates, bituminous mixtures, Portland cement concrete, roller compacted concrete, soil and site stabilization, utility cuts, and flowable backfill in construction projects. Emphasis on behavior of materials in various construction applications. Offered: W.

CESI 596 Pavement Construction (3)

Muench Examines pavement construction, including pavement contracts and specifications, quality control and assurance programs, and plant and laydown operations. Reviews both national and international pavement construction practices. Offered: Sp.

CESI 599 Special Topics in Construction, Energy and Sustainable Infrastructure (1-5, max. 20)

Special topics in construction, energy and sustainable infrastructure offered occasionally by permanent or visiting faculty members. Offered: AWSpS.

ENVIRONMENTAL ENGINEERING

CEWA 532 Advanced Remote Sensing and Earth

Observation (4) Covers the theory and application of

satellite remote sensing as a tool for environmental science. Topics include the fundamentals of electromagnetic radiation, reflection and absorption, black body radiation, use of the Planck Function, satellite and sensor technology, map projections, integration of GIS data, and digital image analysis. Practical training with advanced image processing software (ENVI and open source) . Recommended: GIS; statistics; and basic physics. Offered: jointly with SEFS 532; W.

CEWA 540 Microbiological Process Fundamentals (3) Fundamental concepts for microbial processes including organic chemical structure, nomenclature and environmental properties, principles of microbial metabolism, study of specific types of bacteria important to environmental engineering and their metabolism, development of microbial kinetic equations, including substrate utilization, energetics, and stoichiometry. Offered: A.

CEWA 541 Biological Treatment Systems (3) Basic reactions, design principles, current design models, and operational considerations for biological treatment systems used in environmental engineering. Applications include activated sludge design and optimization, fixed film reactors, nitrification, nitrogen removal, phosphorus removal, anaerobic treatment, biomethane production, resource recovery, and toxic organics removal. Prerequisite: either both CEE 540 and CEE 482 or equivalent. Offered: W.

CEWA 543 Aquatic Chemistry (4) Principles of chemical equilibrium applicable to natural water systems and water and waste treatment processes. Chemical thermodynamics. Characteristics of acid/base, gas/liquid, solid/liquid, and oxidation/reduction equilibria. Computer models for chemical speciation. Offered: A.

CEWA 544 Physical-Chemical Process Principles (4) Principles and design of major physical-chemical unit processes used in water, wastewater, and hazardous waste treatment. Topics include chemical kinetics, reactor design and analysis, ion exchange, adsorption, and gas transfer. Development of mathematical models and evaluation of current design practice. Offered: W.

CEWA 545 Environmental Organic Chemistry (3) Covers characterization and modeling of properties

and processes governing the distribution, fate, and transformation of organic pollutants in environmental systems. Explores linear free energy relationships and their application to examining the water/soil/air partitioning, bioaccumulation, substitution and redox reaction kinetics, and abiotic transformations of organic pollutants. Prerequisite: CEE 543 or permission of instructor. Offered: W.

CEWA 546 Topics in Ecological Effects of Wastewater (3) Application of ecological concepts for analysis and interpretation of bioenvironmental problems and data (eutrophication, acid rain, and toxicity) . Students participate in presentation and discussion of current research. Prerequisite: CEE 462 or BIOL 473 or permission of instructor.

CEWA 547 Lake and Watershed Management (3) Application of current techniques for lake and watershed analysis and modeling using fundamentals of limnology. Approaches to restoring eutrophic lakes, land use impacts on water quality. Practical exercises using data from real lake systems. Prerequisite: CEE 462/FISH 434, BIOL 473, or permission of instructor. Offered: Sp.

CEWA 549 Physical-Chemical Treatment Processes (3) *Jessica Ray* Principles and design of major physical-chemical unit processes used in water, wastewater, and hazardous waste treatment, with emphasis on particle removal and redox processes. Specific focus areas include precipitation, coagulation, flocculation, granular media filtration, membrane filtration, and chemical oxidation. Development of mathematical models and evaluation of current design practice will be examined. Recommended: CEWA 543 and CEWA 544. Offered: Sp.

CEWA 550 Environmental Chemical Modeling (3) Physical/chemical principles controlling the fate and distribution of environmental pollutants, and use of models to apply those principles. Includes modeling of physical transport in conjunction with chemical equilibrium and reaction kinetics. Applications focus on groundwater systems. Prerequisite: CEE 551. Offered: Sp.

CEWA 553 Seminar - Topics in Atmospheric Chemistry (1-3, max. 6) Seminar for atmospheric scientists, chemists, engineers in problems associated with the chemical composition of the

atmosphere. Covers wide variety of topics, ranging from the natural system to urban pollution and global atmospheric change. Prerequisite: ATM S 301 or permission of instructor. Offered: jointly with ATM S 525.

CEWA 554 Acoustics of Environmental Noise (4)
Offered: jointly with M E 528.

CEWA 555 Topics in Environmental Health (3)
Introduction to human biology, including physiology, epidemiology, and toxicology. Study of contemporary environmental health problems and practices as they relate to radiological health, solid-waste disposal, occupational health, biometeorology, and bioengineering.

CEWA 557 Air Resources Management (3)
Technical, administrative, and legal aspects of air conservation. Topics include urban and regional scale air quality measurement and modeling systems, receptor modeling based on chemical fingerprinting of sources and current case studies involving engineering analysis, air-quality modeling, and regulatory aspects at local, state, and federal governmental levels. Offered: A.

CEWA 560 Risk Assessment for Environmental Health Hazards (4) Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with ENV H 577/PUBPOL 589; A.

CEWA 564 Advanced Hydrology (3) *E. Istanbuluoğlu*
Detailed treatment of statistical methods used in hydrology: trend analysis, hypothesis testing, flood frequency, and elements of stochastic hydrology and data generation. Detailed examination of hydrologic models with emphasis on evapotranspiration and water budget, use of a watershed model (e.g., Stanford Watershed Model) in catchment. Offered: Sp.

CEWA 565 Data Analysis in Water Sciences (4) *J. LUNDQUIST*
Covers fundamental topics related to data analysis, including statistical inference testing and error estimation, linear and quantile-based regression models, Monte Carlo simulation, time

series analysis, Bayes theorem, and data visualization using modern computer techniques. Applications to water sciences, but techniques are applicable to any area. Offered: A.

CEWA 566 Satellite Remote Sensing for Water Resources (3) *F. HOSSAIN*
Basic principles of satellite remote sensing of earth's water. Practical aspects of remote sensing in the context of conventional water management. Data uncertainty, modeling and assimilation for advancing water management. Offered: A.

CEWA 568 Snow Hydrology (3) *Lundquist*
Introduces snow hydrology research, emphasizing current research methods and results in both measurements and modeling. Explores the impact of snow on hydrology and water resources. Offered: W.

CEWA 570 Hydrodynamics (4) *A. Horner-Devine*
Applications of the equations of motion to ideal and real fluid flow, with topics in Environmental Fluid Mechanics. Kinematics, Navier-Stokes equations, viscous flows, Coriolis, density driven flows, free surface flows, and introduction to turbulence. Applications include: tidal flushing, lakes, estuaries, gravity currents and river plumes. Prerequisite: CEE 357 or equivalent. Offered: Sp.

CEWA 571 Hydrodynamics in Water Quality (3)
Theoretical, field study, and laboratory model approaches to diffusion in transport problems of concern to water resources engineers. Prerequisite: CEE 342 or permission of instructor.

CEWA 572 Numerical Modeling of Hydrodynamics (3) *U. Nirnimesh Kumar*
Develops finite-difference, finite-volume and spectral numerical methods to solve ordinary and partial differential equations relevant to hydrodynamics and hydrology, and ocean sciences. The course framework will provide insight into working in a UNIX system, writing numerical models, hands-on training with numerical models. Prerequisite: Working knowledge of MATLAB/Python

CEWA 573 Water Wave Mechanics for Coastal Engineers (4) *J. Thomson*
Covers theory and numerical modeling of water waves; classical water wave problem and approximate solution techniques; evolution equations and their solutions for wave systems; viscous damping effects and mass

transport; nonlinear shallow-water waves and the Korteweg-deVries equation; and waves on beaches and structures. Prerequisite: CEE 347. Offered: Sp.

CEWA 574 Hydraulics of Sediment Transport (4) *A. Horner-Devine* Introduction to sediment transport in steady flows with emphasis on physical principles and their extension to modeling of sediment transport. Topics include sediment characteristics, initiation of particle motion, particle suspension, bedforms, sediment discharge formulae, and modeling of scour and deposition in rivers and channels. HECRAS modeling of transport in channels. Prerequisite: CEE 347; recommended: Fluid Mechanics comparable to CEE 347 course or equivalent Offered: Sp.

CEWA 576 Physical Hydrology (4) *E. Istanbuluoglu* Engages familiarity with physical hydrologic processes, interactions, and their representations over multiple timeframe references and scales. Project and report based exercises extend furthering analytical skills using existing theories and observations in Physical Hydrology. Offered: A.

CEWA 577 Open Channel Flow with Modeling (4) *A. Jessup* Water flow in natural and engineered channels, rivers, and streams. Analysis and design of channels (lined, vegetated), flow controls (weirs, spillways), and structures affecting fish passage (culverts). Prediction of water surface profiles. Introduction to river mechanics. Design-oriented problems. Introduction to the HEC-RAS modeling software. Prerequisite: CEE 347. Offered: W.

CEWA 578 Water Resource System Management and Operations (3) Readings in recent literature related to the modeling and management of water resources. Topics include drought management, expansion of existing water supplies, hydropower production, streamflow forecasting, water demand forecasting, regional water planning, climate change, and other topical issues. Offered: Sp.

CEWA 579 Quantitative Water Management (3) *F. Hossain* Delivers an understanding of quantitative methods used in practice to manage the earth's water using a systems approach. It also introduces emerging water management ideas in the context of emerging water management challenges.

CEWA 580 Water-Quality Management (3)

Application of biological, ecological, and chemical processes to modeling of water quality and use of such models in appropriate management of water resource systems. Includes units on the modeling of temperature, BOD, nutrient, phytoplankton, zooplankton, and other processes in lakes, streams, and estuaries. Offered: Sp.

CEWA 582 Wastewater Reuse and Resource Recovery (3) *M. Winkler*

Designed to provide students with fundamentals of wastewater and biosolids treatment and will focus on technologies utilized to recover resources from waste products. Covers experience with real-world applications both in the United States and abroad. Topics include: bioplastic and biogas production, recovery of water, fertilizer, sulfur and metals. Offered: W.

CEWA 590 Field Measurements for Hydrology and Hydrodynamics (3) *Jim Thomson*

Planning and execution of field measurements in lakes, rivers, and oceans. Usage of oceanographic, meteorologic, and hydrologic sensors (primarily in situ sensors). Prerequisite: CEE 347, or a course in fluid mechanics; recommended: data processing; and basic statistics. Offered: Sp, odd years.

CEWA 596 Fate and Transport of Chemicals in the Environment (3) *Neumann*

Presents a general introduction to the fundamental physical, chemical, and biological processes governing the movement and fate of chemicals in surface water and groundwater. Provides basic literacy in environment transport and fate processes, creating a solid foundation for accessing and synthesizing material on these topics. Offered: A.

CEWA 597 Engineering Jordan: Water in an Arid Land Study Abroad (5) *Gough*

Examines impacts of a hot dry climate on water engineering systems by studying the engineered water cycle in Jordan including: water cycles and sources in Jordan; drinking water treatment and desalination; wastewater treatment and reuse; decentralized and on-site treatment; and ancient water engineering.

CEWA 599 Special Topics in Environmental Engineering (1-5, max. 20)

Special topics in environmental engineering offered occasionally by permanent or visiting faculty members. Offered: AWSpS.

STRUCTURAL AND GEOTECHNICAL ENGINEERING

CESG 501 Structural Mechanics (4) *R. Wiebe*
Governing equations of bar and beam elements; vector-based direct stiffness formulation for 3D trusses and frames; the weak form, virtual work, and minimum potential energy methods; buckling and collapse modes; introduction to 3D elasticity and the finite element method. Offered: A.

CESG 502 Structural Dynamics (4) *P. Calvi* Lagrange's equations. Free vibrations of linear, single, and multiple degree of freedom systems. Damping. Mode superposition. Forced vibrations by time history and by response spectrum methods. Free and forced vibrations of continuous systems. Wave propagation in rods and beams. Non-linear response of single and multiple degree of freedom systems. Non-linear response of continuous systems. Prerequisite: CESG 501 or permission of instructor. Offered: W.

CESG 503 Advanced Structures I (3) *L. Lowes, M. Motley* Introduction to the finite element method for modeling civil structures at the graduate level. Formulation of line and continuum elements using virtual work and the principle of minimum potential energy. MATLAB programming of the finite element method. Use of commercial software to model real structures. Prerequisite: CEE 456 or CEE 501 Offered: W.

CESG 504 Finite Element Methods in Structural Mechanics (4) *P. Mackenzie-Helnwein, M. Motley* Extension of the matrix methods of structural analysis and structural mechanics to the solution of static and dynamic continuum elasticity problems by use of finite element approximations. Discussion of convergence and bounding and extension to investigation of stability and finite deformations. Prerequisite: CEE 501 or permission of instructor. Offered: Sp.

CESG 505 Engineering Computing (3) *Lowes, Mackenzie, Miller* Applied computing in civil and environmental engineering contexts, including physical systems modeling, graphics and visualization, and data management. Program development using contemporary tools and strategies. Computer architecture fundamentals,

theoretical and practical issues affecting memory use and performance. Offered: A.

CESG 506 Nonlinear Analysis of Structural Systems (3) Formulation, solution, and interpretation of nonlinear numerical models of structural systems. Material and geometric nonlinearities for truss, beam, and frame systems. Resultant-based material laws. Large deformations. Solutions procedures, arc-length methods. Introduction to parameter identification. Prerequisite: CEE 501. Instructors: Lowes, Miller, Mackenzie Offered: Sp.

CESG 507 Structural Stability (3) *M. Motley, R. Wiebe* Covers concepts and fundamental principles of mechanics of equilibrium states and their stability properties; analysis of the stability and critical loads of columns; beams, and frames with various boundary conditions and loads; application of design formulas; and approximate method to calculate elastic and inelastic buckling loads. Prerequisite: CEE 501. Offered: W.

CESG 508 Materials Modeling (3) Behavior of materials used in civil engineering structures. Yield and failure surfaces. Physical and phenomenological models of plastic and viscoelastic behavior. Fracture mechanics. Fatigue models and predictions. Damping and friction. Behavior of anisotropic and composite materials. Offered: S.

CESG 509 Reliability and Design (3) *Reed* Introduction to theory of structural reliability and its application to design procedures in civil engineering, including probability theory; assessment of uncertainties; code specification and the related concept of risk and the influence of socioeconomic factors; loads, load combinations, and probabilities of damage. Offered: AS.

CESG 521 Advanced Reinforced Concrete (3) Behavior and design of reinforced concrete members and structures. Members subject to torsion and torsion combined with flexure and shear; members with small shear span/depth ratios, slabs. Prerequisite: CEE 452 or equivalent. Instructors: Eberhard, Stanton Offered: A.

CESG 522 Analysis and Design of Prestressed Concrete (3) *J. Stanton* Provides an introduction to prestressed concrete. It will focus primarily on flexural members, but will also include axially loaded

members. First, the concept of prestressing will be discussed, followed by analysis and design under service loads, then analysis for strength. The discussion will be restricted to statically determinate members.. A design project may also be included as part of the course. Prerequisite: CEE 452 or equivalent senior course on Reinforced Concrete; recommended: A course in statics and one in mechanics of materials. Offered: W.

CESG 523 Advanced Structural Systems (3) Examines structural design of floor systems for buildings, including one-way and two-way slabs, strip method, yield line theory, prestressed concrete slabs. Lateral load resisting systems for buildings. Prerequisite: CEE 453; CEE 502. Instructors: Eberhard, Stanton Offered: Sp.

CESG 524 Advanced Steel I (3) Factors influencing strength and serviceability of steel structures; LRFD limit state design procedures. Use of theories of plasticity and stability in development of design methods and specifications, bolted and welded connections, temperature effects, and affect of different fabrication methods on behavior of structure. Prerequisite: CEE 501. Instructors: Berman, Roeder Offered: W.

CESG 526 Earthquake Engineering I (3) Earthquake mechanism and ground shaking, response spectra, linear elastic methods for prediction of behavior, displacement prediction methods for inelastically behaving structures, modeling and solution schemes, earthquake design philosophy, capacity design. Reinforced concrete, steel, and base-isolated structures. Prerequisite: CEE 501, CEE 502. Instructors: Roeder Offered: Sp.

CESG 527 Earthquake Engineering II (3) Performance-based design, development of fragility curves, characteristics and effects of ground-shaking records, design methods, passive and active control, dynamic inelastic time history analysis, design of parts, system detailing, soil-structure interaction, repair and retrofit of structures. Prerequisite: CEE 515. Instructors: Roeder Offered: A.

CESG 528 Wind Engineering Design (3) *Reed* Wind effects on structures, including atmospheric boundary layer flow; bluff body aerodynamics; structural dynamics and aeroelasticity; development and use of the ASCE Standards; estimation of along-

wind, across-wind, and torsional response of tall buildings; design strategies for avoiding wind-induced discomfort. Fundamentals of wind tunnel testing. Offered: A.

CESG 529 Bridge Engineering (3) *M. Eberhard* Design of bridges. Includes the design of decks, joints, girders, columns and foundations to resist gravity loads and earthquakes. Prerequisite: CEE 452, CEE 453 (or equivalents) Offered: S.

CESG 561 Advanced Soil Mechanics (4) Flow of fluids through soils, soil consolidation and consolidation equation, normal and overconsolidation, settlement and rebound, rate of settlement, analytical and numerical solution of consolidation equation. Mitigation of settlement problems. Stresses in soils, yield and failure, failure criteria, shear strength of soils, laboratory and field strength tests, shear strength of different soils under drained and undrained conditions. Prerequisite: CEE 367 or equivalent introductory geotechnical engineering course Offered: A.

CESG 562 Advanced Geotechnical Laboratory (5) Soil and site investigation, classification and engineering properties of soils and rock as determined by standard and advanced test procedures and equipment. Evaluation of test data. Report writing. Prerequisite: CEE 367 or equivalent. Offered: A.

CESG 563 Physicochemical Aspects of Soil Behavior (3) Study of soil formational processes, mineralogy, soil-fluid-electrolyte interactions, clay mineral chemistry, inter-particle forces and stresses, conduction phenomena, time-dependent changes, soil fabric, chemical admixtures, electro-osmosis, particle characteristics, and their effects on macroscopic soil engineering behavior including soil strength, stiffness, and volumetric changes. Prerequisite: CEE 367 (or equivalent course) . Offered: A.

CESG 564 Computational Geomechanics (4) *P. Arduino* Introduction to geotechnical modeling, applied finite elements and soil constitutive modeling. Basic introduction to finite elements as applied to geotechnical problems. Development, implementation and calibration of constitutive models for soils including Von Mises, Drucker Prager, Mohr-Coulomb and Cam-Clay. Offered: W.

CESG 565 Soil Dynamics (3) Vibratory motion, dynamics of linear single-degree-of-freedom (SDOF) systems, dynamics of nonlinear SDOF systems, dynamics of multiple-degree-of-freedom systems, wave propagation, dynamic soil properties for linear, equivalent linear, and nonlinear analysis, ground response analysis, soil-structure interaction.

CESG 566 Slope Stability and Landslides (3) Covers slope processes and mass wasting; landslide characteristics, features and terminology; limit equilibrium slope stability analyses; effects of water on slopes; slope stability and landslide investigations; and design and stabilization of slopes; and landslide risk assessment. Prerequisite: CESG 561. Offered: W.

CESG 567 Advanced Foundation Engineering (3) Design and analysis of shallow and deep foundation systems and earth retention structures. Seismic effects, pile interactions, and other related topics. Site investigation, quality control, and construction methods. Offered: Sp.

CESG 568 Geotechnical Earthquake Engineering (3) Basic seismology (plate tectonics, elastic rebound, intensity and magnitude), ground motions and their prediction, deterministic and probabilistic seismic hazard analysis, soil liquefaction, seismic slope stability, seismic lateral earth pressures, mitigation of geotechnical seismic hazards by soil improvement. Prerequisite: CEE 525 or permission of instructor; recommended: CESG 561 and CESG 565. Offered: Sp.

CESG 569 Geological Engineering (3) Includes study of (i) geologic, geomorphic, and tectonic settings, (ii) rock types, characteristics, and identification; (iii) rock and rock-mass strength assessment, (iv) stereonet and their application to civil engineering problems in rock, (v) rock-slope stability and runout assessment, and (vi) discrete element numerical modeling. Recommended: CEE 367 or equivalent. Offered: Sp.

CESG 570 Geosystems Engineering (3) Advanced geotechnical engineering topics not covered elsewhere in the graduate curriculum: design of earth and rockfill dams and levees; geosynthetics engineering; soil and site improvement methods; environmental geotechnics; lateral earth pressures and retaining systems; emerging topics in geotechnics. Offered: Sp.

CESG 571 Geotechnical Case Histories (3) Geotechnical engineering, exposing successes and limitations of current geotechnical practice and exploring state-of-the-art solutions. Lectures by local practitioners and experts; visits to relevant sites. Offered: W.

CESG 599 Special Topics in Structural and Geotechnical Engineering (1-5, max. 20) Special topics in structural and geotechnical engineering offered occasionally by permanent or visiting faculty members. Offered: AWSpS.

TRANSPORTATION ENGINEERING

CET 511 Planning for People and Freight (4) *Anne Goodchild* Introduces transportation planning as a process integrating and balancing the needs of diverse users, including automobile drivers, freight carriers, public and private mobility service providers, cyclists, and pedestrians. Addresses the purpose and goals of the transportation system, the planning process and governance, use of road and curb space, land use - transportation interactions, and tools for analyzing impacts. Offered: A.

CET 512 Transportation Data Collection (3) *Cynthia Chen* Description of types of data collection methods used for transportation planning applications, including both quantitative and qualitative methods. Emerging data sources such as phone and social media also discussed. Pros and cons of various types of data collection. Discussion of sampling, experimental design, survey design and representativeness issues. Ethics also discussed. Recommended: transportation planning; graduate standing; introduction to probability and statistics; and basic levels in programming. Offered: W.

CET 513 Transportation Networks and Optimization (3) *Xuegang Ban* Network and optimization methods, tools, and applications in transportation and other civil engineering systems. Equips students with network and optimization skills towards data analysis and modeling of civil infrastructure systems. Overview of algorithms, and toolboxes of linear/nonlinear optimization, network flow methods, and applications in modeling and optimization of civil engineering systems. Prerequisite: linear algebra or permission of instructor; recommended: linear or nonlinear programming. Offered: A.

CET 521 Inferential Data Analysis for Engineers (3)
Linda Ng Boyle Application of statistical methods to analyze transportation systems, with an emphasis on modeling individual behaviors and drawing sound inferences about cause and effect. Addresses linear regression and common misuses; generalized linear models including logit and negative binomial; multilevel modeling; matching methods. Emphasizes frequentist approaches but introduces Bayesian analysis and extensions of regression modeling to machine learning. Prerequisite: either IND E 315, STAT 390, or equivalent; recommended: standard introductory probability and statistics course. Offered: jointly with IND E 546; W.

CET 522 Transportation Data Management and Visualization (3)
Yinhai Wang Modern concepts, theories, and tools for management, visualization, and analysis of transportation data. Applications of software tools to large data sets, such as highway sensor data, real-time traffic and mobility service data, spatial data, probe vehicle and mobile device data. Addresses information retrieval, storage, knowledge discovery, data exchange, online sharing, visualization, communication, system optimization, and decision support. Offered: W.

CET 561 Transportation Planning and Design (5)
Avery Provides an overview of transportation planning and how sustainability fits into this field. Topics include institutional frameworks, legal/legislative issues, land use, capacity analysis, supply management and Intelligent Transportation Systems (ITS). Covers tasks/tools of transportation planning at the site, city, region, and state levels. Offered: A.

CET 562 Livable Communities and Design (4)
Bassok Explores the positives and negatives affecting livability. Covers sprawl and compact cities, energy issues and environmental quality, transit-oriented and traditional neighborhood development, and mixed-use and mixed income developments. Includes context-sensitive solutions to transportation projects. Offered: A.

CET 563 Transportation Choices and Technology (4)
Rutherford Explores the range of sustainable transportation choices for both people and goods. Studies passenger modes of transportation including bicycles, single-occupancy vehicles, care and van pools, shared autos, bus, rail, ferries, trolleys, and

foot travel in the context of sustainability. Offered: A.

CET 564 Sustainable Transportation from a Systems Perspective (5)
McCormack Covers tools to evaluate and develop sustainable transportation systems. Emphasizes design approaches that support sustainable transportation, methods to evaluate the full life cycle impacts of transportation systems, and tools to assess transportation networks as resilient systems. Offered: A.

CET 565 Climate Change and Energy (5)
Larson, Mahoney Covers the nature of global climate systems, global warming, ozone depletion, and human influences. Introduces tools to evaluate current and alternative energy production and conversion options for transportation. Explores the nexus between transportation and energy in the context of climate change adaptation and mitigation. Offered: W.

CET 566 Environmental Analysis and Assessment (5)
Watkins Reviews statistical methods necessary to analyze environmental issues. Uses environmental data to demonstrate how significant impacts are measured and reported. Discusses transportation data sources, sustainable transportation indicators, and related statistical analysis. Includes travel demand forecasting and a review of engineering economy. Offered: Sp.

CET 567 Health and Sustainable Transportation (5)
Rowangould Examines how transportation policy is driven by human health impacts. Highlights water and air impacts on health along with the health benefit of human powered transportation. Presents legal and regulatory issues. Case studies provide examples of application of these principles to real world transportation issues. Offered: A.

CET 568 Transportation Economics (5)
Niemeier Economics applied to transportation planning, operations, maintenance, and management problems; microeconomic and macroeconomic theories; benefit-cost analysis; and the effect of uncertainty. Presents the effect of tolls, parking pricing, transit subsidies, and other pricing and incentive policies. Offered: W.

CET 569 Policy Development, Finance, and Sustainable Transportation (5)
Rutherford Covers

the development and implementation of transportation policies to support sustainable transportation systems. Reviews regulations and finance opportunities at the local, state, and federal level highlighting those that promote sustainable transportation. Offered: Sp.

CET 579 Advanced Traffic Detection Systems (3)

Wang Introduction to advanced tracking and detection technologies in transportation engineering, including Global Positioning Systems (GPS), inductance loop detection systems, remote traffic microwave radar, computer-vision based technologies, and other emerging detection technologies with cutting-edge research in these areas.

CET 581 Travel Demand Forecasting (4) Application of mathematical models to forecast urban travel behavior. Introduces emerging methods, land use models, travel demand models, including trip generation, trip distribution, mode choice, and network assignment. Discusses validation and ethics. Offered: A.

CET 582 Intelligent Transportation Systems (3)

Application of modern computer and communication technologies to transportation systems. Benefits to public agencies, commercial companies, and travelers. Coordination between private and public sectors. Intelligent Transportation System's (ITS) social, organizational, and operational changes. Offered: A.

CET 583 Transportation Energy and Sustainability (3)

D. Mackenzie Addresses technical and policy options for making transportation more sustainable, considering economic, environmental, and equity impacts. Topics include transportation demand management; vehicle technologies; alternative fuels; dynamics of technology change; and roles of state, federal, and international policy. Prepares students to think broadly, analyze systematically, and communicate effectively in this area. Offered: Sp.

CET 585 Analytical Methods in Transportation II (3)

Applications of advanced econometric methods to transportation issues. Topics include, but not limited to, systems of equations, duration models, limited dependent variable approaches, and count models. Hands-on modeling, with numerous data sets,

available for application. Collaborative projects. Prerequisite: CEE 584 or permission of instructor.

CET 586 Pedestrian Travel, Land Use, and Urban Form (3)

Seminar concentrating on walking as a mode of transportation in cities and city-regions, including social, cognitive, and perceptual dimensions of pedestrian movement and behavior theory. Offered: jointly with URBDP 576.

CET 587 Transportation Logistics (4)

Anne Goodchild Physical and information flows in supply chains. Economic drivers of supply chain choices as well as applications of technology, policy, and infrastructure to improve freight transportation systems. Focus on fundamental supply chain transportation and logistics concepts that can be mathematically demonstrated, and that underpin more complex analyses or tools used. Offered: Sp.

CET 589 Transit Systems Planning (3)

Planning, operational methods for urban public transportation. Review of technological, operating characteristics of vehicles and systems; financing, management, institutional aspects. Paratransit. Short-range planning, operational strategies, revenue-fare structures. Service monitoring. Mode choice, transit demand relating to service. Computer-aided methods for planning, design of transit systems. Offered: Sp.

CET 590 Traffic Systems Operations (3)

Goodchild, McCormack Operational planning, management of arterial and freeway traffic systems. Review of transportation system management strategies to achieve more efficient use of existing infrastructure, including improved and innovative traffic control systems and demand management policies, measures of effectiveness, impact assessment, traveler response. Introduction to use of relevant computer models and packages. Prerequisite: CEE 327. Offered: A.

CET 591 Freight Transportation (3)

Overview of the technical and institutional aspects of transporting freight. Topics include the different modes of moving freight, the technology of transferring freight between modes at ports and terminals, issues that impact freight movement such as congestion and government regulation, and the future of freight mobility. Also covers regional freight demand modeling techniques. Offered: A.

CET 593 Transportation System Analysis (3) X. Ban
Applications of mathematical models to model traffic flow on transportation system. Introduces graph theories of transportation networks, basic network flow methods, network equilibrium and pricing concepts. Discusses impact of emerging techniques (e.g., shared mobility) on transportation. Prepares students on transportation system analysis fundamentals for them to conduct more advanced research. Offered: Sp.

CET 599 Special Topics in Transportation Engineering (1-5, max. 20) Special topics in transportation engineering offered occasionally by permanent or visiting faculty members. Offered: AWSpS.

COMPUTER SCIENCE AND ENGINEERING

COMPUTER SCIENCE AND ENGINEERING

CSE 112 Advanced Placement (AP) Computer Science A (4) NW, QSR Course awarded based on Advanced Placement (AP) score. Consult the Admissions Exams for Credit website for more information.

CSE 120 Computer Science Principles (5) NW, QSR
Introduces fundamental concepts of computer science and computational thinking. Includes logical reasoning, problem solving, data representation, abstraction, the creation of digital artifacts such as web pages and programs, managing complexity, operation of computers and networks, effective web searching, ethical, legal and social aspects of information technology. May not be taken for credit if credit earned in CSE 100/INFO 100.

CSE 131 Science and Art of Digital Photography (4) VLPA Hemingway Covers the fundamentals of digital photography, including computational imaging; the elements of photographic composition and design; and the future of internet-enabled photography.

CSE 142 Computer Programming I (4) NW, QSR
Basic programming-in-the-small abilities and concepts including procedural programming (methods, parameters, return, values), basic control structures (sequence, if/else, for loop, while loop), file processing, arrays, and an introduction to defining objects. Intended for students without prior programming experience. Offered: AWSpS.

CSE 143 Computer Programming II (5) NW, QSR
Continuation of CSE 142. Concepts of data abstraction and encapsulation including stacks, queues, linked lists, binary trees, recursion, instruction to complexity and use of predefined collection classes. Prerequisite: CSE 142. Offered: AWSpS.

CSE 154 Web Programming (5) QSR Covers languages, tools, and techniques for developing interactive and dynamic web pages. Topics include page styling, design, and layout; client and server side scripting; web security; and interacting with data sources such as databases. Prerequisite: minimum grade of 2.0 in either CSE 142, CSE 143, or CSE 160.

CSE 160 Data Programming (4) NW, QSR
Introduction to computer programming. Assignments solve real data manipulation tasks from science, engineering, business, and the humanities. Concepts of computational thinking, problem-solving, data analysis, Python programming, control and data abstraction, file processing, and data visualization. Intended for students without prior programming experience. No credit if CSE 143 has been taken.

CSE 163 Intermediate Data Programming (4)
Intermediate data programming. Topics include writing programs that manipulate different types of data; leveraging the growing ecosystem of tools and libraries for data programming; writing programs that are both efficient and elegant; and writing medium-scale programs (100 to 200 lines). Prerequisite: either CSE 142, CSE 143, or CSE 160.

CSE 180 Introduction to Data Science (4) QSR Survey course introducing the essential elements of data science: data collection, management, curation, and cleaning; summarizing and visualizing data; basic ideas of statistical inference, machine learning. Students will gain hands-on experience through computing labs.

CSE 190 Current Topics in Computer Science and Engineering (1-5, max. 15)

CSE 301 CSE Internship Education (1-2, max. 12) CSE Internship practicum; integration of classroom theory with on-the-job training. Periods of full-time work alternate with periods of full-time study. Open

only to students who have been admitted to CSE Internship Program or by special permission of the Department. Offered credit/no credit only. Credit/no-credit only. Offered: AWSpS.

CSE 311 Foundations of Computing I (4) QSR

Examines fundamentals of logic, set theory, induction, and algebraic structures with applications to computing; finite state machines; and limits of computability. Prerequisite: CSE 143; either MATH 126 or MATH 136.

CSE 312 Foundations of Computing II (4) QSR

Examines fundamentals of enumeration and discrete probability; applications of randomness to computing; polynomial-time versus NP; and NP-completeness. Prerequisite: CSE 311.

CSE 331 Software Design and Implementation (4)

Explores concepts and techniques for design and construction of reliable and maintainable software systems in modern high-level languages: specifications; program structure and design; program-correctness approaches, including testing; and event-driven programming (e.g., graphical user interface) . Prerequisite: CSE 143

CSE 332 Data Structures and Parallelism (4)

Covers abstract data types and structures including dictionaries, balanced trees, hash tables, priority queues, and graphs; sorting; asymptotic analysis; fundamental graph algorithms including graph search, shortest path, and minimum spanning trees; multithreading and parallel algorithms; P and NP complexity classes. No credit if CSE 373 has been taken. Prerequisite: CSE 311.

CSE 333 Systems Programming (4)

Includes substantial programming experience in languages that expose machine characteristics and low-level data representation (e.g., C and C++) ; explicit memory management; modern libraries and language features; interacting with operating-system services; introduction to concurrent programming. Prerequisite: CSE 351.

CSE 340 Interaction Programming (4)

User interfaces for computing systems, including principles and implementation techniques. Covers key topics and programming paradigms for interactive systems, such as event handling; graphical layout, design, and widgets; undo;

accessibility; and context awareness. Provides experience with modern application domains and frameworks (e.g., mobile applications) . Prerequisite: CSE 143.

CSE 341 Programming Languages (4)

Basic concepts of programming languages, including abstraction mechanisms, static and dynamic typing, scope, syntax vs. semantics, first-class function closures, and algebraic datatypes. Detailed study of functional programming and other paradigms. No credit if CSE 413 has been taken. Prerequisite: CSE 143.

CSE 344 Introduction to Data Management (4)

Introduces database management systems and writing applications that use such systems; data models (e.g., relational, semi-structured) , query languages (e.g., SQL, XQuery) , language bindings, conceptual modeling, transactions, security, database tuning, data warehousing, parallelism, and web-data management. Prerequisite: CSE 311.

CSE 351 The Hardware/Software Interface (4)

Examines key computational abstraction levels below modern high-level languages; number representation, assembly language, introduction to C, memory management, the operating-system process model, high-level machine architecture including the memory hierarchy, and how high-level languages are implemented. Prerequisite: CSE 143.

CSE 352 Hardware Design and Implementation (4)

Covers digital circuit design, processor design, and systems integration and embedded-systems issues. Includes substantial hardware laboratory. Prerequisite: CSE 311; CSE 351.

CSE 369 Introduction to Digital Design (3)

Introduces the implementation, specification, and simulation of digital logic. Boolean algebra; combinational circuits including arithmetic circuits and regular structures; sequential circuits including finite-state-machines; and use of field-programmable gate arrays (FPGAs) . Emphasizes simulation, high-level specification, and automatic synthesis techniques. Cannot be taken for credit if credit received for EE 271. Prerequisite: CSE 311.

CSE 371 Design of Digital Circuits and Systems (5)

Provides a theoretical background in, and practical experience with, tools, and techniques for modeling complex digital systems with the Verilog hardware

description language, maintaining signal integrity, managing power consumption, and ensuring robust intra- and inter-system communication. Prerequisite: either E E 205 or E E 215; either E E 271 or CSE 369. Offered: jointly with E E 371.

CSE 373 Data Structures and Algorithms (4)

Fundamental algorithms and data structures for implementation. Techniques for solving problems by programming. Linked lists, stacks, queues, directed graphs. Trees: representations, traversals. Searching (hashing, binary search trees, multiway trees). Garbage collection, memory management. Internal and external sorting. Intended for non-majors. Not open for credit to students who have completed CSE 332. Prerequisite: CSE 143.

CSE 374 Intermediate Programming Concepts and Tools (3)

Covers key software development concepts and tools not in introductory courses. Concepts of lower-level programming (C/C++) and explicit memory management; techniques and tools for individual and group software development; design, implementation, and testing strategies. Intended for non-majors. Cannot be taken for credit if credit received for CSE 333. Prerequisite: CSE 143.

CSE 390 Special Topics in Computer Science and Engineering (1-5, max. 10)

Covers topics of current interest in computer science and engineering.

CSE 391 System and Software Tools (1)

Introduction to tools commonly used in software development. Topics include using a command-line interface, writing scripts for file and string manipulation, managing user permissions, manipulating text with regular expressions, using build-management tools, and using version-control systems. Prerequisite: CSE 143. Credit/no-credit only.

CSE 399 CSE Foreign Study (*)

Upper-division computer science or computer engineering course, taken through an approved study abroad program, for which there is no direct University of Washington equivalent. Credit/no-credit only.

CSE 401 Introduction to Compiler Construction (4)

Fundamentals of compilers and interpreters; symbol tables; lexical analysis, syntax analysis, semantic analysis, code generation, and optimizations for general purpose programming languages. No credit

to students who have taken CSE 413. Prerequisite: CSE 332; CSE 351.

CSE 402 Design and Implementation of Domain-Specific Languages (4)

Design and implementation of domain-specific languages. Creation of new programming abstractions, formal and informal language specification techniques, implementation strategies to support language analysis and execution on traditional and non-traditional computing platforms. Selection and use of appropriate software tools and development environments to build novel DSLs. Prerequisite: CSE 332 and CSE 351.

CSE 403 Software Engineering (4)

Fundamentals of software engineering using a group project as the basic vehicle. Topics covered include the software crisis, managing complexity, requirements specification, architectural and detailed design, testing and analysis, software process, and tools and environments. Prerequisite: CSE 331; CSE 332.

CSE 410 Computer Systems (3)

Structure and components of hardware and software systems. Machine organization, including central processor and input-output architectures; assembly language programming; operating systems, including process, storage, and file management. Intended for non-majors. No credit to students who have completed CSE 351 or CSE 451. Prerequisite: CSE 373.

CSE 412 Introduction to Data Visualization (4)

Introduction to data visualization design and use for both data exploration and explanation. Methods for creating effective visualizations using principles from graphic design, psychology, and statistics. Topics include data models, visual encoding methods, data preparation, exploratory analysis, uncertainty, cartography, interaction techniques, visual perception, and evaluation methods. No credit if CSE 442 taken. Prerequisite: CSE 143 or CSE 163

CSE 413 Programming Languages and Their Implementation (3)

Basic concepts and implementation strategies for modern functional and object-oriented programming languages such as Scheme and Java. Intended for non-majors. No credit to students who have completed CSE 341 or CSE 401. Prerequisite: CSE 373.

CSE 414 Introduction to Database Systems (4)

Introduces database management systems and writing applications that use such systems; data models, query languages, transactions, database tuning, data warehousing, and parallelism. Intended for non-majors. Not open for credit to students who have completed CSE 344. Prerequisite: minimum grade of 2.5 in CSE 143.

CSE 415 Introduction to Artificial Intelligence (3)

NW Principles and programming techniques of artificial intelligence: LISP, symbol manipulation, knowledge representation, logical and probabilistic reasoning, learning, language understanding, vision, expert systems, and social issues. Intended for non-majors. Not open for credit to students who have completed CSE 473. Prerequisite: CSE 373.

CSE 416 Introduction to Machine Learning (4) NW

Provides practical introduction to machine learning. Modules include regression, classification, clustering, retrieval, recommender systems, and deep learning, with a focus on an intuitive understanding grounded in real-world applications. Intelligent applications are designed and used to make predictions on large, complex datasets. Prerequisite: either CSE 143, CSE 160, or CSE 163; and either STAT 311, STAT 390, STAT 391, or IND E 315. Offered: jointly with STAT 416.

CSE 417 Algorithms and Computational Complexity (3)

Design and analysis of algorithms and data structures. Efficient algorithms for manipulating graphs and strings. Fast Fourier Transform. Models of computation, including Turing machines. Time and space complexity. NP-complete problems and undecidable problems. Intended for non-majors. Prerequisite: CSE 373.

CSE 421 Introduction to Algorithms (3) Techniques for design of efficient algorithms. Methods for showing lower bounds on computational complexity. Particular algorithms for sorting, searching, set manipulation, arithmetic, graph problems, pattern matching. Prerequisite: CSE 312; CSE 332.

CSE 427 Computational Biology (3) Algorithmic and analytic techniques underlying analysis of large-scale biological data sets such as DNA, RNA, and protein sequences or structures, expression and proteomic profiling. Hands-on experience with databases, analysis tools, and genome markers. Applications

such as sequence alignment, BLAST, phylogenetics, and Markov models. Prerequisite: CSE 312; CSE 332.

CSE 428 Computational Biology Capstone (5)

Designs and implements a software tool or software analysis for an important problem in computational molecular biology. Prerequisite: CSE 312; CSE 331; CSE 332.

CSE 431 Introduction to Theory of Computation (3)

Models of computation, computable and noncomputable functions, space and time complexity, tractable and intractable functions. Prerequisite: CSE 312.

CSE 440 Introduction to HCI: User Interface Design, Prototyping, and Evaluation (5)

Human-Computer Interaction (HCI) theory and techniques. Methods for designing, prototyping, and evaluating user interfaces to computing applications. Human capabilities, interface technology, interface design methods, and interface evaluation tools and techniques. Prerequisite: CSE 332.

CSE 441 Advanced HCI: Advanced User Interface Design, Prototyping, and Evaluation (5)

Human-Computer Interaction (HCI) theory and techniques. Advanced methods for designing, prototyping, and evaluating user interfaces to computing applications. Novel interface technology, advanced interface design methods, and prototyping tools. Prerequisite: CSE 440.

CSE 442 Data Visualization (4) Techniques for creating effective visualizations of data based on principles from graphic design, perceptual psychology, and statistics. Topics include visual encoding models, exploratory data analysis, visualization software, interaction techniques, graphical perception, color, animation, high-dimensional data, cartography, network visualization, and text visualization. Prerequisite: CSE 332.

CSE 444 Database Systems Internals (4)

The relational data model and the SQL query language. Conceptual modeling: entity/relationships, normal forms. XML, XPath, and XQuery. Transactions: recovery and concurrency control. Implementation of a database system. A medium sized project using a relational database backend. Prerequisite: CSE 332; CSE 344.

CSE 446 Machine Learning (4) Methods for designing systems that learn from data and improve with experience. Supervised learning and predictive modeling: decision trees, rule induction, nearest neighbors, Bayesian methods, neural networks, support vector machines, and model ensembles. Unsupervised learning and clustering. Prerequisite: CSE 332; either STAT 390, STAT 391, or CSE 312.

CSE 447 Natural Language Processing (4) Methods for designing systems that usefully and/or intelligently process natural language text data. Language models, text categorization, syntactic and semantic analysis, machine translation. This course emphasizes algorithms and data-driven methods. Prerequisite: CSE 312 and CSE 332; recommended: MATH 308 ; CSE 446 is recommended before or concurrently.

CSE 450 Animation Production Seminar (1) Open to all students who have an interest in digital animation. Reviews and analyzes films, animated feature films, and television commercials. Emphasizes the technical and aesthetic basics of animation production in industry studio environments.

CSE 451 Introduction to Operating Systems (4) Principles of operating systems. Process management, memory management, auxiliary storage management, resource allocation. No credit to students who have completed CSE 410. Prerequisite: CSE 351; CSE 332; CSE 333.

CSE 452 Introduction to Distributed Systems (4) Covers abstractions and implementation techniques in the construction of distributed systems, including cloud computing, distributed storage systems, and distributed caches. Prerequisite: CSE 332 and CSE 333. ; recommended: CSE 451

CSE 454 Advanced Internet and Web Services (5) Design of Internet search engines, including spider architecture, inverted indices, frequency rankings, latent semantic indexing, hyperlink analysis, and refinement interfaces. Construction of scalable and secure web services. Datamining webserver logs to provide personalized and user-targeted services. Large project. Prerequisite: CSE 332; CSE 351; either CSE 331 or CSE 352.

CSE 455 Computer Vision (4) Introduction to image analysis and interpreting the 3D world from image data. Topics may include segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: CSE 333; CSE 332.

CSE 456 Story Design for Computer Animation (4) Animation principles and production for story development and design. Design, development, and production of several storyreels, which are a tool for the pre-production of animated features and shorts. Student use authoring tools to present finished work.

CSE 457 Computer Graphics (4) Introduction to computer image synthesis, modeling, and animation. Topics may include visual perception, displays and framebuffers, image processing, affine and projective transformations, hierarchical modeling, hidden surface elimination, shading, ray-tracing, anti-aliasing, texture mapping, curves, surfaces, particle systems, dynamics, character animation, and animation principles. Prerequisite: CSE 333; CSE 332.

CSE 458 Computer Animation (5) Introduction to basic principles of computer generated animation. Focus on the modeling and lighting of animated characters. Students from art, CSE, and music team up on projects to be built on commercially-available modeling and lighting packages. Prerequisite: CSE 457.

CSE 459 Pre-Production for Collaborative Animation (5) Pre-production of collaboratively designed animated shorts. In-depth analysis of classical and computer generated works. Character design and pre-planning, model sheets, character rigging, storyreel and animatics, character motion, design for multiple characters, and principles of animation as applied to character motion and effects. Prerequisite: CSE 458.

CSE 460 Animation Capstone (5) Apply the knowledge gained in previous animation courses to produce a short animated film. Topics include scene planning, digital cinematography, creature and hard surface modeling, animatics and basics of character animation, and rendering techniques. Prerequisite: CSE 458, CSE 459.

CSE 461 Introduction to Computer-Communication Networks (4) Computer network architectures, protocol layers, network programming. Transmission media, encoding systems, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, network security. Prerequisite: either CSE 326 or CSE 332; either CSE 303 or CSE 333.

CSE 464 Advanced Topics in Digital Animation (1-5, max. 10) Students design individual animated works for professional quality demo reels. 2- and 3-D animatics, special effects design, advanced character animation techniques, 3-D paint techniques and integration, short design, sequence planning, non-photorealistic rendering options, interactive animation for pre-planning, and advanced production techniques and strategies.

CSE 467 Advanced Digital Design (4) Advanced techniques in the design of digital systems. Hardware description languages, combinational and sequential logic synthesis and optimization methods, partitioning, mapping to regular structures. Emphasis on reconfigurable logic as an implementation medium. Memory system design. Digital communication including serial/parallel and synchronous/asynchronous methods. Prerequisite: CSE 352; CSE 332.

CSE 469 Computer Architecture I (5) Introduction to computer architecture. Assembly and machine language, microprocessor organization including control and datapath. Computer arithmetic. Memory systems and caching. Performance modeling of microprocessors. Prerequisite: either E E 271 or CSE 369; CSE 143 Offered: jointly with E E 469; AWSp.

CSE 470 Computer Architecture II (4) Advanced computer architecture. Performance evaluation and energy efficiency. Instruction set architectures. Instruction-level parallelism. Modern microprocessor micro-architecture. Thread-level parallelism. Cache coherency and memory consistency in shared-memory multiprocessors. Memory hierarchy. GPU architecture. Warehouse-scale computing. Trends in computer design. Prerequisite: either CSE 469 or E E 469. Offered: jointly with E E 470.

CSE 472 Introduction to Computational Linguistics (5) VLP/NW E. BENDER Introduction to computational approaches to modeling language, for

linguistic research and practical applications, including analyses at different levels of linguistic structure and symbolic as well as statistical approaches. Prerequisite: either LING 200 or LING 400; either LING 461 or CSE 311. Offered: jointly with LING 472.

CSE 473 Introduction to Artificial Intelligence (3) Principal ideas and developments in artificial intelligence: Problem solving and search, game playing, knowledge representation and reasoning, uncertainty, machine learning, natural language processing. Not open for credit to students who have completed CSE 415. Prerequisite: CSE 332.

CSE 474 Introduction to Embedded Systems (4) Introduces the specification, design, development, and test of real time embedded system software. Use of a modern embedded microcomputer or microcontroller as a target environment for a series of laboratory projects and a comprehensive final project. Prerequisite: CSE 143. Offered: jointly with E E 474; AWSpS.

CSE 475 Embedded Systems Capstone (5) Capstone design experience. Prototype a substantial project mixing hardware, software, and communications. Focuses on embedded processors, programmable logic devices, and emerging platforms for the development of digital systems. Provides a comprehensive experience in specification, design, and management of contemporary embedded systems. Prerequisite: either E E 271 or CSE 369; either CSE 466, E E 472, or CSE 474/E E 474. Offered: jointly with E E 475; AWSp.

CSE 478 Autonomous Robotics (4) Theory and application of algorithms and probabilistic techniques for autonomous robotics. Covers topics related to state estimation (Bayes filtering, probabilistic motion and sensor models), planning/control (search based planners, lattice based planners, trajectory following techniques), and perception and learning (object detection, learning from demonstrations etc.). Prerequisite: CSE 332; recommended: CSE 312; MATH 308.

CSE 481 Capstone Software Design (5, max. 15) Student teams design and implement a software project involving multiple areas of the CSE curriculum. Course emphasizes the development

process, rather than the product. Prerequisite: CSE 332; CSE 351; either CSE 331 or CSE 352.

CSE 482 Capstone Software Design to Empower Underserved Populations (5, max. 15) DIV Students work in teams to design and implement a software project involving multiple areas of the CSE curriculum, for the purpose of empowering marginalized or underserved populations. Prerequisite: CSE 332; CSE 351; either CSE 331 or CSE 352.

CSE 484 Computer Security (4) Foundations of modern computer security, including software security, operating system security, network security, applied cryptography, human factors, authentication, anonymity, and web security. Prerequisite: CSE 332; CSE 351.

CSE 486 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136, MATH 307, or AMATH 351; and either MATH 308, AMATH 352, or CSE 311 Offered: jointly with BIOEN 423/E E 423; A.

CSE 487 Advanced Systems and Synthetic Biology (3) H. Kueh Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with BIOEN 424/E E 424; Sp.

CSE 488 Laboratory Methods in Synthetic Biology (4) Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with BIOEN 425/E E 425; W.

CSE 490 Special Topics in Computer Science and Engineering (1-5, max. 15) Lectures, discussions, and possibly labs on topics of current interest in computer science and engineering not covered by other CSE undergraduate courses.

CSE 491 Data Science and Society Seminar (1) Current topics related to the societal implications of data science. Topic selection will vary from quarter to quarter and may include data privacy and security, data anonymization, hypothesis-testing on a shared database, impact of data science-based decisions on society. Includes both guest speakers and case-study or article-based discussions. Credit/no-credit only. Credit/no-credit only.

CSE 492 Undergraduate Seminar (1-2, max. 5) Seminars on current topics in computer science and engineering. Topic selection will vary from quarter to quarter. Credit/no-credit only.

CSE 495 Project Practicum ([1-5]-, max. 5) Available in special situations for computer science majors to compete, under instructor guidance, a substantial computing project that deepens one's knowledge and experience in the field. Projects may involve a group of students.

CSE 497 Undergraduate Research Seminar (1) Students prepare and give a public talk on their faculty-sponsored research projects.

CSE 498 Senior Project ([1-9]-, max. 9) A report (and perhaps demonstration) describing a development, survey, or small research project in computer science or an application to another field. Objectives: (1) integrating material from several courses, (2) introducing the professional literature, (3) gaining experience in writing a technical document, and (4) showing evidence of independent work.

CSE 499 Reading and Research (1-24, max. 24) Available in special situations for advanced computer science majors to do reading and research in field, subject to approval of undergraduate adviser and CSE faculty member. Free elective, but does not replace core course or computer science elective. Credit/no-credit only.

CSE 501 Programming Language Analysis and Implementation (4) Design and implementation of

compilers and run-time systems for imperative, object-oriented, and functional languages. Intra- and interprocedural analyses and optimizations.

Prerequisite: CSE 341.

CSE 503 Software Engineering (4) Specification, implementation, and testing of large, multiperson, software systems. Topics include abstraction, information hiding, software development environments, and formal specifications.

CSE 504 Advanced Topics in Software Engineering (4) Topics vary but may include software design and evolution, formal methods, requirements specifications, software and system safety, reverse engineering, real-time software, metrics and measurement, programming environments, and verification and validation.

CSE 505 Principles of Programming Languages (4) Design and formal semantics of modern programming languages, includes functional and object-oriented languages. Prerequisite: CSE 341.

CSE 506 Advanced Topics in Programming Languages (4) May include functional, object-oriented, parallel, and logic programming languages; semantics for languages of these kinds; type declaration, inference, and checking (including polymorphic types); implementation issues, such as compilation, lazy evaluation, combinators, parallelism, various optimization techniques. Implementation project required. Prerequisite: CSE 501 which may be taken concurrently, and CSE 505.

CSE 507 Computer-Aided Reasoning for Software (4) Covers theory, implementation, and applications of automated reasoning techniques, such as satisfiability solving, theorem proving, model checking, and abstract interpretation. Topics include concepts from mathematical logic and applications of automated reasoning to the design, construction, and analysis of software.

CSE 510 Advanced Topics in Human-Computer Interaction (4) Content varies, including interface issues for networks, embedded systems, education applications, safety and critical systems, graphics and virtual reality, databases, and computer-supported cooperative work.

CSE 512 Data Visualization (4) Covers techniques and algorithms for creating effective visualizations based on principles from graphic design, visual art, perceptual psychology, and cognitive science. Topics include data and image models; visual encoding; graphical perception; color; animation; interaction techniques; graph layout; and automated design. Lectures, reading, and project.

CSE 515 Statistical Methods in Computer Science (4) Introduction to the probabilistic and statistical techniques used in modern computer systems. Graphical models, probabilistic inference, statistical learning, sequential models, decision theory. Prerequisite: either CSE 312, STAT 341, STAT 391 or equivalent.

CSE 517 Natural Language Processing (4) Overview of modern approaches for natural language processing. Topics include language models, text, classification, tagging, parsing, machine translation, semantic, and discourse analysis.

CSE 519 Current Research in Computer Science (1, max. 18) Weekly presentations on current research activities by members of the department. Only computer science graduate students may register, although others are encouraged to attend. Credit/no-credit only.

CSE 520 Computer Science Colloquium (1, max. 18) Weekly public presentations on topics of current interest by visiting computer scientists. Credit/no-credit only.

CSE 521 Design and Analysis of Algorithms I (4) Principles of design of efficient algorithms: recursion, divide and conquer, balancing, dynamic programming, greedy method, network flow, linear programming. Correctness and analysis of algorithms. NP-completeness. Prerequisite: either CSE 332 or equivalent.

CSE 522 Design and Analysis of Algorithms II (4) Analysis of algorithms more sophisticated than those treated in CSE 521. Content varies and may include such topics as algebraic algorithms, combinatorial algorithms, techniques for proving lower bounds on complexity, and algorithms for special computing devices such as networks or formulas. Prerequisite: CSE 521.

CSE 523 Computational Geometry (4) Algorithms for discrete computational geometry. Geometric computation, range searching, convex hulls, proximity, Voronoi diagrams, intersection. Application areas include VLSI design and computer graphics. Prerequisite: CSE 521.

CSE 524 Parallel Algorithms (4) Design and analysis of parallel algorithms: fundamental parallel algorithms for sorting, arithmetic, matrix and graph problems, and additional selected topics. Emphasis on general techniques and approaches used for developing fast and efficient parallel algorithms and on limitations to their efficacy. Prerequisite: CSE 521.

CSE 525 Randomized Algorithms and Probabilistic Analysis (4) Examines algorithmic techniques: random selection, random sampling, backwards analysis, algebraic methods, Monte Carlo methods, and randomized rounding; random graphs; the probabilistic method; Markov chains and random walks; and analysis tools: random variables, moments and deviations, Chernoff bounds, martingales, and balls in bins. Prerequisite: either CSE 521 or equivalent.

CSE 526 Cryptography (4) Introduction to the theoretical foundation of cryptography, teaching the design and application of selected important cryptographic objects, and the mathematical frameworks and methodologies of modern cryptography for formalizing security goals and developing provably secure solutions.

CSE 527 Computational Biology (4) Introduces computational methods for understanding biological systems at the molecular level. Problem areas such as mapping and sequencing, sequence analysis, structure prediction, phylogenetic inference, regulatory analysis. Techniques such as dynamic programming, Markov models, expectation-maximization, local search.

CSE 528 Computational Neuroscience (3) Introduction to computational methods for understanding nervous systems and the principles governing their operation. Topics include representation of information by spiking neurons, information processing in neural circuits, and algorithms for adaptation and learning. Prerequisite: elementary calculus, linear algebra, and statistics, or

permission of instructor. Offered: jointly with NEURO 528.

CSE 529 Neural Control of Movement: A Computational Perspective (3) Systematic overview of sensorimotor function on multiple levels of analysis, with emphasis on the phenomenology amenable to computational modeling. Topics include musculoskeletal mechanics, neural networks, optimal control and Bayesian inference, learning and adaptation, internal models, and neural coding and decoding. Prerequisite: vector calculus, linear algebra, MATLAB, or permission of instructor. Offered: jointly with AMATH 533.

CSE 531 Computational Complexity I (4) Deterministic and nondeterministic time and space complexity, complexity classes, and complete problems. Time and space hierarchies. Alternation and the polynomial-time hierarchy. Circuit complexity. Probabilistic computation. Exponential complexity lower bounds. Interactive proofs. Prerequisite: either CSE 311 or equivalent.

CSE 532 Computational Complexity II (4) Advanced computational complexity including several of the following: circuit complexity lower bounds, $\#P$ and counting classes, probabilistically-checkable proofs, de-randomization, logical characteristics of complexity, communication complexity, time-space tradeoffs, complexity of data structures.

CSE 533 Advanced Topics in Complexity Theory (4) An in-depth study of advanced topics in computational complexity.

CSE 535 Theory of Optimization and Continuous Algorithms (4) Theoretical foundations of convex optimization and continuous algorithms. First-order methods, rates of convergence, and acceleration; gradient, subgradient, and mirror descent. Randomization, stochastic descent, leverage scores and sampling. Interior point methods. Linear systems in convex optimization. Algorithmic applications.

CSE 541 Interactive Learning (4) Foundations and methods of interactive machine learning including multi-armed bandits, active learning, and adaptive experimental design. Stochastic and adversarial K-armed bandits, structured bandits, and contextual

bandits. Online learning; adaptive data collection for supervised learning.

CSE 544 Principles of Database Systems (4) Data models and query languages (SQL, datalog, OQL) . Relational databases, enforcement of integrity constraints. Object-oriented databases and object-relational databases. Principles of data storage and indexing. Query-execution methods and query optimization algorithms. Static analysis of queries and rewriting of queries using views. Data integration. Data mining. Principles of transaction processing.

CSE 546 Machine Learning (4) Explores methods for designing systems that learn from data and improve with experience. Supervised learning and predictive modeling; decision trees, rule induction, nearest neighbors, Bayesian methods, neural networks, support vector machines, and model ensembles. Unsupervised learning and clustering. Prerequisite: either CSE 312, STAT 341, STAT 391 or equivalent.

CSE 547 Machine Learning for Big Data (4) Covers machine learning and statistical techniques for analyzing datasets of massive size and dimensionality. Representations include regularized linear models, graphical models, matrix factorization, sparsity, clustering, and latent factor models. Algorithms include sketching, random projections, hashing, fast nearest-neighbors, large-scale online learning, and parallel learning (Map-Reduce, GraphLab) . Prerequisite: either STAT 535 or CSE 546. Instructors: Fox, Guestrin Offered: jointly with STAT 548; W.

CSE 548 Computer Systems Architecture (4) Notations for computer systems. Processor design (single chip, look-ahead, pipelined, data flow) . Memory hierarchy organization and management (virtual memory and caches) . Microprogramming. I/O processing. Multiprocessors (SIMD and MIMD) . Prerequisite: CSE 451.

CSE 549 High-Performance Computer Architectures (4) Algorithm design, software techniques, computer organizations for high-performance computing systems. Selected topics from: VLSI complexity for parallel algorithms, compiling techniques for parallel and vector machines, large MIMD machines, interconnection networks, reconfigurable systems, memory hierarchies in multiprocessors,

algorithmically specialized processors, data flow architectures. Prerequisite: CSE 548 or permission of instructor.

CSE 550 Computer Systems (4) Explores computer system design, implementation, and evaluation. Covers principles, techniques, and examples related to the construction of computer systems, including concepts that span network systems, operating systems, web servers, parallel computing, and databases. Prerequisite: CSE 451.

CSE 551 Operating Systems (4) Operating system design and construction techniques. Concurrent programming, operating system kernels, correctness, deadlock, protection, transaction processing, design methodologies, comparative structure of different kinds of operating systems, and other topics. Prerequisite: CSE 451.

CSE 552 Distributed and Parallel Systems (4) Principles, techniques, and examples related to the design, implementation, and analysis of distributed and parallel computer systems. Prerequisite: CSE 551.

CSE 553 Real-Time Systems (4) Design and construction of software for real-time computer systems. Software architectures. Requirements and specification methods. Scheduling algorithms and timing analysis. Real-time operating systems. Real-time programming languages. Selected case studies. Prerequisite: CSE 451.

CSE 556 Computational Fabrication (4) Overview of the computational tools and concepts used throughout the modern pipeline for computational fabrication, including topics such as hardware abstraction languages, geometry processing fundamentals, physics-based simulation, optimization techniques, data-driven design methods, and algorithms for high-performance interactive applications.

CSE 557 Computer Graphics (4) Introduction to image synthesis and computer modeling, emphasizing the underlying theory required for undertaking computer graphics research. Topics include color theory, image processing, affine and projective geometry, hidden-surface determination, photorealistic image synthesis, advanced curve and surface design, dynamics, realistic character

animation. Prerequisite: solid knowledge of linear algebra.

CSE 558 Special Topics in Computer Graphics (4)

Advanced topics in computer graphics not treated in CSE 557. Topics vary from year to year but typically include advanced aspects of image synthesis, animation, and 3D photography. Prerequisite: CSE 557 or permission of instructor.

CSE 561 Computer Communication and Networks (4)

Fundamentals of data transmission: coding, message formats, and protocols. Organization of computer networks. Examples of network implementations. Prerequisite: either CSE 451 or equivalent.

CSE 564 Computer Security and Privacy (4)

Examines the fundamentals of computer security including: human factors; attack detection, measurements, and models; cryptography and communications security; system design and implementation; and side channels.

CSE 567 Principles of Digital Systems Design (4)

Principles of logic design, combinational and sequential circuits, minimization techniques, structured design methods, CMOS technology, complementary and ratioed gates, delay estimation and performance analysis, arithmetic circuits, memories, clocking methodologies, synthesis and simulation tools, VLSI processor architecture. Prerequisite: basic knowledge of logic design.

CSE 568 Introduction to VLSI Systems (4)

Introduction to CMOS technology and circuit design; combinational logic-design alternatives; register-design and system-clocking methodologies; datapath and subsystem design; VLSI system-design methodologies; CAD tools for synthesis, layout, simulation, and validation; design of a complex VLSI chip. Prerequisite: either CSE 567 or permission of instructor.

CSE 571 AI-based Mobile Robotics (4) Overview of mobile robot control and sensing. Behavior-based control, world modeling, localization, navigation, and planning Probabilistic sensor interpretation, Bayes filters, particle filters. Projects: Program real robots to perform navigation tasks. Prerequisite: either CSE 473 or permission of instructor.

CSE 573 Artificial Intelligence I (4) Intensive introduction to artificial intelligence: Problem solving and search, game playing, knowledge representation and reasoning, uncertainty, machine learning, natural language processing. Prerequisite: either CSE 421 or equivalent; exposure to logic, probability, and statistics.

CSE 574 Artificial Intelligence II (4) Advanced topics in artificial intelligence. Subjects include planning, natural language understanding, qualitative physics, machine learning, and formal models of time and action. Students are required to do projects. Prerequisite: CSE 573.

CSE 576 Computer Vision (3) Principles and methods for interpreting the three-dimensional world from images. Topics include feature detection, image segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: solid knowledge of linear algebra; good programming skills. Offered: jointly with E E 576.

CSE 577 Special Topics in Computer Vision (3) Topics vary and may include vision for graphics, probabilistic vision and learning, medical imaging, content-based image and video retrieval, robot vision, or 3D object recognition. Prerequisite: CSE 576/E E 576. Offered: jointly with E E 577.

CSE 578 Convex Optimization (4) Basics of convex analysis: Convex sets, functions, and optimization problems. Optimization theory: Least-squares, linear, quadratic, geometric and semidefinite programming. Convex modeling. Duality theory. Optimality and KKT conditions. Applications in signal processing, statistics, machine learning, control communications, and design of engineering systems. Prerequisite: A A 510, CHEM E 510, E E 510, or M E 510. Offered: jointly with A A 578/E E 578/M E 578; W.

CSE 579 Intelligent Control through Learning and Optimization (3) Design or near-optimal controllers for complex dynamical systems, using analytical techniques, machine learning, and optimization. Topics from deterministic and stochastic optimal control, reinforcement learning and dynamic programming, numerical optimization in the context of control, and robotics. Prerequisite: vector

calculus; linear algebra; MATLAB. Offered: jointly with AMATH 571.

CSE 583 Software Development for Data Scientists

(4) Provides students outside of CSE with a practical knowledge of software development that is sufficient to do graduate work in their discipline. Modules include Python basics, software version control, software design, and using Python for machine learning and visualization.

CSE 586 Introduction to Synthetic Biology (3)

Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 523/E E 523/MOLENG 525.

CSE 587 Advanced Systems and Synthetic Biology

(3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with BIOEN 524/E E 524; Sp.

CSE 590 Research Seminar (*, max. 50) Several offerings each quarter, on topics of current interest.

CSE 591 Group Projects in Computer Science (1-3, max. 25) Focuses on specialized topics and research activities in computer science.

CSE 599 Special Topics in Computer Science (1-5, max. 30) Studies of emerging areas and specialized topics in computer science.

CSE 600 Independent Study or Research (*-)
Credit/no-credit only.

CSE 601 Internship (1-2, max. 12) CSE Internship practicum; integration of classroom theory with on-the-job training. Periods of full-time work alternate with periods of full-time study. Open only to

students who have been admitted to CSE Internship Program or by special permission of the Department. Credit/no-credit only. Offered: AWSpS.

CSE 700 Master's Thesis (*-) Credit/no-credit only.

CSE 800 Doctoral Dissertation (*-) Credit/no-credit only.

ACCELERATED MASTERS PROGRAM

CSE M 501 Introduction to Compiler Construction

(4) Fundamentals of compilers and interpreters; symbol tables; lexical analysis, syntax analysis, semantic analysis, code generation, and optimizations for general purpose programming languages. Cannot be taken for credit if credit received for CSE 401. Prerequisite: CSE 332; CSE 351.

CSE M 544 Database Systems (4)

Relational data model and SQL query language. Conceptual modeling; normal forms; XML. Transactions: recovery and concurrency control. Implementation of a database system. Application project using a relational database system. Study of database research papers. May not be taken for credit if student has taken CSE 444. Prerequisite: CSE 332; CSE 344.

CSE M 547 Natural Language Processing (4)

Methods for designing systems that usefully and/or intelligently process natural language text data. Language models, text categorization, syntactic and semantic analysis, machine translation. Emphasizes algorithms and data-driven methods. Prerequisite: CSE 312 and CSE 332. Cannot be taken for credit if credit received for CSE 447; recommended: MATH 308 ; CSE 446 is recommended before or concurrently.

CSE M 552 Introduction to Distributed Systems (4)

Covers abstractions and implementation techniques in the construction of distributed systems, including cloud computing, distributed storage systems, and distributed caches. Prerequisite: CSE 451

CSE M 584 Computer Security (4)

Explores foundations and new directions in computer security and privacy, including: risk analysis, system security, applied cryptography, human-computer interaction, design and implementation issues, anonymity, web

security, and side channels. Studies security and privacy research papers. Prerequisite: CSE 351; either CSE 451 or CSE 461.

DATA SCIENCE

CSE D 514 Data Management for Data Science (5)

Introduces database management systems and techniques that use such systems; data models, query languages, database tuning and optimization, data warehousing, and parallel processing. Intended for professional students and non-CSE-majors. Offered: jointly with DATA 514.

CSE D 515 Software Design for Data Science (5)

Introduces software design and engineering practices and concepts, including version control, testing, and automatic build management. Intended for professional students and non-CSE-majors. Offered: jointly with DATA 515.

CSE D 516 Scalable Data Systems and Algorithms (5)

Principles and algorithms for data management and analysis at scale. Designs of traditional and modern big data systems and how to use those systems. Basics of cloud computing. Prerequisite: CSE D/DATA 514 and CSE D/DATA 515 or permission of instructor. Offered: jointly with DATA 516; A.

PROFESSIONAL MASTERS PROGRAM

CSE P 501 Compiler Construction (4) Principles and practice of building efficient implementations of modern programming languages. Lexical, syntactic, and semantic analysis of programs. Intermediate program representations. Intra- and interprocedural analysis and optimization. Run-time system techniques. Related programming environment facilities such as source-level debuggers and profilers.

CSE P 503 Principles of Software Engineering (4)

Study of major developments in software engineering over the past three decades. Topics may include design (information hiding, layering, open implementations), requirements specification (informal and formal approaches), quality assurance (testing, verification and analysis, inspections), reverse and re-engineering (tools, models, approaches).

CSE P 504 Advanced Topics in Software Systems (4)

Topics include software architecture, software tools, programming language analysis, type systems, formal reasoning, and other pertinent topics in software engineering and programming languages research.

CSE P 505 Programming Languages (4)

A study of non-imperative programming paradigms such as functional, object-oriented, logic, and constraint programming. Programming language semantics and type theory.

CSE P 510 Human Computer Interaction (4)

Topics in human-computer interaction, including tools and skills for user interface design, user interface software architecture, rapid prototyping and iterative design, safety and critical systems, evaluation techniques, and computer supported cooperative work.

CSE P 517 Natural Language Processing (4)

Provides an overview of modern approaches for natural language processing. Topics include language models, text classification, tagging, parsing, machine translation, semantics, and discourse analysis.

CSE P 521 Applied Algorithms (4) Principles of design of efficient algorithms with emphasis on algorithms with real world applications. Examples drawn from computational geometry, biology, scientific computation, image processing, combinatorial optimization, cryptography, and operations research.

CSE P 524 Parallel Computation (4) Survey of parallel computing including the processing modes of pipelining, data parallelism, thread parallelism, and task parallelism; algorithmic implications of memory models; shared memory and message passing; hardware implementations; bandwidth and latency; synchronization, consistency, interprocessor communication; programming issues including implicit and explicit parallelism, locality, portability.

CSE P 527 Computational Biology (4) Introduction to the use of computational methods for understanding biological systems at the molecular level. Problem areas such as mapping and sequencing, sequence analysis, structure prediction, phylogenetic inference, motif discovery, expression analysis, and regulatory analysis. Techniques such as dynamic programming,

Markov models, MCMC, expectation-maximization, and local search.

CSE P 531 Computability and Complexity Theory (4)

Survey of the theory of computation including Turing Machines, Church's Thesis, computability, incompleteness, undecidability, complexity classes, problem reductions, Cook's theorem, NP-completeness, randomized computation, cryptography, parallel computation, and space complexity. Some emphasis placed on historical and philosophical aspects of the theory of computation.

CSE P 544 Database Management System (4)

Introduction to the principles of database management systems. Topics include database system architecture, data models, theory of database design, query optimization, concurrency control, crash recovery, and storage strategies.

CSE P 545 Transaction Processing (4) Technology supporting reliable large-scale distributed computing, including transaction programming models, TP monitors, transactional communications, persistent queuing, software fault tolerance, concurrency control and recovery algorithms, distributed transactions, two-phase commit, data replication.

CSE P 546 Machine Learning (4) Methods for designing systems that learn from data and improve with experience. Supervised learning and predictive modeling; decision trees, rule induction, nearest neighbors, Bayesian methods, neural networks, support vector machines, and model ensembles. Unsupervised learning and clustering.

CSE P 548 Computer Architecture (4) Architecture of the single-chip microprocessor: instruction set design and processor implementation (pipelining, multiple issue, speculative execution) . Memory hierarchy: on-chip and off-chip caches, TLBs and their management, virtual memory from the hardware viewpoint. I/O devices and control: buses, disks, and RAIDs.

CSE P 551 Computer Operating Systems (4) A study of developments in operating systems from the 1960s to the present. Topics include operating system structure, protection, virtual memory, communication mechanisms, concurrency, lightweight threads, object-oriented systems,

distributed systems, and transaction support in operating systems.

CSE P 552 Distributed Systems (4) Principles, techniques, and examples related to the design, implementation, and analysis of distributed computer systems.

CSE P 557 Current Trends in Computer Graphics (4)

Introduction to computer image synthesis, modeling, and animation emphasizing the state-of-the-art algorithm applications. Topics may include visual perception, image processing, geometric transformations, hierarchical modeling, hidden-surface elimination, shading, ray-tracing, anti-aliasing, texture mapping, curves, surfaces, particle systems, dynamics, realistic character animation, and traditional animation principles.

CSE P 561 Network Systems (4) Current choices and challenges in network systems. Fundamental concepts combined with emphasis on evaluation of design/operations alternatives. Topics include alternative link, network, and transport-layer technologies, topologies, routing, congestion control multimedia, IPv6, ATM v. IP, network management and policy issues.

CSE P 564 Computer Security and Privacy (4)

Examines the fundamental of computer security including: human factors; attack detection, measurements, and models; cryptography and communications security; system design and implementation; and side channels.

CSE P 567 Design and Implementation of Digital Systems (4)

Overview of current implementation technologies for digital systems including custom integrated circuits, field-programmable logic, and embedded processors. Systems components such as buses and communications structures, interfaces, memory architectures, embedded systems, and application-specific devices. Focus on the design of large systems using modern CAD tools.

CSE P 573 Applications of Artificial Intelligence (4)

Introduction to the use of Artificial Intelligence tools and techniques in industrial and company settings. Topics include foundations (search, knowledge representation) and tools such as expert systems, natural language interfaces, and machine learning techniques.

CSE P 576 Computer Vision (4) Provides an overview of computer vision, emphasizing the middle ground between image processing and artificial intelligence. Image formation, pre-attentive image processing, boundary and region representations, and case studies of vision architectures.

CSE P 590 Special Topics in Computer Science (1-4, max. 20)

CSE P 595 Software Entrepreneurship (4) Provides an overview of the major elements of entrepreneurial activity in software, including market identification and analysis, evaluation and planning of the business, financing, typical operating and administrative problems, and alternatives for growth or sale.

CSE P 596 Business Basics Computer Science Professionals (4) Business principles relevant to the software industry in four areas: competitive strategy, finance, accounting, and human resources. Organized as a series of case studies and lectures. Progresses from an emphasis on tools to a more high-level look at competitive dynamics in high-tech industries.

CSE P 600 Independent Study or Research ([1-4]-)

ELECTRICAL AND COMPUTER ENGINEERING

E E 201 Computer Hardware Skills (1) QSR Robert B Darling An exclusively lab-based class focused on basic hands-on skills for electrical and computer engineers. Topics include soldering, PCB layout, basic microcontroller coding, 3D printing, use of basic test & measurement equipment, file management and version control. Prerequisite: CSE 142 or CSE 143, either of which may be taken concurrently. Offered: AWSp.

E E 205 Introduction to Signal Conditioning (4) QSR Introduces analog circuits interfacing sensors to digital systems. /includes connection, attenuation, amplification, sampling, filtering, termination, controls, Kirchhoff's Laws, sources, resistors, op amps, capacitors, inductors, PSice, and MATLAB. Intended for non-EE majors. Prerequisite: either MATH 126 or MATH 136; PHYS 122. Offered: W.

E E 215 Fundamentals of Electrical Engineering (4) NW Introduction to electrical engineering. Basic circuit and systems concepts. Mathematical models of components. Kirchhoff's laws. Resistors, sources, capacitors, inductors, and operational amplifiers. Solution of first and second order linear differential equations associated with basic circuit forms. Prerequisite: either MATH 136, or MATH 126 and either MATH 307 or AMATH 351, either of which may be taken concurrently; PHYS 122. Offered: AWSpS.

E E 233 Circuit Theory (5) Electric circuit theory. Analysis of circuits with sinusoidal signals. Phasors, system functions, and complex frequency. Frequency response. Computer analysis of electrical circuits. Power and energy. Two port network theory. Laboratory in basic electrical engineering topics. Prerequisite: E E 215. Offered: AWSpS.

E E 235 Continuous Time Linear Systems (5) Introduction to continuous time signal analysis. Basic signals including impulses, pulses, and unit steps. Periodic signals. Convolution of signals. Fourier series and transforms in discrete and continuous time. Computer laboratory. Prerequisite: either MATH 136, MATH 307, or AMATH 351, any of which may be taken concurrently; PHYS 122; either CSE 142 or CSE 143, either of which may be taken concurrently. Offered: AWSp.

E E 271 Digital Circuits and Systems (5) Overview of digital computer systems. Covers logic, Boolean algebra, combinational and sequential circuits and logic design; programmable logic devices; and the design and operation of digital computers, including ALU, memory, and I/O. Weekly laboratories. No credit if CSE 369 has been taken. Prerequisite: either CSE 142 or CSE 143. Offered: AWSpS.

E E 299 Introductory Topics in Electrical Engineering (1-5, max. 10) NW New and experimental approaches to basic electrical engineering. May include design and construction projects.

E E 321 Computing Fundamentals (4) QSR Covers the theoretical and mathematical foundations of computation. Logic, set theory, induction, and algebraic structures with applications to computing; models of computation; limits of computability; P, NP, and NP-Complete. Prerequisite: either MATH 126 or MATH 136; and CSE 143. Offered: AW.

E E 331 Devices and Circuits I (5) Physics, characteristics, applications, analysis, and design of circuits using semiconductor diodes and field-effect transistors with an emphasis on large-signal behavior and digital logic circuits. Classroom concepts are reinforced through laboratory experiments and design exercises. Prerequisite: 1.0 in E E 233. Offered: AWSpS.

E E 332 Devices and Circuits II (5) Characteristics of bipolar transistors, large- and small- signal models for bipolar and field effect transistors, linear circuit applications, including low and high frequency analysis of differential amplifiers, current sources, gain stages and output stages, internal circuitry of op-amps, op-amp configurations, op-amp stability and compensation. Weekly laboratory. Prerequisite: 1.0 in E E 331. Offered: ASp.

E E 341 Discrete Time Linear Systems (5) Discrete time signals and systems, impulse response, convolution, Z-transforms, discrete time Fourier analysis. Computer laboratory. Prerequisite: 1.0 in E E 235. Offered: WSpS.

E E 351 Energy Systems (5) Develops understanding of modern energy systems through theory and analysis of the system and its components. Discussions of generation, transmission, and utilization are complemented by environmental and energy resources topics as well as electromechanical conversion, power electronics, electric safety, renewable energy, and electricity blackouts. Prerequisite: 1.0 in E E 233. Offered: ASp.

E E 361 Applied Electromagnetics (5) Introductory electromagnetic field theory and Maxwell's equations in integral and differential forms; uniform plane waves in linear media; boundary conditions and reflection and transmission of waves; guided waves; transmission lines and Smith chart; electrostatics. Prerequisite: 1.0 in E E 233; MATH 324; PHYS 123. Offered: AW.

E E 371 Design of Digital Circuits and Systems (5) Provides a theoretical background in, and practical experience with, tools, and techniques for modeling complex digital systems with the Verilog hardware description language, maintaining signal integrity, managing power consumption, and ensuring robust intra- and inter-system communication. Prerequisite:

either E E 205 or E E 215; either E E 271 or CSE 369. Offered: jointly with CSE 371.

E E 393 Advanced Technical Communication (4) *Christine Pinto, Penny Hinke* Practical skills for day-to-day engineering communication as well as an advanced exploration of how to prepare persuasive documents and presentations for technical and non-technical audiences. Prerequisite: either ENGR 231 or HCDE 231. Offered: AWSp.

E E 398 Introduction to Professional Issues (1) Covers topics of interest to students planning their educational and professional path, including salaries, the value of advanced degrees, societal expectations of engineering professionals, the corporate enterprise, ethical dilemmas, patents and trade secrets, outsourcing, and the global market. Offered: AWSp.

E E 399 Special Topics in Electrical Engineering (1-5, max. 10) New and experimental approaches to current electrical engineering problems. May include design and construction projects.

E E 400 Advanced Topics in Electrical Engineering (1-5, max. 10) Contemporary topics at the advanced undergraduate elective level. Faculty presents advanced elective topics not included in the established curriculum.

E E 406 Teaching Engineering (3) Explores effective teaching techniques in engineering and related STEM fields. Topics include how students learn in college, active learning, problem-based learning, student evaluations of teaching, and teacher-student interactions

E E 414 Engineering Innovation in Health (4) *Eric J. Seibel, Jonathan D Posner* Introduces the role of Innovation and engineering in the design of medical devices and healthcare technologies, applicable both to medical practice and healthcare-focused engineering. May serve as the first course in a medically related senior design project sequence. Discusses medical practice, clinical needs finding, FDA regulation, insurance reimbursement, intellectual property, and the medical device design process. Offered: jointly with M E 414; A.

E E 416 Random Signals for Communications and Signal Processing (4) Probability and random

processes in communications. Random variables, distributions, and expectation. Statistical filter design for detection and estimation. Prerequisite: E E 341; either STAT 390 or IND E 315. Offered: A.

E E 417 Modern Wireless Communications (4)

Introduction to wireless networks as an application of basic communication theorems. Examines modulation techniques for digital communications, signal space, optimum receiver design, error performance, error control coding for high reliability, multipath fading and its effects, RF link budget analysis, WiFi and Wimax systems. Prerequisite: E E 416 Offered: W.

E E 418 Network Security and Cryptography (3)

Fundamental principles of cryptography and its application to network and communication security. An introduction to the fundamental tools in cryptography and the protocols that enable its application to network and communication security. Prerequisite: MATH 308; either MATH 390, STAT 390, or IND E 315. Offered: A.

E E 419 Introduction to Computer-Communication Networks (4)

Sumit Roy Computer network architectures and protocols. OSI Layers and performance analysis. Transmission media, switching, multiple access arbitration. Network routing, congestion control, flow control. Transport protocols, real-time, multicast, network security. Prerequisite: CSE 143; either STAT 390, STAT 391, or IND E 315. Offered: Sp.

E E 420 Design in Communications (4)

Design projects in communications. Frequent projects solved by student teams. Reports and presentations. Prerequisite: 1.0 in E E 417 which may be taken concurrently. Offered: Sp.

E E 421 Quantum Mechanics for Engineers (3)

M. Anantram Covers the basic theory of quantum mechanics in the context of modern examples of technological importance involving 1D, 2D, and 3D nanomaterials. Develops a qualitative and quantitative understanding of the principles of quantization, band structure, density of states, and Fermi's golden rule (optical absorption, electron-impurity/phonon scattering). Prerequisite: MATH 307 or AMATH 351; recommended: Calculus through differential equations. Offered: W.

E E 423 Introduction to Synthetic Biology (3)

Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136, MATH 307, or AMATH 351; and either MATH 308, AMATH 352, or CSE 311 Offered: jointly with BIOEN 423/CSE 486; A.

E E 424 Advanced Systems and Synthetic Biology (3)

H. Kueh Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with BIOEN 424/CSE 487; Sp.

E E 425 Laboratory Methods in Synthetic Biology (4)

Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with BIOEN 425/CSE 488; W.

E E 433 Analog Circuit Design (5)

Design of analog circuits and systems applying modern integrated circuit technology: operational amplifiers, differential amplifiers, active filters, voltage references and regulators. Prerequisite: 1.0 in E E 332. Offered: A.

E E 436 Medical Instrumentation (4)

Introductory course in the application of instrumentation to medicine. Topics include transducers, signal-conditioning amplifiers, electrodes and electrochemistry, ultrasound systems, electrical safety, and the design of clinical electronics. Laboratory included. For upper-division and first-year graduate students preparing for careers in bioengineering - both research and industrial. Prerequisite: E E 332. Offered: Sp.

E E 437 Integrated Systems Capstone (5) *J. Rudell*
Team-based design experience to develop integrated electronic systems by constructing and validating, prototype integrated circuits (IC) and sensors using modern Computer Aided Design (CAD) tools. Systems are simulated using modern semiconductor, MEMs and nanophotonic technologies. Teams define requirements; investigate tradeoffs in performance, cost, power and size; design for both reliability and testability. Prerequisite: E E 331; E E 433; E E 473
Offered: Sp.

E E 438 Instrumentation Design Project Capstone (5) *R. DARLING* Team-based design for developing an electronic instrumentation system and constructing and validating a prototype using modern printed circuit board technology. Teams develop design requirements; investigate tradeoffs for miniaturization, integration, performance, and cost; and consider use cases, failure modes, manufacturability, and testability. Includes extensive laboratory. Prerequisite: either E E 433 or E E 436.
Offered: Sp.

E E 440 Introduction to Digital Imaging Systems (4)
Image representation and standards, visual perception and color spaces, spatial domain image filtering and enhancement, image restoration, image transforms, image and video coding, image geometrical transformation and camera modeling. Prerequisite: E E 341. Offered: A.

E E 442 Digital Signals and Filtering (3) Methods and techniques for digital signal processing. Review of sampling theorems, A/D and D/A converters. Demodulation by quadrature sampling. Z-transform methods, system functions, linear shift-invariant systems, difference equations. Signal flow graphs for digital networks, canonical forms. Design of digital filters, practical considerations, IIR and FIR filters. Digital Fourier transforms and FFT techniques. Prerequisite: 1.0 in E E 341. Offered: W.

E E 443 Design and Application of Digital Signal Processing (5) Application of learned theories/algorithms and available computer technologies to modern image and speech processing problems. Two-dimensional signals and systems. Image transform, enhancement, restoration, coding. Characteristics of speech signals, linear predictive coding (LPC) of speech, pitch detection, and LPC speech synthesis, speech

recognition, hardware designs for signal processing. Prerequisite: 1.0 in E E 442. Offered: Sp.

E E 447 Control System Analysis I (4) Linear Servomechanism theory and design principles. Pole-zero analysis, stability of feedback systems by root locus and real-frequency response methods. Design methods of Bode and Nichols. Introduction to advanced topics in automatic control theory, state variable methods. Prerequisite: E E 233; E E 235; MATH 308. Offered: A.

E E 448 Systems, Controls, and Robotics Capstone (4-) In-depth control engineering design experience in small design teams. Includes project planning and management, reporting, and technical communication. Student teams design, implement, test, and report on their project results, Includes lectures on selected topics, e.g., project management, intellectual property, and some control engineering topics. Prerequisite: E E 447. Offered: W.

E E 449 Systems, Controls, and Robotics Capstone (-4) In-depth control engineering design experience in small design teams. Includes project planning and management, reporting, and technical communication. Student teams design, implement, test, and report on their project results, Includes lectures on selected topics, e.g., project management, intellectual property, and some control engineering topics. Prerequisite: E E 448. Offered: Sp.

E E 451 Wind Energy (4) Covers the operation and modeling of wind energy, wind statistics, wind generators and converters, wind energy systems, challenges to wind energy development, impacts of wind energy on the power grid, and existing and potential solutions to wind energy integration. Prerequisite: E E 351. Offered: Sp, odd years.

E E 452 Power Electronics Design (5) Electronic conversion and control of electrical power. Includes semiconductor switching devices, power converter circuits, design of magnetics, and control of power converters. Also ac/ac, ac/dc, and dc/dc power converters; circuit simulation; extensive laboratory work; a four-week power converter design project. Prerequisite: 1.0 in E E 331; 1.0 in E E 351. Offered: A.

E E 453 Electric Drives (5) Elements of drive systems, speed-torque characteristics of electric motors and industrial loads, solid-state converter. Starting and braking methods of loaded motors. Speed control of electric motors. Solid-state drives. Transient analysis of loaded motors. Special forms of individual- and multimotor drives. Prerequisite: a minimum grade of 1.0 in E E 452; and a minimum grade of 1.0 in E E 458.

E E 454 Power System Analysis (4) Introduction to methods of analyzing power systems. Includes symmetrical components, calculation of line parameters, representation of transmission lines and power components, and power flow control. Prerequisite: 1.0 in E E 351. Offered: A.

E E 455 Power System Dynamics and Protection (4) Analysis of symmetrical and unsymmetrical power systems' networks, fault analysis, and stability studies. Prerequisite: 1.0 in E E 351. Offered: W.

E E 456 Computer-Aided Design in Power Systems (4) Design-oriented course in power system engineering. Students are assigned a project concerning system operation and planning, steady-state and dynamic behaviors of power systems, or distribution systems. Each involves formulation of design criteria, development of approach, application of existing software. Prerequisite: either 1.0 in E E 454 or 1.0 in E E 455. Offered: Sp.

E E 457 Electric Energy Distribution Systems (4) Introduction to electric utility distribution systems. Primary and secondary network analysis and design, distribution substation problems, distribution transformers, capacitor application, overcurrent and overvoltage protection. System planning and reliability. Prerequisite: 1.0 in E E 351. Offered: W.

E E 458 Power Electronics Controls (5) *Brian Johnson* Theory, design, and analysis of closed-loop controllers for power electronics circuits. Emphasis will be placed on modern control methods using digital control. Prerequisite: E E 447 and E E 452; recommended: circuits; control systems; and power electronics. Offered: W.

E E 460 Neural Engineering (3) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Introduces the field of Neural Engineering: overview of neurobiology, recording and stimulating the nervous system, signal

processing, machine learning, powering and communicating with neural devices, invasive and non-invasive brain-machine interfaces, spinal interfaces, smart prostheses, deep-brain stimulators, cochlear implants and neuroethics. Heavy emphasis on primary literature. Prerequisite: either BIOL 130, BIOL 162, or BIOL 220; and one of the following: MATH 308, AMATH 301, or AMATH 352. Offered: jointly with BIOEN 460; A.

E E 461 Neural Engineering Tech Studio (4) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Neural engineering design and translational engineering. Groups design, build and present a neural engineering prototype project to a panel of industry judges. Prerequisite: BIOEN 460/E E 460. Offered: jointly with BIOEN 461.

E E 462 Electromagnetics I: Microwave Engineering (4) Covers microwave transmission line models and their applications; electromagnetic waves in layered media; mode structures in metallic and dielectric waveguides; resonators and cavities; and Green's functions. Prerequisite: minimum grade of 1.0 in E E 361. Offered: A.

E E 463 Microwave Electronic Design (4) Design of microwave circuits using S-parameter techniques. Measurement techniques, CAD of microwave systems. Includes design, fabrication, and evaluation of a microwave amplifier. Prerequisite: E E 361; E E 332, which may be taken concurrently. Offered: W.

E E 464 Antennas: Analysis and Design (4) Fundamentals of antennas, analysis, synthesis, and computer-aided design, and applications in communications, remote sensing, and radars. Radiation pattern, directivity, impedance, wire antennas, arrays, numerical methods for analysis, horn antennas, microstrip antennas, and reflector antennas. Prerequisite: 1.0 in E E 361. Offered: Sp.

E E 466 Neural Computation and Engineering Laboratory (3) *NW Amy Orsborn* Introduces neural recording and quantitative analysis techniques to students with a background in quantitative methods. Prerequisite: Either AMATH 342, BIOL 162, or BIOL 220; and one of the following: MATH 308, AMATH 301, or AMATH 352. Offered: jointly with BIOEN 466.

E E 468 Computer, Network, and Embedded Security (4) *QSR Raadhakrishnan Poovendran*

Fundamental principles of software and embedded system security and their application to network, web, and embedded systems. Introduction to the practical tools used for software security, cryptography, and protocols that enable its application to network and system security. Prerequisite: E E 205 or E E 215; CSE 373; CSE 374. Offered: W.

E E 469 Computer Architecture I (5) Introduction to computer architecture. Assembly and machine language, microprocessor organization including control and datapath. Computer arithmetic. Memory systems and caching. Performance modeling of microprocessors. Prerequisite: either E E 271 or CSE 369; CSE 143 Offered: jointly with CSE 469; AWSp.

E E 470 Computer Architecture II (4) Advanced computer architecture. Performance evaluation and energy efficiency. Instruction set architectures. Instruction-level parallelism. Modern microprocessor micro-architecture. Thread-level parallelism. Cache coherency and memory consistency in shared-memory multiprocessors. Memory hierarchy. GPU architecture. Warehouse-scale computing. Trends in computer design. Prerequisite: either CSE 469 or E E 469. Offered: jointly with CSE 470.

E E 472 Real-Time and Embedded Operating Systems (4) QSR Software-intensive course in modern operating systems, with a focus on real-time (RT) and embedded applications. Covers a range of topics from the classical OS concepts to RT operating systems, including the OS kernel--process and task abstraction, scheduling, concurrency, memory management, file systems and IOs, RTOS, and case studies of RTOS programming for Bluetooth or IoT networking. Prerequisite: CSE 373 and CSE 374. Offered: Sp.

E E 473 Linear Integrated Circuits (5) Design of linear integrated circuits applying modern MOS and BJT integrated circuit technologies: single-stage amplifiers; current-mirror DC bias and active load circuits; stability and frequency compensation of single-stage and two-stage operational amplifiers; output stages; current and voltage reference circuits. Prerequisite: 1.0 in E E 332. Offered: W.

E E 474 Introduction to Embedded Systems (4) Introduces the specification, design, development, and test of real time embedded system software.

Use of a modern embedded microcomputer or microcontroller as a target environment for a series of laboratory projects and a comprehensive final project. Prerequisite: CSE 143. Offered: jointly with CSE 474; AWSpS.

E E 475 Embedded Systems Capstone (5) Capstone design experience. Prototype a substantial project mixing hardware, software, and communications. Focuses on embedded processors, programmable logic devices, and emerging platforms for the development of digital systems. Provides a comprehensive experience in specification, design, and management of contemporary embedded systems. Prerequisite: either E E 271 or CSE 369; either CSE 466, E E 472, or CSE 474/E E 474. Offered: jointly with CSE 475; AWSp.

E E 476 Introduction to Very Large-Scale Integrated Design (5) *Visvesh S Sathe* Breadth-first introduction to digital VLSI design. Integrated CMOS logic design. CMOS logic delay and power analysis. Introduction to IC- mask-layout, gate-sizing, VLSI building blocks (adders, multipliers, counters, shifters etc.) , design for testability, and memory. Projects involve some layout design, and mostly transistor and gate-level schematic design. Prerequisite: E E 215; and either E E 271 or CSE 369; recommended: basic circuit theory and basic digital design experience. Offered: A.

E E 477 VLSI II (5) Provides a fairly deep understanding of how IC-based memory and datapath blocks are designed using static and dynamic CMOS technologies. Gives students extensive experience with industry-standard computer-aided design tools, including Cadence (Virtuoso, DRC, LVS) and Avanti (Hspice) . Credit not allowed for both E E 477 and E E 525. Prerequisite: either E E 371/CSE 371, or E E 469/CSE 469. Offered: W.

E E 478 Capstone Integrated Digital Design Projects (5) *Visvesh Sathe* VLSI-capstone course. A more detailed examination of building high-performance or low-energy integrated circuits. Wire design, timing-elements, clock generation, distribution and control, dynamic-logic, low-power design. Cannot be taken for credit if credit received for E E 526. Prerequisite: E E 331; E E 332; E E 476; and E E 477; recommended: introduction to VLSI design and knowledge of ASIC design flows. Offered: Sp.

E E 479 High-Performance Graphics Processing Unit Computing (4) QSR *Jeffrey A Bilmes* Introduction to high performance computing (HPC) and graphics processing units (GPUs). GPU based systems, microarchitectures, memory hierarchies, programming models, and general strategies to harness their computational power. Prerequisite: CSE 373 and CSE 374. Offered: A.

E E 482 Semiconductor Devices (4) Fundamentals of state-of-the-art semiconductor devices and emerging semiconductor technologies including diodes, LEDs, solar cells, photodetectors, MOS field-effect transistors, power transistors, and nanoscale devices. In-depth analysis of devices using carrier diffusion, drift, effective mass, and density of states. Prerequisite: E E 331. Offered: A.

E E 484 Sensors and Sensor Systems (4) Introduction to optical and solid-state chemical and physical sensors. Topics include transduction mechanisms, design parameters, fabrication methods and applications. Prerequisite: E E 331. Offered: Sp.

E E 485 Introduction to Photonics (4) Introduction to optical principles and phenomena. Topics include electromagnetic theory of light, optical interference, diffraction, polarization, optical waveguides, and optical fibers. Prerequisite: E E 361. Offered: A.

E E 486 Fundamentals of Integrated Circuit Technology (3) Processing physics, chemistry, and technology, including evaporation, sputtering, epitaxial growth, diffusion, ion implantation, laser annealing, oxidation, chemical vapor deposition, photoresists. Design considerations for bipolar and MOS devices, materials and process characterization. Future trends. Prerequisite: EE 331 or MSE 351. Offered: jointly with MSE 486; AW.

E E 490 Reading and Research (1-5, max. 25) Reading and research in the field under supervision of an E E faculty member. Credit/no-credit only.

E E 491 Undergraduate Seminar (1, max. 2) Weekly seminars on current topics in electrical engineering. Credit/no-credit only.

E E 492 Electrical Engineering Leadership Seminar (1) Weekly seminar with program alumni presenting their workforce experience, demonstrating the

depth and breadth possible in the field and best practices. Credit/no-credit only. Offered: W.

E E 496 Engineering Entrepreneurial Systems and Design (2) *P. ARABSHAHI, J. SAHR* Fundamentals of systems engineering methods, system life cycle, project management and scheduling, trade studies, risk mitigation, configuration management, budgeting, procurement, prototyping, technical reviews, and associated tools; startup life cycle, intellectual property, trade secrets, patents, startup financing, incorporation, business plan, market research, roles of officers. Offered: A.

E E 497 Engineering Entrepreneurial Capstone (4-) Completion of an industry-motivated and mentored engineering project to develop design skills. Overseen by UW Faculty and guided by practicing engineers sponsored by industry. Emphasizes cross-disciplinary teamwork. Offered: W.

E E 498 Engineering Entrepreneurial Capstone (-4) Completion of an industry-motivated and mentored engineering project to develop design skills. Overseen by UW Faculty and guided by practicing engineers sponsored by industry. Emphasizes cross-disciplinary teamwork. Prerequisite: E E 497. Offered: Sp.

E E 499 Undergraduate Research and Special Projects (1-5, max. 10) Undergraduate research or design project carried out under the supervision of a faculty sponsor.

E E 500 Graduate Seminar (1, max. 9) Weekly seminars on current topics in electrical engineering. More than one section may be offered in a given quarter. Credit/no-credit only.

E E 501 Academic Writing (4) *A. Mamishev* Develops formal technical writing skills for graduate engineering students. Covers organization and structure of archival papers, theses, reports, and proposals; concise technical language; terminology; literature search; peer review process; analysis of grammatical and stylistic errors; organization of multi-authored writing and implementation of figures, equations, and citations. Offered: Sp.

E E 503 Modeling of MEMS (4) Microelectro mechanical systems (MEMS) including lumped modeling, conjugate power variables, electrostatic

and magnetic actuators, linear transducers, linear system dynamics, design optimization, and thermal analysis. Numerical modeling topics include electro (quasi) static, mechanical, electro mechanical, magneto (quasi) static, and fluidic phenomena; parametric analysis, visualization of multi-dimensional solutions; and verification of results.

E E 504 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Cannot be taken for credit if credit received for EE P 504. Offered: jointly with M E 504/MSE 504.

E E 505 Probability and Random Processes (4) Foundations for the engineering analysis of random processes: set theoretic fundamentals, basic axioms of probability models, conditional probabilities and independence, discrete and continuous random variables, multiple random variables, sequences of random variables, limit theorems, models of stochastic processes, noise, stationarity and ergodicity, Gaussian processes, power spectral densities. Prerequisite: graduate standing and understanding of probability at the level of E E 416.

E E 506 Fundamentals of Wireless Communication (4) Fundamentals of wireless communications: signals, modulation, coding, channel estimation, fading channels; performance metrics. Prerequisite: E E 505.

E E 507 Advanced Wireless Systems (4) MIMO (Rate Multiplexing, Diversity, Beamforming) , Space-Time-Frequency Coding; Advanced Modulation, Equalization, Channel Estimation and Synchronization for 5G; Spread Spectrum. Prerequisite: E E 506. Offered: Sp, odd years.

E E 508 Stochastic Processes in Engineering (3) A. *GHATE* Non-measure theoretic introduction to stochastic processes. Topics include Poisson processes, renewal processes, Markov and semi-Markov processes, Brownian motion, and martingales, with applications to problems in queuing, supply chain management, signal processing, control, and communications.

Prerequisite: E E 505. Offered: jointly with IND E 508; W.

E E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces; projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with A A 510/CHEM E 510/M E 510.

E E 511 Introduction to Statistical Learning (4) Covers classification and estimation of vector observations, including both parametric and nonparametric approaches. Includes classification with likelihood functions and general discriminant functions, density estimation, supervised and unsupervised learning, feature reduction, model selection, and performance estimation. Prerequisite: either E E 505 or CSE 515.

E E 512 Graphical Models in Pattern Recognition (4) Bayesian networks, Markov random fields, factor graphs, Markov properties, standard models as graphical models, graph theory (e.g., moralization and triangulation) , probabilistic inference (including pearl's belief propagation, Hugin, and Shafer-Shenoy) , junction trees, dynamic Bayesian networks (including hidden Markov models) , learning new models, models in practice. Prerequisite: E E 508; E E 511.

E E 514 Information Theory I (4) Includes entropy, mutual information, Shannon's source coding theorem, data compression to entropy limit, method of types, Huffman coding, Kraft inequality, arithmetic coding, Kolmogorov complexity, communication at channel capacity (channel coding) , coding theory, introduction to modern statistical coding techniques, differential entropy, and Gaussian channels. Prerequisite: E E 505.

E E 515 Information Theory II (4) Includes advanced modern statistical coding techniques (statistical coding) , advanced codes and graphs, source coding with errors (rate distortion) , alternating minimization principles, channel coding with errors, network information theory, multiple description coding, and information theory in other areas including pattern recognition, bio-informatics,

natural language processing, and computer science.

Prerequisite: E E 514.

E E 516 Computer Speech Processing (4)

Introduction to automatic speech processing. Overview of human speech production and perception. Fundamental theory in speech coding, synthesis and reproduction, as well as system design methodologies. Advanced topics include speaker and language identification and adaptation. Prerequisite: E E 505; E E 518.

E E 517 Continuous-Space Language Processing (4)

Introduction to human language technology, with in-depth coverage of continuous-space statistical models of language and application to natural language processing tasks. Methods covered include low rank distributional representations, neural networks, and log bilinear statistical models, which are leveraged for language modeling, similarity scoring, classification, and translation/generation. Prerequisite: E E 505.

E E 518 Digital Signal Processing (4) Covers discrete-time processing of continuous-time signals; sampling rate conversion; frequency magnitude, phase delay, and group delay; design techniques for non-recursive (FIR) filters; multirate signal processing; all-pass/minimum phase decompositions; discrete Fourier transforms, fast Fourier transforms; overlap-add; short-time Fourier analysis; and filter banks. Includes applications such as machine learning. Prerequisite: E E 442; recommended: Cannot be taken for credit if credit received for EE P 518.

E E 519 Stochastic Analysis of Data From Physical Systems (4) Computer systems for acquisition and processing of stochastic signals. Calculation of typical descriptors of such random processes as correlation functions, spectral densities, probability densities. Interpretation of statistical measurements made on a variety of physical systems (e.g., electrical, mechanical, acoustic, nuclear) . Lecture plus laboratory. Prerequisite: E E 505.

E E 520 Spectral Analysis of Time Series (4)

Estimation of spectral densities for single and multiple time series. Nonparametric estimation of spectral density, cross-spectral density, and coherency for stationary time series, real and complex spectrum techniques. Bispectrum. Digital filtering techniques. Aliasing, prewhitening. Choice

of lag windows and data windows. Use of the fast Fourier transform. Prerequisite: one of STAT 342, STAT 390, STAT 481, STAT 509/CS&SS 509/ECON 580, or IND E 315. Offered: jointly with STAT 520.

E E 521 Quantum Mechanics for Engineers (4)

Covers the basic theory of quantum mechanics in the context of modern examples of technological importance involving 1D, 2D, and 3D nanomaterials. Develops a qualitative and quantitative understanding of the principles of quantization, band structure, density of states, and Fermi's golden rule (optical absorption, electron-impurity/phonon scattering) . Prerequisite: MATH 307 or AMATH 351.

E E 523 Introduction to Synthetic Biology (3)

Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 523/CSE 586/MOLENG 525.

E E 524 Advanced Systems and Synthetic Biology (3)

Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with BIOEN 524/CSE 587; Sp.

E E 525 VLSI II (5) Analyzes how IC-based memory and datapath blocks are designed using static and dynamic CMOS technologies. Gives students extensive experience with industry-standard computer-aided design tools, including Cadence (Virtuoso, DRC, LVS) and Avanti (Hspice) . Credit not allowed for both E E 477 and E E 525. Prerequisite: either E E 371/CSE 371, or E E 469/CSE 469.

E E 526 VLSI III (4) Ultra-high speed digital logical families based on output prediction logic; high-speed division; input and output pad design; state-of-the-art latch and flip-flop design; clock distribution, including PLLs and DLLs; noise considerations in high-

speed digital IC design. Prerequisite: E E 477 or E E 525.

E E 527 Microfabrication (4) Principles and techniques for the fabrication of microelectronics devices and integrated circuits. Includes clean room laboratory practices and chemical safety, photolithography, wet and dry etching, oxidation and diffusion, metallization and dielectric deposition, compressed gas systems, vacuum systems, thermal processing systems, plasma systems, and metrology. Extensive laboratory with limited enrollment. Recommended: Cannot be taken for credit if credit received for EE P 527.

E E 529 Semiconductor Optoelectronics (4) Covers optical processes in semiconductors; optical waveguide theory; junction theory; LEDs; lasers photodetectors; photovoltaics; and optical modulators and switches. Prerequisite: E E 485. Offered: jointly with MSE 529.

E E 530 Wavelets: Data Analysis, Algorithms, and Theory (3) Review of spectral analysis. Theory of continuous and discrete wavelets. Multiresolution analysis. Computation of discrete wavelet transform. Time-scale analysis. Wavelet packets. Statistical properties of wavelet signal extraction and smoothers. Estimation of wavelet variance. Prerequisite: some Fourier theory and linear algebra; MATH 390/STAT 390, ECON 481 or STAT 481, STAT 509/CS&SS 509/ECON 580, STAT 513, or IND E 315. Offered: jointly with STAT 530; Sp.

E E 531 Semiconductor Devices and Device Simulation (4) Physical principles in semiconductor devices. Generation, recombination, p-n junctions, MOS, metal-semiconductor and other interface structures. Carrier transport at low and high level injection levels. Device simulation used to demonstrate physical principles and basic device operation. Project using device simulation. Prerequisite: E E 482.

E E 534 Power Electronics (4) Detailed study of DC-to-AC inverters, pulse-width modulated and resonant DC-to-DC converter topologies; drive and protection circuits for efficient switching of semiconductor devices. Includes extensive computer-aided circuit simulation and power supply control.

E E 535 Applied Nanophotonics (4) *Arka Majumdar* Concepts of optics at wave-length, scale-structured medium. Topics include photonic crystal, dielectric and metallic optical resonators, and meta-photonic devices. Introduction to cavity quantum electrodynamics. Students learn about nanoscale photonic devices, via literature survey, problem solving and numerical simulations. Prerequisite: either E E 361, PHYS 321, or equivalent course or experience with nanophotonics. Offered: Sp.

E E 536 Design of Analog Integrated Circuits and Systems (4) Design of analog VLSI: specifications, design, simulation, layout. Covering CMOS and Bi CMOS technologies. Prerequisite: E E 433.

E E 537 Computation Methods for Circuit Analysis and Simulation (3) Introduction to numerical algorithms and computer-aided techniques for the simulation of electronic circuits. Theoretical and practical aspects of important analyses: large-signal nonlinear DC, small-signal AC, nonlinear transient, and large-signal steady-state. Simulation concepts applied to the modeling and characterization of various electronic devices.

E E 538 Topics in Electronic Circuit Design (1-5, max. 16) Topics of current interest in electronic circuit and system design. Course content varies from year to year, based on current professional interests of the faculty member in charge.

E E 539 Advanced Topics in Solid-State Electronics (1-5, max. 16) Lectures or discussions of topics of current interest in the field of solid-state electronics for advanced graduate students having adequate preparation in solid-state theory. Subject matter may vary according to the interests of students and faculty.

E E 541 Automatic Layout of Integrated Circuits (4) Examines the algorithms behind the following commonly used physical design automation tools: floorplanning, partitioning, placement, routing, compaction, and verification. Prerequisite: either E E 271 or CSE 370; CSE 143.

E E 542 Advanced Embedded Systems Design (5) Studies advanced embedded system design principles and practices. Emphasizes formal design methodologies such as hardware-software co-design, investigates techniques for performance

optimization, and examines distributed embedded systems. Prerequisite: E E 478.

E E 543 Models of Robot Manipulation (4)

Mathematical models of arbitrary articulated robotic (or biological) arms and their application to realistic arms and tasks, including the homogeneous coordinate model of positioning tasks, the forward and inverse kinematic models, the Jacobian Matrix, and the recursive Newton-Euler dynamic model. Prerequisite: linear algebra.

E E 546 Advanced Topics in Control System Theory (1-5, max. 16)

Topics of current interest in control system theory for advanced graduate students with adequate preparation in linear and nonlinear system theory. Prerequisite: permission of instructor. Offered when adequate enrollment develops prior to close of advance registration.

E E 547 Linear Systems Theory (4) Linearity, linearization, finite dimensionality, time-varying vs. time-invariant linear systems, interconnection of linear systems, functional/structural descriptions of linear systems, system zeros and invertibility, linear system stability, system norms, state transition, matrix exponentials, controllability and observability, realization theory. Cannot be taken for credit if credit received for EE P 547. Prerequisite: E E 510/A A 510/CHEM E 510/M E 510. Offered: jointly with A A 547.

E E 548 Linear Multivariable Control (3) Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 548/M E 548.

E E 549 Estimation and System Identification (3)

Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with A A 549/M E 549.

E E 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Offered: jointly with A A 550/M E 550.

E E 551 Wind Energy (4) Covers the operation and modeling of wind energy, wind statistics, wind generators and converters, wind energy systems, challenges to wind energy development, impacts of wind energy on the power grid, and existing and potential solutions to wind energy integration. Prerequisite: E E 351.

E E 552 Power Systems Dynamics and Control (4)

Advanced computer modeling and analysis of power systems. Application of modern systems and control theories. Prerequisite: E E 351 and E E 455.

E E 553 Power System Economics (4) Economic structure of power systems. Problem formulation, optimization methods and programming for economic analysis of power system operation and planning. Economic dispatch, load forecasting, unit commitment, interchange, planning and reliability analysis. Provides background to pursue advanced work in planning and operation. Cannot be taken for credit if credit received for EE P 553.

E E 554 Large Electric Energy Systems Analysis (4)

Deals with problems whose solution depends upon the inversion of sparse matrices that occur in the planning and operational studies of large interconnected energy systems. Application studies include system model development, state estimation, and load flow. Prerequisite: E E 456.

E E 556 Analyzing the Power Grid (4) Discusses the models of the various components of an electricity grid and how they are combined into a set of equations that can be used to analyze the grid under normal, steady state conditions, as well as to calculate fault currents and assess its transient stability.

E E 557 Dynamics of Controlled Systems (4) Explores control techniques for high precision motion control. Covers state variable feedback of linear and

nonlinear, multivariable systems in depth. Uses physical system modeling, graphical analysis, and numerical analysis to describe system performance. Uses simulation mini-projects to emphasize the dynamics of controlled systems and their performance.

E E 558 Substation and Distribution Automation (4)

Examines how smart grid technologies affect substation and distribution operations and how history, customer expectations, and state and federal policies have shaped the existing infrastructure. Studies the capabilities of various emerging technologies to assess how they are able to solve existing issues.

E E 559 Special Topics in Electrical Energy Systems (1-5, max. 16)

Topics of current interest in electrical power and energy devices and systems. Content varies from year to year, based on current professional interests of faculty member in charge.

E E 560 Neural Engineering (3) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Introduces the field of Neural Engineering: overview of neurobiology, recording and stimulating the nervous system, signal processing, machine learning, powering and communicating with neural devices, invasive and non-invasive brain-machine interfaces, spinal interfaces, smart prostheses, deep-brain stimulators, cochlear implants and neuroethics. Heavy emphasis on primary literature. Offered: jointly with BIOEN 560; A.

E E 561 Neural Engineering Tech Studio (4) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Neural engineering design and translational engineering. Groups design, build and present a neural engineering prototype project to a panel of industry judges. Prerequisite: BIOEN 560 Offered: jointly with BIOEN 561; W.

E E 562 Artificial Intelligence for Engineers (3)

Covers main areas of artificial intelligence (AI) without need for extensive prerequisites. Programming languages for AI; problem solving; representations; control strategies; searching strategies; predicate calculus; rule-based deduction; goal-directed planning; knowledge-based systems. Prerequisite: CSE 373.

E E 563 Submodular Functions, Optimization, and Applications (4) *J. Bilmes*

Submodularity and supermodularity. Definitions, properties, operations that preserve submodularity, variants, certain special submodular functions, computational properties, matroids and lattices, polyhedral properties, semidifferentials, convex/concave extensions, constrained and unconstrained minimization and maximization, and generalizations of submodularity and uses in machine learning. Prerequisite: E E 510/A A 510/CHEM E 510/M E 510. Offered: Sp, even years.

E E 564 Neural Computation and Engineering Laboratory (3) *Amy Orsborn*

Introduces neural recording and quantitative analysis techniques to students with a background in quantitative methods. Offered: jointly with BIOEN 566.

E E 565 Computer-Communication Networks I (4)

Network architectures and protocols; layered model; reliable transmission protocols at the data control layer; Transmission Control Protocols (TCP); routing algorithms; performance modeling, and analysis of packet-switched networks. Multi-access. Projects involving routing and multi-access principles. Prerequisite: E E 505.

E E 566 Computer-Communication Networks II (3)

Local area, metropolitan area, satellite, and packet radio networks; routing algorithms for wide area networks; optimal design of packet-switched networks; congestion and flow control; fast packet switching; gigabit networks. Prerequisite: E E 565.

E E 567 Mobile Networks (4)

Wireless communication networks: wireless channel abstractions, Multiple Access Methods in Cellular networks, Applications of queueing models to wireless MAC analysis: IEEE 802.11 WLANs, LTE (CSMA/CA and Scheduling). Co-Existence and Spectrum Sharing. Prerequisite: E E 506; E E 565.

E E 568 Digital Image Processing (4)

Digital image processing techniques and various special topics such as image restoration, image segmentation, multi-resolution imaging with wavelet transform, and image registration. Prerequisite: permission of instructor.

E E 571 High Frequency Circuits and Antennas: Computation of Fields and Waves (4) Planar

microstrip structures are high frequency circuits and antennas used in communication, aerospace and computer industries. Examines the computation of fields and waves in such structures. How to calculate circuit parameters and radiation characteristics. Structures studied include microstrip lines, coupled lines, antennas, resonators, and discontinuities. Prerequisite: either E E 482 or E E 572.

E E 572 Electromagnetics I: Microwave Engineering (4) Covers microwave transmission line models and their applications; electromagnetic waves in layered media; mode structures in metallic and dielectric waveguides; resonators and cavities; and Green's functions. Prerequisite: E E 361. Offered: A.

E E 573 Electromagnetics II (4) Covers Green's functions; radiation from apertures and beam waves; periodic structures and coupled-mode theory; dispersion and anisotropic media; antennas, apertures, and arrays; and scattering of waves by conducting and dielectric objects. Prerequisite: E E 572.

E E 574 Antennas: Analysis and Design (4) Covers fundamentals of antennas, analysis, synthesis, and computer-aided design; applications in communications, remote sensing, and radars; radiation pattern; directivity; impedance; wire antennas; arrays; numerical methods for analysis; horn antennas; microstrip antennas; and reflector antennas. Offered: Sp.

E E 575 Radar Remote Sensing (4) Introduces radar remote sensing. Covers the fundamentals of radar systems, monostatic and bistatic topologies, radar equation, range-time diagram; ambiguity function, pulse compression, elementary estimation and detection theory, spectrum estimation for underspread and overspread targets; interferometry, source imaging; and Time Difference of Arrival, Aperture Synthesis (SAR and ISAR) .

E E 576 Computer Vision (3) Principles and methods for interpreting the three-dimensional world from images. Topics include feature detection, image segmentation, motion estimation, image mosaics, 3D-shape reconstruction, object recognition, and image retrieval. Prerequisite: solid knowledge of linear algebra; good programming skills. Offered: jointly with CSE 576.

E E 577 Special Topics in Computer Vision (3) Topics vary and may include vision for graphics, probabilistic vision and learning, medical imaging, content-based image and video retrieval, robot vision, or 3D object recognition. Prerequisite: CSE 576/E E 576. Offered: jointly with CSE 577.

E E 578 Convex Optimization (4) Basics of convex analysis: Convex sets, functions, and optimization problems. Optimization theory: Least-squares, linear, quadratic, geometric and semidefinite programming. Convex modeling. Duality theory. Optimality and KKT conditions. Applications in signal processing, statistics, machine learning, control communications, and design of engineering systems. Prerequisite: A A 510, CHEM E 510, E E 510, or M E 510. Offered: jointly with A A 578/CSE 578/M E 578; W.

E E 579 Advanced Topics in Electromagnetics, Optics, and Acoustics (1-5, max. 16) Topics of current interest in electromagnetics, optics, and acoustics. Content varies from year to year, based on current professional interests of faculty member in charge.

E E 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems. Offered: jointly with A A 580/M E 580; Sp, even years.

E E 581 Digital Control System Design (4) *M. BERG* Digital control system design by classical methods. Discrete-time systems and the z-transform. Modeling sampled-data systems. Frequency response of discrete time systems and aliasing. Nyquist stability criterion and gain and phase margins. Discrete-time control law determination by direct z-plane root locus and loop shaping methods. Includes hands-on-with-hardware projects. Prerequisite: AA/EE 447 or ME 471. Offered: jointly with A A 581/M E 581; W.

E E 582 Introduction to Discrete Event Systems (3) Modeling DES with automata and Petri nets. Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with

uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets.
Prerequisite: A A 447/E E 447/ M E 471. Instructors: Berg
Offered: jointly with A A 582/M E 582; Sp, even years.

E E 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with A A 583/M E 583; A.

E E 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Offered: jointly with A A 585/M E 585.

E E 586 Digital Video Coding Systems (4) Introduction to digital video coding algorithms and systems. Theoretical and practical aspects of important topics on digital video coding algorithms, motion estimation, video coding standards, systems issues, and visual communications.

E E 587 Multimedia Compression and Networking (4) Addresses four major components of multimedia: 1) data compression of multimedia (e.g., speech, audio, image, and video) ; 2) quality of service (QoS) issues for data transmission over IP; 3) multimedia streaming and conferencing applications; and 4) intellectual property management and protection (IPMP) of multimedia contents. Co-requisite: E E 518.

E E 589 Advanced Topics in Sensors and Sensor Systems (3) Topics of current interest in sensors and sensor systems.

E E 590 Advanced Topics in Digital Computers (2-5, max. 16) Lectures or discussions of topics of current interest in the field of digital systems. Subject matter may vary from year to year.

E E 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics and control systems analysis and design. Topics presented by invited speakers as well as on-campus

speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/CHEM E 591/M E 591.

E E 593 Feedforward Control (3) Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actuators. Prerequisite: A A 547/E E 547/M E 547. Instructors: Devasia Offered: jointly with A A 593/M E 593; Sp, even years.

E E 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 594/M E 594; Sp, odd years.

E E 595 Advanced Topics in Communication Theory (1-5, max. 16) Extension of E E 507, E E 508, E E 518, E E 519, E E 520. Material differs each year, covering such topics as: detection theory, decision theory, game theory, adaptive communication systems, nonlinear random processes.

E E 596 Advanced Topics in Signal and Image Processing (2-5, max. 16) Topics of current interest in signal and image processing. Content may vary from offering to offering.

E E 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include network models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 597/M E 597.

E E 598 Special topics in Electrical Engineering (1-5, max. 16) Topics of current interest in non-traditional areas of electrical engineering. Offered: AWSpS.

E E 599 Special Projects in Electrical Engineering (1-5, max. 15) Prerequisite: permission of instructor.

E E 600 Independent Study or Research (*-)

E E 700 Master's Thesis (*-)

E E 800 Doctoral Dissertation (*-)

ENGINEERING

ENGR 100 Introduction to Engineering Design (5) I&S Introduction to design and communication principles through engineering project approach, stressing teamwork, design process, specialties and tools of engineering, creative and analytical thinking, professionalism and ethics, social, economic and political context, open-ended problems. Grading based on quality of engineering projects and presentation of design through written, oral, and graphical communication. Offered: AWSp.

ENGR 101 Engineering Exploration (1) Presentations and discussions on topics of current interest in engineering. Explores various areas of engineering research, engineering disciplines, and the relevance to today's students. Topics vary by quarter.

ENGR 102 Studying Engineering (1-3, max. 6) Intensive seminar focusing on topics relating to the successful study of engineering. Topics include an introduction to the university culture, learning skills development, engagement with critical resources, and an introduction to engineering disciplines and professions. Topics vary by quarter. Credit/no-credit only.

ENGR 105 Introduction to Engineering Design (3) Uses a hands-on approach to teach fundamental aspects of engineering and effective teamwork to help students explore their academic interests. Topics include basic programming, mechanics, circuitry, CAD modeling, and 3D printing. Students will learn the fundamentals of engineering in the classroom, build on those skills in weekly labs, and apply them to a quarter long project of their own.

ENGR 115 Engineering Transformation of Health (3) Introduction to fundamental aspects of engineering and exploration of multidisciplinary engineering approaches to improving and promoting human

health, including understanding how engineers from different disciplines collaborate, approach, and solve health problems. Offered: W.

ENGR 120 STARS Mathematics Problem Solving (4) Lectures and intensive problem solving in mathematics designed to strengthen academic and study skills. Enrollment restricted to students in the STARS program.

ENGR 121 STARS Chemistry Problem Solving (3) NW Lectures and intensive problem solving in mathematics designed to strengthen academic and study skills. Enrollment restricted to students in the STARS program.

ENGR 122 STARS Physics Problem Solving (3) Lectures and intensive problem solving in physics designed to strengthen academic and study skills. Enrollment restricted to students in the STARS program.

ENGR 197 Engineering Problem Solving (1, max. 12) Lectures and problem sessions in mathematics, chemistry, and physics with engineering applications. Enrollment restricted to Minority Science, Engineering Program (MSEP), and Women in Science and Engineering (WiSE) students. Credit/no-credit only. Offered: AWSp.

ENGR 199 Special Projects (1-3, max. 3) Students propose problems to solve to an engineering faculty member. Problems selected from the student's own experiences and interests, from the interest of faculty members, or from other sources such as faculty or graduate students doing research projects, or from personnel in physical medicine, occupational therapy, hospital, industry, or government. Required corroboration by an engineering faculty member. Project suggestions available. Offered: AWSpS.

ENGR 201 Engineering Diversity, Access and Inclusion (3) DIV *Scott Pinkham, Ed.D. June Summers Hairston* Presentations and discussions on the need for multiple perspectives in broadening the impact of engineering. Students will work collaboratively to enhance their academic skills, solve engineering problems and develop team synergy with emphasis on inclusion of underrepresented groups in engineering. Field trips will provide first hand exposure to diversity and access in the engineering

classroom and workforce. Credit/no-credit only. Offered: A.

ENGR 202 Special Topics (1-5, max. 10) Topics of current interest to engineering students. Offered: AWSp.

ENGR 231 Introduction to Technical Communication (3) Examines basics of researching and presenting technical information for different audiences and purposes. Individually and in teams, students learn to construct document and presentations, following conventions of oral, written, and visual communication. Assignments are grounded in ethical and sustainable engineering practices. Prerequisite: Either both ENGL 109 and ENGL 110, or any one of the following: C LIT 240, ENGL 111, ENGL 121, ENGL 131, ENGL 182, ENGL 197, ENGL 198, ENGL 199, ENGL 281, ENGL 282, ENGL 297, ENGL 298, ENGL 299, ENGL 381, ENGL 382, HONORS 205, HONORS 345 Offered: AWSpS.

ENGR 296 Engineering Study Abroad (1-6, max. 18) Lower-division engineering course taken abroad for which there are no direct UW equivalents. May apply toward UW faculty-led programs or to courses taught approved study abroad programs. Credit does not apply to major requirements without approval.

ENGR 297 Vertically Integrated Projects ([1-2]-, max. 8) Project-based, design and exploration experiences for lower division students. Through this class, students will take on entry level roles on faculty-led project/research teams while being mentored by upper division students, faculty, and graduate students.

ENGR 320 Engineering Cooperative Education (1-10, max. 12) Engineering practicum; includes integration of classroom theory with on-the-job training. Open only to students who have been admitted to the Engineering Cooperative Education Program. Credits are deducted from student record. Credit/no-credit only. Offered: AWSpS.

ENGR 321 Engineering Internship Education ([1-2]-, max. 16) Practical on-the-job experience to apply classroom theory in the engineering field. Internship credit for undergraduate students as approved by the Engineering Career Center and may be applied to the undergraduate degree requirement, as

determined by each department. Credit/no-credit only. Offered: AWSpS.

ENGR 322 Engineering Cooperative Education Postwork Seminar (-0) Reporting and evaluation of co-op work experience, and discussion of current topics in engineering. To be taken during the first quarter in school following each work session. Offered: AWSpS.

ENGR 333 Advanced Technical Communication in the Engineering Workplace (4) Technical communication and writing skills, strategies, and genres. Genres include resumes, proposals, procedures, and presentations. Thematic focus on collaborative teamwork and inclusive language for a diverse workplace. Builds on practical strategies introduced in ENGR 231. Prerequisite: ENGR 231 or HCDE 231; recommended: English composition course. Offered: AWSp.

ENGR 360 Introductory Acoustics (3) NW Introduction to propagation of acoustical waves; emphasis on propagation of sound waves in air, but material is applicable to propagation of sound waves in liquids, including underwater acoustics, and to propagation of stress waves in solids. Includes a historical development of acoustics, terminology, and units employed. Prerequisite: either MATH 136 or MATH 307; PHYS 123. Offered: Sp.

ENGR 380 Design for Sustainability in the Developing World (2, max. 8) I&S Bolton Introduction to issues in international sustainable development from an engineering perspective. Combines lectures on current approaches and potential pitfalls with work on group projects related to sustainable development efforts of Engineers Without Borders. Develops research and design skills using real life projects. Intended for students from all backgrounds. Credit/no-credit only. Offered: AW.

ENGR 401 Leadership Development to Promote Equity in Engineering Relationships (3) I&S, DIV Engages engineering students' energy, creativity, social conscience, and on-the-ground perspectives in advancing diversity and inclusion in engineering. Students explore topics such as diversity in science and engineering, impact of unconscious bias, the role of allies, community engagement, and leadership in supporting all current and potential engineers. Credit/no-credit only.

ENGR 496 Engineering Study Abroad (1-6, max. 18)

Upper-division engineering course taken abroad for which there are no direct UW equivalents. May apply toward UW faculty-led programs or to courses taught approved study abroad programs. Credit does not apply to major requirements without approval.

ENGR 497 Vertically Integrated Projects ([1-2]-, max. 10)

Advanced project based, design and exploration experiences for upper division students. Students will take on leadership roles and faculty-led research teams while mentoring participating lower division students and engaging with faculty and graduate students.

ENGR 498 Special Topics in Engineering (1-5, max. 6)

Offered: AWSpS.

ENGR 499 Special Projects in Engineering (1-3, max. 6)

Offered: AWSpS.

ENGR 598 Seminar Series in Engineering (1, max. 12)

Graduate seminar series on topics of interest to all engineering students.

ENGR 601 Internship ([1-2]-, max. 24)

Practical on-the-job experience to apply classroom theory in the engineering field. Internship credit for graduate students as approved by the Engineering Career Center. Credit/no-credit only. Offered: AWSpS.

HUMAN CENTERED DESIGN AND ENGINEERING

HCDE 100 Introduction to Human Centered Design and Engineering (5)

Topics may include: virtual communities, human-computer interaction, web design, usability testing, visual design, and others. Explores course content through individual and group hands-on projects. Offered: A.

HCDE 210 Explorations in Human Centered Design (3) I&S

Explores the core principles, methodologies, and applications of human centered design practice. Areas of investigation include user research, ideation, interaction design, visualization, prototyping, and usability. Offered: AWSp.

HCDE 231 Introduction to Communication in HCDE (3)

Examines fundamentals of researching, writing,

and presenting technical information for diverse audiences and purposes. Students learn to conduct secondary research; design and present information written and orally; revise for content, organization and style; and work individually and collaboratively in teams. Assignments are framed around ethical and sustainable human-centered design practices. Prerequisite: either C LIT 240, both ENGL 109 and ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 182, ENGL 197, ENGL 198, ENGL 199, or ENGL 281. Offered: AWSp.

HCDE 298 Introductory Special Topics (1-5, max. 10)

Introductory special topics in human centered design and engineering to be offered occasionally by permanent or visiting faculty members.

HCDE 300 Foundations of Human Centered Design and Engineering (5)

Examines principles and practices of human centered design and engineering. Includes overview of conceptual problems in human centered design and engineering, issues related to communicating scientific and technical information to a variety of audiences, and human centered design approaches. Includes attention to social contexts and environments (legal, ethical, cultural) .

HCDE 301 Advanced Communication in HCDE (5)

Examines various communication genres in HCDE. Students conduct primary and secondary research; analyze results; write, design, and orally present communications that meet the needs of stakeholders with differing priorities and cultures. The course is taught through the lens of sustainable and ethical HCDE practices. Prerequisite: HCDE 231 or ENGR 231. Offered: AWSp.

HCDE 303 Project Management and Computer Supported Collaboration and Work (5)

Addresses how to understand and manage communication practices and projects in scientific and technical organizations. Topics include: system design, project design, supporting workflow, communication practices, information structures, and planning. Focuses on CMC and CSC principles and practices.

HCDE 308 Visual Communication in Human Centered Design and Engineering (5) VLPA

Introduces principles of visual communication and design used in human centered design and engineering so that students gain a systematic understanding as they create visual communication

components of print, interactive, and video media. Students develop this understanding through hands-on exercises, design critiques, discussions, lectures, and readings in a studio environment.

HCDE 310 Interactive Systems Design and Technology (5) Provides opportunities to identify and build interactive systems to solve problems in human centered design and engineering. Students specify, design, build, and justify design solutions in terms of user experience and technical design choices. Prerequisite: CSE 142 or CSE 160. Offered: A.

HCDE 313 Introduction to User Research (5) Introduces user research methods, such as interviews, surveys, usability tests, content analysis, and focus groups. Reviews selecting an appropriate research method, how to conduct research and analyze results, conveying research data in the form of design requirements, and ethics.

HCDE 318 Introduction to User-Centered Design (5) Explores the user-centered design paradigm from a broad perspective, with an emphasis on the importance of developing and applying design processes and strategies. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design.

HCDE 321 Professional Portfolio (2) Prepares students for professional practice by developing expertise and artifacts that make up an effective professional portfolio for careers in human centered design and engineering. Covers job searches, networking, recruiting, and interviewing, as well as development of resumes, cover letters, and online portfolios. Credit/no-credit only. Offered: AWSp.

HCDE 322 Organizational Teamwork (2) Introduces students to teamwork and leadership competencies of particular significance to interdisciplinary, design-oriented, creative, and distributed work of human-centered design and engineering. Particular emphasis on competencies related to interpersonal interactions, group dynamics, and civic responsibility. Credit/no-credit only.

HCDE 333 Advanced Technical Writing and Oral Presentation (4) Emphasizes the principles of written and oral communication for the engineering workplace. Designs solutions to professional

communication problems: technical reports, proposals, correspondence, resumes, and oral presentations. Focuses on needs assessment and designing solutions that call for effective selection and integration of verbal and visual components. For engineering majors. Prerequisite: HCDE 231. Offered: AWSpS.

HCDE 398 Special Topics (1-5, max. 10) Special topics in human centered design and engineering to be offered occasionally by permanent or visiting faculty members.

HCDE 407 Software User Assistance (5) Concepts, skills, and industry practices for designing the full spectrum of information resources that users need to master complex interfaces. Includes interface text, embedded and standard help, manuals, wizards, tutorials, SDK documentations and troubleshooting (Knowledge Base) content, and the role of social media and user-generated content. Prerequisite: HCDE 310. Offered: Sp.

HCDE 408 Public Documents: Proposals, EISs, Assessments (3) Analyzing special documents of public character: proposals, EISs, questionnaires, technology assessments. Understanding socio-political milieu in which they are planned, organized, written; the specialized audiences (e.g., agencies with their missions, guidelines, constituencies; citizen groups; commercial interests) they serve. Documents, the decision-making process. Offered: Sp, odd years.

HCDE 411 Information Visualization (5) I&S/VLPA Introduces the design and presentation of digital information. Covers the use of graphics, animation, sound, and other modalities in presenting information to the user; understanding vision and perception; methods of presenting complex information to enhance comprehension and analysis; and the incorporation of visualization techniques into human-computer interfaces. Prerequisite: HCDE 308 and HCDE 310.

HCDE 412 Qualitative Research Methods in HCDE (5) Explores qualitative research methodologies, particularly the use of grounded theory methods to conduct field research for design and engineering. Develops skills for understanding and investigating why and how people experience, make meaning, and participate in their own social worlds, including

how to create and iterate research questions, observations, and interviews. Prerequisite: HCDE 313

HCDE 417 Usability Research Techniques (5)

Introduces usability research methods used in the product-development process; contextual inquiry, surveys and interviews, focus groups, user profiling, usability testing, cognitive walkthroughs, heuristics, and others. Prerequisite: HCDE 313.

HCDE 418 Advanced Projects in Human Centered Design and Engineering (5, max. 10)

Explores advanced topics in human centered design. Students engage with and discuss an advanced topic and then apply it by researching, designing, and implementing a solution to a design challenge. Team-based investigations culminate in a project response to the challenge. Prerequisite: either HCDE 318, INFO 360, or CSE 440; recommended: Students should have completed at least one project-based human centered design or human-computer interaction course (e.g., HCDE 318) .

HCDE 419 Concepts in Human-Computer Interaction (5) I&S

Studies the social, cognitive, behavioral, and contextual aspects of information systems and informational dimensions of the human-computer interface, and other user-centered design concepts. Surveys research literature of human information behavior, as well as ethical standards. Prerequisite: HCDE 300.

HCDE 421 Current Practices in Technical Communication (3)

Covers principles and practices of writing to communicate scientific and technical information to a variety of readers. Teaches how to write for the expert, general scientific and technical reader, manager, and general public.

HCDE 422 Style in Technical Communication (3)

Covers principles and practices of writing publication-ready American English writing for global audiences. Teaches how to write for the expert, general scientific and technical reader, manager, and general public.

HCDE 423 Introduction to Technical Editing (3)

Covers editorial practices and responsibilities in communication of scientific and technical information. Includes the editor's role as an editor of documents, a collaborator in document

development, and a manager of publication projects and groups.

HCDE 424 The Computer in Technical Communication (4)

Introduces popular tools used by TC professionals. Students examine the tools' functionality, the types of design activities supported, and techniques for designing effective solutions. Project-driven course project teaches students how to transform unformatted content, using these tools, into a polished set of documents in multiple formats.

HCDE 426 Software User Assistance (3)

Covers how to write effective documentations for a variety of software users, from end-users to developers. Students produce a complete documentation set for a software product or service using the most appropriate delivery mechanisms for the content and the audience. Prerequisite: HCDE 310.

HCDE 427 Production Editing (4)

Covers the editorial role in the preparation of text and visual materials, both print and online, for production. Teaches the editor's responsibilities and prerogatives as they relate to those of other professionals in the production phase of the publication's field.

HCDE 435 Introduction to Content Management (3)

Principles and practices of building, managing, and using content management systems in the workplace. Examines both the intricacies of collaborative workflow technologies and the organizational contexts that surround them.

HCDE 437 Web Design and Web Publishing (5)

VLPA/I&S Design principles and skills including navigation, functional design, visual design, and content development. Includes the ongoing process of Web publishing. Addresses societal issues pertaining to the web and Internet. Students build a website and plan for ongoing web publishing. Prerequisite: HCDE 318. Offered: W.

HCDE 438 Web Technologies (5)

Markup languages and styles, JavaScript, Flash, Photoshop, and the fundamentals of digital sound and video. Includes an introduction to server-side technologies. Students expand their existing design skills to encompass the use of these web technologies. Offered: Sp.

HCDE 439 Physical Computing (5) Introduction to engineering and prototyping interactive systems and environments for human-centered applications that employ basic digital electronics components and circuits. Students build systems using micro-controllers and software tools. Provides hands-on experience in a project-based, studio environment. Prerequisite: HCDE 310 or permission of instructor.

HCDE 440 Advanced Physical Computing (5, max. 10) Advanced topics in engineering and prototyping interactive systems and environments for human-centered applications that use digital electronics, components, and circuits. Students build advanced systems using micro-controllers, sensors, wireless communications, and software APIs. Projects incorporate investigation of emerging technologies and their social and cultural impact. Provides hands-on experience in a project-based, studio environment. Prerequisite: HCDE 439

HCDE 451 User Experience Prototyping Techniques (5) Introduces students to a variety of prototyping techniques for different kinds of user experience design problems. Structured as a series of independent explorations, each on a different prototyping methodology, aimed at many platforms. Prerequisite: HCDE 318.

HCDE 455 User Interface Design (4) Design oriented to cover fundamentals of user interface design; models on human computer interaction, software psychology, input devices, usability, cognitive and perceptual aspects of human-computer interaction, advanced interface, and research methodologies are discussed. Offered: jointly with IND E 455; A.

HCDE 461 Japanese for Technical and Business Professions I (5) VLPA *Kato* Strengthens knowledge of grammar and vocabulary and applies this to basic technical business communication situations. Covers cultural concepts underlying these situations. Reviews authentic materials on technology-related topics. Teaches skills to analyze sentence structure for accurate interpretation. Laboratory work required. Placement test before admission. Offered: A.

HCDE 462 Japanese for Technical and Business Professions II (5) VLPA Covers the functional/situational conversation skills necessary in technical and business communication situations,

plus the cultural concepts underlying these situations. Reviews skills (such as prediction) for more effective reading and improves skills for analyzing complex sentence structure. Additional grammar, vocabulary, and kanji are introduced. Laboratory work required. Prerequisite: HCDE 461. Instructors: Kato Offered: W.

HCDE 463 Japanese for Technical and Business Professions III (5) VLPA Covers the functional/situational conversation skills necessary in technical and business communication situations, plus the cultural concepts underlying these situations. Further improves skills introduced in previous courses and reviews skills for understanding inter-sentence structure. Additional grammar, vocabulary, and kanji introduced. Laboratory work required. Prerequisite: HCDE 462. Instructors: Kato Offered: Sp.

HCDE 492 Capstone Planning (2) Helps students define capstone topics, form project teams, and develop initial concepts, deliverables, and schedules for the HCDE capstone project. Prerequisite: HCDE 300; HCDE 301; HCDE 308; HCDE 310; HCDE 313; and HCDE 318. Offered: W.

HCDE 493 Senior Capstone (5) Capstone design experience. Integrates knowledge and skills acquired during major program into one paper or project. Prerequisite: HCDE 492.

HCDE 495 Internship (3-10, max. 10) Supervised internship where work experience involves substantial application of HCDE concepts learned in the classroom. Credit/no-credit only. Offered: AWSpS.

HCDE 496 Directed Research in Human Centered Design and Engineering (1-5, max. 10) Students, working in teams under the supervision of individual faculty members, review relevant literature, pose research questions, design and conduct studies, and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Credit/no-credit only. Offered: AWSpS.

HCDE 497 Study Abroad: Human Centered Design and Engineering (3-5, max. 15) Upper-division human centered design and engineering courses, for which there are no direct University of Washington

equivalents, taken through the Department of Human Centered Design and Engineering's study abroad program. Credit/no-credit only. Offered: S.

HCDE 498 Advanced Special Topics (1-5, max. 10)

Advanced special topics in human centered design and engineering to be offered occasionally by permanent or visiting faculty members.

HCDE 499 Special Projects (1-5, max. 10) Individual undergraduate projects in human centered design and engineering. Offered: AWSpS.

HCDE 501 Theoretical Foundations of Human Centered Design and Engineering (4) Examination of the theories that inform work in human centered design and engineering, focusing particularly on communication and interaction design theories. Topics include the complexities of communication as it is configured in different theoretical frameworks, the implications of these different configurations, and why these differences matter to people engaged in professional practice or research. Prerequisite: admission to an engineering master's program or permission of instructor. Offered: A.

HCDE 502 Empirical Traditions in Human Centered Design and Engineering (4) Introduction to empirical traditions that inform research and practice in field of human centered design and engineering. Topics include epistemological assumptions underlying empirical research, empirical methods, and survey of results of empirical research on effects of text and visual media on comprehension, recall, and performance. Prerequisite: graduate standing or permission of instructor. Offered: Sp.

HCDE 503 Navigating Design in Organizations (4) Examines how to manage the incubation and development of an idea, communicate it effectively to stakeholders, and deliver a quality product. Students learn to manage a design project from start to finish, collaborating across disciplines, working with partners and end-users, and communicating strategies for project management in organizations.

HCDE 505 Computer-Assisted Communication (4) Explores computer-assisted communication from three perspectives: (1) cultural roles of communication technologies; (2) relationships between communication and information including information technologies in the workplace,

academe, and other settings; and (3) application to design including models for audience analysis, task analysis, and cognitive systems engineering. Prerequisite: graduate standing or permission of instructor. Offered: Sp.

HCDE 508 Visual Communication (4) Reviews principles of visual communication and design used in HCDE so that students gain a systematic and critical understanding so they can create visual communication components of print and interactive media. Students develop this understanding through hands-on exercises, design critiques, discussions, lectures, and readings in a studio environment.

HCDE 509 Writing the Scientific Article (3)

Examination of principles and practice of writing research manuscripts, articles, abstracts, and oral presentations. Detailed examination of scientific publication process includes issues of style, organization, and ethics. Students draft, critique, and revise their own manuscripts and learn to review the manuscripts of others. Offered: Sp.

HCDE 510 Information Design (4) Examination of the design principles and procedures underlying the creation of both print and electronic information presentations. Topics include: print vs. electronic media, designing for the page and screen, information topologies, and hypermedia. Seminar includes a design project. Prerequisite: HCDE 501 or permission of instructor. Offered: A.

HCDE 511 Information Visualization (4) Covers the design and presentation of digital information. Uses graphics, animation, sound, and other modalities in presenting information to users. Studies understanding vision and perception. Includes methods of presenting complex information to enhance comprehension and analysis; and incorporation of visualization techniques into human-computer interfaces.

HCDE 512 International User Experience and Communication (4) Covers theory, research, and approaches for creating digital media for international audiences. Topics include cultural schemata and contrastive rhetoric, content, and text types and corresponding translation and localization strategies, market relevance and adaptation, international user research and usability, international politics and geopolitics, and cross-

cultural business management and team work.
Offered: Sp.

HCDE 513 Globalization and Localization Management (4) *Spyridakis* Examines globalization and localization business processes. Topics include localization challenges for various business sectors and audiences as well as selecting localization software, services, and content; project types; and associated start-to-finish processes. Offered: S.

HCDE 514 Strategies for International Product Management (4) Examines best practices in establishing localization work in technology companies. Covers facets important to research, planning, and decision-making processes, including use of internal company data, and economic, marketing, and technology factors. Uses real-life scenarios to demonstrate how companies have instituted localization processes given user-centered practices. Prerequisite: HCDE 512; HCDE 513; or permission of instructor. Instructors: Spyridakis

HCDE 515 Accessibility and Inclusive Design (4) An introduction to designing, prototyping, and evaluating inclusive user interfaces that meet the needs of a diverse range of users - such as older adults, users with visual, cognitive or motor disabilities, and users who are deaf or hard of hearing. Building on basic concepts in human-centered design, students will learn about design exclusion and barriers to use, and methods by which these can be overcome. Prerequisite: HCDE 518.

HCDE 516 Experimental Research Methods (4) Introduction to experimental research methods in human centered design and engineering. Examines the relationship between theory and research, hypothesis testing, experimental designs, modes of observation, sampling, validity, and data analysis and interpretation. Prerequisite: introductory statistics course. Offered: Sp.

HCDE 517 Usability Studies (4) Discusses the human-computer interface (HCI) as the communicative aspect of a computer system. Analyzes usability issues in HCI design, explores design-phase methods of predictability, and introduces evaluative methods of usability testing. Prerequisite: HCDE 518 or permission of instructor. Offered: A.

HCDE 518 User-Centered Design (4) Explores the user-centered design paradigm from a broad perspective, emphasizing how user research and prototype assessment can be integrated into different phases of the design process. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design. Offered: W.

HCDE 519 Qualitative Research Methods (4) Provides hands-on experience with qualitative research methods, such as interviewing and participant observation, as used in human-centered design and engineering. Students learn to develop appropriate research questions, collect observational data, develop interview protocols, conduct interviews, analyze data, and communicate findings.

HCDE 520 Design and Management of Complex Systems (4) Focuses on how to design and implement improvements to complex work systems. Emphasis on Agile development, including sprints using scrum teams to achieve rapid iteration design with system users, developers and owners. Investigates decision support systems, including sense making and adaptation in ambiguous situations.

HCDE 521 Seminar: Current Issues in Human Centered Design and Engineering (1-2, max. 3) Presentations on current issues in human centered design and engineering. Prerequisite: HCDE graduate student status or permission of instructor. Credit/no-credit only. Offered: AW.

HCDE 523 Design Use Build (DUB) Seminar (1, max. 3) Exploration of advanced issues in human centered design and engineering research and practice. Students are encouraged to join the dub mailing list for calendar of events. Credit/no-credit only. Offered: AWSp.

HCDE 524 Programming Concepts in HCDE (2) Workshop in foundations of computing. Introduces students to core concepts in programming using interactive graphics applications. For students with NO prior experience programming in a high-level language like Java, Python, or C++. Prerequisite: graduate standing or permission of instructor.

HCDE 526 Video Prototyping (2) Explores video as a design tool. Students learn about narrative and storytelling in the context of User Centered Design. Enhances technical abilities in the creation of visual artifacts while communicating design vision. Imparts practical knowledge necessary to create a video prototype. Exposes students to the history of video prototypes, as well as contemporary practices. Prerequisite: Graduate standing or permission of instructor.

HCDE 530 Computational Concepts in HCDE (4) Introduces basic computational concepts and programming skills needed to work with interactive systems in HCDE. Draws on topics such as log analysis, visualization, prototyping, and data mining. Students analyze data to inform user research and design.

HCDE 532 Web Design Studio (2) Provides an overview of basic principles and practices of professional web site design and programming. Students gain hands-on experience with designing and building a successful website using industry standard techniques. For students planning to take HCDE 535 or HCDE 537 without previous programming experience.

HCDE 533 Digital Fabrication (4) Introduces designing for and fabricating with tools such as 3D printers, laser cutters, computer controlled mills, and more. Students produce digital plans and physical prototypes in a variety of materials, and gain hands-on experience in a studio-based environment. Prerequisite: HCDE 518.

HCDE 534 Designing a Human Centered Venture (4) Explores the planning of a new venture related to human-centered design. Examines relevant topics, such as team formation, user and market research, value creation, and the iterative demand planning for a new venture.

HCDE 536 Interaction Design and Prototyping (4) Investigates advanced topics in the theory and practice of interaction design, using a project-oriented approach. Develops expertise in design, development, and critique of solutions in online and mobile platforms. Examines issues such as interaction theory, requirements and specifications, design language, prototyping, and presentation of projects. Prerequisite: HCDE 518.

HCDE 537 User-Centered Web Design (4) Theory and practice of the user-centered web development process. Principles and processes for documenting and implementing various development stages, including requirements analysis, user needs analysis, information architecture, prototyping, mock-ups, and production. Prerequisite: HCDE 518.

HCDE 538 Designing for Behavior Change (4) Students are introduced to existing behavior change theories, frameworks, and research to gain an understanding of why and how behavior changes. Utilizing these insights, students practice theory-driven design to nudge positive behavior change. They analyze current behavior change applications and utilize existing resources to guide their design process. Prerequisite: HCDE 501; HCDE 518; and HCDE 536 (or equivalent graduate level interaction design coursework) .

HCDE 539 Physical Computing and Prototyping (4) Reviews fundamentals of designing and prototyping human-centered interactive systems and environments that include software and hardware components. Students build projects using electronic devices and fabrication tools. Provides hands on experience in a project-based, studio environment.

HCDE 541 Introduction to PhD Studies in HCDE (2) Introduces the skills needed as a doctoral student in the field of human-centered design and engineering, including communicating about research, preparing for PhD milestones, identifying mentors, and establishing work practices. Credit/no-credit only. Offered: A.

HCDE 542 Theoretical Foundations in Human Centered Design and Engineering (4) Examines theories that inform work in human centered design and engineering, focusing particularly on theories of communication and interaction design. Topics include complexities of interaction as it is configured in different theoretical frameworks, implications of these different configurations, and why these differences matter to people engaged in professional practice/research.

HCDE 543 Empirical Traditions in Human Centered Design and Engineering (4) Introduces empirical traditions that inform research and practice in the field of human centered design and engineering. Topics include epistemological assumptions

underlying research approaches and a survey of empirical methods.

HCDE 544 Research Methods I (4) Introduces experimental, quasi-experimental, and related research methods in human centered design and engineering. Examines the relationship between theory and research, hypothesis testing, experimental designs, modes of observation, sampling, validity, and data analysis and interpretation. Students undertake an intensive research project. Prerequisite: Introductory statistics course.

HCDE 545 Research Methods II (4) Provides hands-on experience with qualitative research methods with particular emphasis on how ethnographic fieldwork methods (e.g., interviewing and participant observation) are used in human centered design and engineering. Students undertake an intensive research project at a field site, collecting and analyzing data.

HCDE 546 Design Thinking (4) Examines how design is enacted within disciplines, exploring commonalities and differences in design practices. Surveys empirical studies of design practices and approaches.

HCDE 547 Academic Research Seminar (1, max. 10) Discussion seminar of a variety of academic research topics for doctoral students. Credit/no-credit only. Offered: AWSp.

HCDE 548 Advanced Topics in Human Centered Design and Engineering (4, max. 20) In-depth examination of a specialized topic in an emerging area of human centered design and engineering.

HCDE 592 Capstone Planning (4) Helps students define capstone topics, form project teams, and develop initial concepts, deliverables, and schedules for the HCDE capstone project. Prerequisite: HCDE 501; HCDE 517; HCDE 518; and either HCDE 516 or HCDE 519.

HCDE 593 Capstone (4) Capstone design experience. Integration of knowledge and skills acquired during program into one project. Prerequisite: HCDE 592.

HCDE 596 Directed Research in Human Centered Design and Engineering (1-5, max. 18) Students, working in teams under the supervision of individual faculty members, review relevant literature, pose research questions, design and conduct studies, and present the results in papers prepared either for submission to a professional journal or for presentation at a professional conference. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

HCDE 597 Approaches to Teaching Technical Communication (1-2, max. 2) Examines theory and practice of teaching engineering undergraduate students written and oral technical communication competencies, strategies for developing teaching skills and philosophies. Teaching seminar for instructors of HCDE 231 and HCDE 333. Prerequisite: concurrent teaching appointment or permission of instructor. Credit/no-credit only. Offered: AWSpS.

HCDE 598 Special Topics (1-5, max. 15) Special topics in human centered design and engineering to be offered occasionally by permanent or visiting faculty members. Prerequisite: permission of instructor.

HCDE 599 Special Projects (1-5, max. 10) Written report required. Credit/no-credit only. Offered: AWSpS.

HCDE 600 Independent Study or Research (*-)

HCDE 601 Internship (2-10, max. 10) Written report required. Prerequisite: permission of committee chair. Offered: AWSpS.

HCDE 700 Master's Thesis (*-) Prerequisite: permission of thesis adviser. Offered: AWSpS.

HCDE 800 Doctoral Dissertation ([1-10]-) Prerequisite: permission of thesis adviser. Credit/no-credit only. Offered: AWSpS.

INDUSTRIAL AND SYSTEMS ENGINEERING

IND E 101 Introduction to Industrial Engineering (1 I&S) Examines the basic concepts and methods of industrial engineering through team-based hands-on activities. Explores the profession of industrial engineering. Discusses resources available to

industrial engineering students at the University of Washington. Offered: A.

IND E 250 Fundamentals of Engineering Economy (4) NW Basics of industrial cost analysis and accounting. Application of interest computations to engineering decision making. Analysis of engineering alternatives based on use of interest computations, valuations, depreciation, and cost estimates. Offered: ASp.

IND E 315 Probability and Statistics for Engineers (3) NW Application of probability theory and statistics to engineering problems, distribution theory and discussion of particular distributions of interest in engineering, statistical estimation and data analysis. Illustrative statistical applications may include quality control, linear regression, and analysis of engineering data sets. Prerequisite: either MATH 136, MATH 307, or AMATH 351. Offered: AWSpS.

IND E 316 Design of Experiments (4) NW Introduction to the analysis of data from planned experiments. Analysis of variance for multiple factors and applications of orthogonal arrays and linear graphs for fractional factorial designs to product and process design optimization. Regression analysis with applications in engineering. Prerequisite: IND E 315. Offered: jointly with STAT 316; W.

IND E 321 Statistical Quality Control (4) Design of quality control and assurance systems. Statistical Process Control (SPC) design and implementation. Control charts for attributes and variables. Process capability analysis and process improvement techniques. Statistical tolerance design. Quality management and recent developments. Prerequisite: IND E 315 Offered: Sp.

IND E 337 Introduction to Manufacturing Systems (4) Description of manufacturing systems. Includes discussion of current trends in manufacturing. Introduces process flow analysis, manufacturing organizations including job-shop, assembly lines, and group technology, manufacturing inventory philosophies (just-in-time, MRP, OPT), work environment, and work simplification.

IND E 351 Human Factors in Design (4) Engineering considerations of the abilities and limitations of the human aspect in the design of operational systems and components. Functional, psychological,

physiological, and environmental considerations. Offered: Sp.

IND E 411 Stochastic Models and Decision Analysis (4) Stochastic systems analysis to industrial engineering problems. Topics include: Markov chains, queueing theory, queueing applications, and decision analysis. Prerequisite: IND E 315; IND E 410. Offered: W.

IND E 412 Integer and Dynamic Programming (4) Modeling and optimization of problems and dynamic programming approach to optimization. Topics include: integer programming formulation techniques, linear and Lagrangian relaxation, branch-and-bound and cutting-plane methods, integer programming applications, and dynamic programming. Prerequisite: IND E 411. Offered: Sp.

IND E 424 Simulation (4) Discrete-event simulation methodology emphasizing model formulation and construction with modern simulation languages and environments, statistical basis for evaluating model results, design and management of simulation projects. Application to manufacturing, retail, and service industries. Prerequisite: IND E 337; IND E 411, which may be taken concurrently. Offered: W.

IND E 426 Reliability Engineering and System Safety (4) Reliability and system safety measures. Life distributions and their applications in reliability. System reliability models. Design by reliability and probabilistic design. Reliability and safety analysis through FMECA and FTA. Reliability estimation and measurement by testing for binomial, exponential, and Weibull distributions. Prerequisite: IND E 315.

IND E 427 Data Analytics for Systems Engineering (4) Emphasizes data-driven system modeling, including basic statistical learning models, and system modeling and decision-making. Covers experimental design for data collection, tree-based control charts for process monitoring, rule-based decision-making, and diagnosis of root causes as learning problems. Students develop connections between emerging statistical learning techniques with system modeling and optimization methods. Prerequisite: Either IND E 315, STAT 390, or STAT 391; recommended: basic programming skills; and experience with R programming language or Matlab.

IND E 430 Manufacturing Scheduling and Inventory

(4) Manufacturing scheduling and inventory control for different work organizations. Coverage of workforce scheduling, job- and flow-shop scheduling and order release, production line balancing, MRP II, Lean Production, and data management. Particular attention to computer-based aspects of management and scheduling for manufacturing and service industries. Prerequisite: IND E 337; IND E 410, both of which may be taken concurrently. Offered: A.

IND E 439 Plant Layout and Material Handling (4)

Design of new or expanding industrial facilities. Consideration of work organization and layout. Study of basic design of plant systems, including plumbing, electrical, HVAC, illumination, acoustics, and waste handling. In depth coverage of material handling system design and equipment choices. Prerequisite: IND E 410 which may be taken concurrently. Offered: A.

IND E 455 User Interface Design (4) Design oriented to cover fundamentals of user interface design; models on human computer interaction, software psychology, input devices, usability, cognitive and perceptual aspects of human-computer interaction, advanced interface, and research methodologies are discussed. Offered: jointly with HCDE 455; A.

IND E 470 Systems Engineering (4) Concepts of system approach, system hierarchies, functional analysis, requirements, trade studies, and other concepts used to define and integrate complex engineering systems. Introduction to risk analysis and reliability, failure modes and effects analysis, writing specifications, and lean manufacturing. Offered: jointly with A A 470; Sp.

IND E 491 Professional Practice Seminar (1)

Speakers from industry help students explore the wide variety of careers and opportunities available in the ISE field. Speakers cover topics such as elective coursework and extra-curriculars, networking, getting hired, professional ethics, and how to be flexible in a dynamic work environment. Credit/no-credit only. Offered: A.

IND E 494 Design in the Manufacturing Firm (4)

Engineering design in manufacturing firms is presented. Topics include design methodology, concurrent engineering, and project management.

Focus on the relationship between product design and manufacturing (design for production and assembly) . Prerequisite: IND E 337. Offered: W.

IND E 495 Industrial Engineering Design (4)

Capstone senior design project involving identification and synthesis of industrial engineering skills. Students apply their knowledge of industrial engineering to actual industrial problems. Prerequisite: IND E 494. Offered: Sp.

IND E 496 Technology-Based Entrepreneurship (3)

Concentrates on hands-on aspects of innovation and entrepreneurial enterprise development. Examines relationships between innovation, iterative prototyping, and marketing testing. Students identify market opportunities, create new technology-based products and services to satisfy customer needs, and construct and test prototypes. Offered: jointly with M E 496; Sp.

IND E 498 Special Topics in Industrial Engineering (1-5, max. 9) Lecture and/or laboratory.

IND E 499 Special Projects (2-5, max. 12)**IND E 508 Stochastic Processes in Engineering (3) A.**

GHATE Non-measure theoretic introduction to stochastic processes. Topics include Poisson processes, renewal processes, Markov and semi-Markov processes, Brownian motion, and martingales, with applications to problems in queuing, supply chain management, signal processing, control, and communications. Prerequisite: E E 505. Offered: jointly with E E 508; W.

IND E 512 Introduction to Optimization Models (3)

Presents optimization models that are used in applications such as industrial engineering, production, transportation, financial investment, healthcare systems, and environmental ecology. Problems span a variety of continuous and integer optimization models, with discussion of multi-objectives and incorporating randomness into optimization models.

IND E 513 Linear Optimization Models in

Engineering (3) Advanced formulation techniques to expand applications of linear programming to large-scale models. Appreciation of role of optimization models in engineering applications through

introduction of techniques such as decomposition. Individual engineering projects. Prerequisite: IND E 410 and MATH 308 or permission of instructor.

IND E 515 Optimization: Fundamentals and Applications (5) Maximization and minimization of functions of finitely many variables subject to constraints. Basic problem types and examples of applications; linear, convex, smooth, and nonsmooth programming. Optimality conditions. Saddlepoints and dual problems. Penalties, decomposition. Overview of computational approaches. Prerequisite: Proficiency in linear algebra and advanced calculus/analysis; recommended: Strongly recommended: probability and statistics. Desirable: optimization, e.g. Math 408, and scientific programming experience in Matlab, Julia or Python. Offered: jointly with AMATH 515/MATH 515.

IND E 516 Applications of Optimization in Engineering Design (3) Discussion of issues arising in applications of optimization to engineering design. Emphasis on formulating problems and selecting appropriate solution techniques. Random search methods for problems otherwise computationally intractable. Individual projects in engineering optimal design. Prerequisite: AMATH 515/MATH 515/IND E 515 and MATH 328 or permission of instructor.

IND E 517 Markov Decision Processes (3) *ARCHIS GHATE* Markov Decision Processes (MDPs) encapsulate a broad class of mathematical models for solving sequential decision problems under uncertainty. Combines techniques from linear/convex optimization, probability, statistics, and machine learning to build a modeling, theoretical, and algorithmic foundation for MDPs. Prerequisite: either IND E 508 and IND E 513, other similar classes in optimization and stochastic models, or permission of instructor. Coding experience with languages such as MATLAB or Python; recommended: graduate level optimization, probability, and statistics. Computer programming.

IND E 519 Healthcare Modeling and Decision Making (3) Applications of operations research in healthcare. Introduction to a variety of modeling techniques including decision analysis, cost-effectiveness analysis, Markov models, Markov decision processes, dynamic programming, simulation, queuing, scheduling, machine learning

and their applications in healthcare management and medical decision making.

IND E 521 Statistical Quality Engineering (3) Design of quality control systems in manufacturing. Use of advanced statistical process controls, sampling inspection techniques, process capability, and other statistical tools. Also includes vendor sourcing and control tools, methods for establishing specifications and tolerances, quality function deployment, and other quality control techniques.

IND E 524 Robust Design for Process Improvement (3) Introduction to robust design for process improvement. Applications of design of experiments for product and process design optimization. Experimental design using factorial design and fractional factorial design. Robustness in design and quality improvement for complex systems including Taguchi methods and response surface methodology. Prerequisite: IND E 316/STAT 316 or equivalent. Offered: W.

IND E 526 Reliability in Product Design and Testing (3) Product assurance including reliability and quality engineering. Reliability design, measurement, and optimization. Advanced topics in probabilistic design. Design of reliability test plans and analysis of test data. Design of reliability programs and their management.

IND E 535 Engineering Simulation (3) Advanced applications of discrete event, continuous, and combined discrete-continuous simulation modeling, detailed examination of fundamental computer programming concepts underlying the design and development of simulation languages, variance reduction techniques, and output analysis for various engineering, service systems, and manufacturing applications. Prerequisite: IND E 424 or equivalent.

IND E 537 Smart Manufacturing Systems (3) *Ashis G Banerjee* Design, modeling and analysis of manufacturing systems, capable of intelligent decision making for optimal and/or robust productivities. Covers automation, digitization, on-demand design, and demand-supply forecasting. Offered: A.

IND E 543 Virtual Interface Technology (3) Explores advanced concepts and technologies for interfacing

humans to complex machines, with focus on virtual interfaces. Interface design principles reviewed from psychological and technological perspectives. Hardware, software, and mindware aspects of virtual interfaces investigated. Applications postulated and designed. Prerequisite: graduate standing in College of Engineering or permission of instructor.

IND E 546 Inferential Data Analysis for Engineers (3)

Linda Ng Boyle Application of statistical methods to analyze transportation systems, with an emphasis on modeling individual behaviors and drawing sound inferences about cause and effect. Addresses linear regression and common misuses; generalized linear models including logit and negative binomial; multilevel modeling; matching methods. Emphasizes frequentist approaches but introduces Bayesian analysis and extensions of regression modeling to machine learning. Prerequisite: either IND E 315, STAT 390, or equivalent; recommended: standard introductory probability and statistics course. Offered: jointly with CET 521; W.

IND E 549 Research Methods in Human Factors (3)

Includes fundamental guidelines for survey design, controlled experiments, quasi-experimental, and observational studies. Focus on safety, productivity, functionality, and usability. Review of journal articles on research methods and design issues, given functional, psychological, physiological, and environmental constraints. Recommended: introductory class in human factors. Offered: jointly with ENV H 549; Sp.

IND E 564 Recognition of Health and Safety Problems in Industry (2)

Develops skills in occupational health and safety hazard recognition in a variety of important Northwest industries. Focuses on process understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: jointly with ENV H 564; A.

IND E 566 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission

of instructor. Offered: jointly with ENV H 566/NSG 508; W.

IND E 567 Applied Occupational Health and Safety (3)

Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with ENV H 559/NSG 505; Sp, even years.

IND E 569 Occupational Biomechanics (4)

Lectures and laboratories address human occupational biomechanical and physiological limits and measurement, analysis, and modeling techniques that are used by ergonomists for design of safe, healthful, and productive physical work. Prerequisite: ENV H 566 or permission of instructor. Offered: jointly with ENV H 569; Sp, even years.

IND E 570 Supply Chain Systems (3) Develops concepts related to the design, evaluation, and performance of supply chain systems through an exploration of contemporary practice and research, focusing on current issues, analytical frameworks, and case studies. Prerequisite: IND E 315 or equivalent.

IND E 581 Navigating the Business Environment (3)

Covers the fundamentals of finance and accounting, marketing, strategy, and business communication as well as the skill of identifying and influencing the key decision maker. Offered: A.

IND E 582 Technical Leadership (3)

Includes how to motivate, reach consensus, work virtually, recruit, and work with engineers from different cultures. Offered: W.

IND E 583 Decision Analysis in Engineering (3)

Examines multi-criteria decision tools involving qualitative and quantitative methods. Covers decision trees, subjective probability, utility and value theories, goals and objectives, risk, optimization, and simulation. Includes case studies in decision and systems analysis. Offered: Sp.

IND E 584 Project Performance (3) Examines the fundamentals of project performance and application of systems engineering theory, concepts, and tools and techniques to plan, manage, and accomplish organizational objectives in a project framework. Also considers the critical roles leadership and team development plays in successful completion of projects. Offered: S.

IND E 585 Systems Architecture and Model-Based Systems Engineering (3) Introduction to systems architecture through development of system requirements, allocations of functionality and reintegration. Utilizes model systems engineering as a graphical, mathematical, and modeling tool for systems analysis. Offered: A.

IND E 586 Systems Engineering Risk: Assessment and Management (3) Management of systems engineering risk ensures costs, schedule, and technical performance objectives are achieved. Covers analysis methods and stochastic modeling for assessing and making decisions about projects and financial and technical risks associated with complex systems engineering projects. Also covers balancing risks across the systems development like cycle.

IND E 591 Seminar (1-) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: A.

IND E 592 Seminar (-1-) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: W.

IND E 593 Seminar (-1) Topics of current interest in industrial engineering. Prerequisite: graduate standing in Industrial Engineering or permission of instructor. Credit/no-credit only. Offered: Sp.

IND E 595 Global Integrated Systems Engineering ([4/5]-, max. 9) Covers systems engineering, project management, finance and economics in a global environment. Offered: jointly with A A 595; AW.

IND E 596 Global Integrated Systems Engineering Project (3) Project-based systems design course. Prerequisite: A A/INDE 595. Offered: jointly with A A 596; Sp.

IND E 599 Special Topics in Industrial Engineering (1-5, max. 9) Prerequisite: permission of supervisor.

IND E 600 Independent Study or Research (*-)

IND E 700 Master's Thesis (*-)

IND E 800 Doctoral Dissertation (*-)

MATERIALS SCIENCE AND ENGINEERING

MSE 170 Fundamentals of Materials Science (4) NW Fundamental principles of structure and properties of materials utilized in the practice of engineering. Properties of materials as related to atomic, molecular, and crystalline structures. Metals, ceramics, multiphase systems, and polymeric materials. Relationships between structure and electrical, mechanical, thermal, and chemical properties. Prerequisite: Either CHEM 142, CHEM 143, or CHEM 145. Offered: AWSpS.

MSE 197 Case Studies in Materials Innovation (2) Materials science concepts, with emphasis on career opportunities in Materials Science and Engineering. Includes structural materials, electronic materials, biomaterials, and energy related materials. Development of scientific analysis and research proposal formulation skills. Prerequisite: either CHEM 142, CHEM 143, or CHEM 145. Offered: Sp.

MSE 298 Introduction to Modern Materials (1) Materials and advances in materials are at the core of a large number of significant technological advances. Seminar format highlights processing, properties, and uses of a broad class of materials for a variety of applications, each introduced by a faculty member from the department. Offered: ASP.

MSE 310 Introduction to Materials Science and Engineering (3) Introduces the materials field to new department majors. Examples are drawn from ceramics, metals, polymers, electronic materials, and composites. Structure-properties-manufacturing-design relationships are emphasized. Materials selection design project. Introduction to research. Offered: A.

MSE 311 Integrated Undergraduate Laboratory I (3) Laboratory experimentation and techniques used in evaluating the physical properties of metals,

ceramics, and polymers. Use and instruction of analytical equipment, library resources for reference and literature searches, laboratory report writing, laboratory notebook recording, and data analysis. Prerequisite: MSE 170, which may be taken concurrently Offered: A.

MSE 312 Integrated Undergraduate Laboratory II

(3) Materials processing-related laboratory experiments for producing advanced ceramic, metallic, polymeric and composite materials. Examination of particle-particle interactions and rheological behavior. Proper experimental documentation, formal laboratory reports, research project. Prerequisite: MSE 311. Offered: W.

MSE 313 Integrated Undergraduate Laboratory III

(3) Laboratory experiments for characterizing advanced ceramic, metallic, polymeric, semiconducting and composite materials. Examination of processes of mechanical, electrical, dielectric and optical measurements for the understanding of the particulars of property measurements. Materials engineering project, including project paper and oral presentation. Prerequisite: MSE 312. Offered: Sp.

MSE 321 Thermodynamics and Phase Equilibrium

(4) Phase equilibria in materials systems of one, two, and three components. Determination of phase diagrams. Quantitative applications of thermodynamics to systems of interest to materials scientists; detailed review of thermodynamic laws and principles. Offered: A.

MSE 322 Kinetics and Microstructural Evolution (4)

Applications of thermodynamic and kinetic principles to the study of transport processes, transformations and reactions in engineering materials. Thermal activation and rates of processes, nucleation and growth, phase transformations, grain growth, sintering, among other processes. Prerequisite: MSE 321. Offered: W.

MSE 331 Crystallography and Structure (3)

Theory and practice of x-ray diffraction with applications to materials sitemaps. Principles of crystal symmetry, lattice systems, and stereographic projections. Bragg's law of diffraction, Laue conditions, diffraction by X-rays, single crystal and powder diffraction techniques and their applications to

lattice, phase, strain, and texture analyses.

Prerequisite: MSE 170. Offered: A.

MSE 333 Materials Characterization (3)

Principles and applications of analytical techniques, imaging, diffraction and spectroscopy for materials characterization including crystal structures, texture formation, phase analysis. Nano- and micro-structures of materials including defects and second phases, chemistry, bonding, compositions of materials. Demonstrations and lab experiments involving light scattering and diffraction techniques. Prerequisite: MSE 170; MSE 331; MSE 351. Offered: Sp.

MSE 342 Materials Processing I (3)

Provides students with the fundamentals and applications of metal and alloy processing techniques. Focuses on relationships between the processing fundamentals and practice, and between processing, microstructure, and properties. Ferrous and non-ferrous metal and alloy processing discussed. Prerequisite: MSE 170; MSE 321. Offered: W.

MSE 351 Electronic Properties of Materials (3)

Introduction to elementary solid-state concepts in materials, free electrons, and band theories. Principles to conduction in metals, insulators, semiconductors, and applications of semiconductors and devices. Prerequisite: MSE, 170, MSE 331. Offered: W.

MSE 352 Functional Properties of Materials I (3)

Introduction to thermal properties, electrical (ionic and polaron) conduction and optical properties, including origins of color, interaction of light wave with materials, lasers and optoelectronics. Focuses on the relations between physical properties and chemical composition, crystal structure, and microstructure. Prerequisite: MSE 351. Offered: Sp.

MSE 362 Mechanical Behavior of Materials I (3)

Influence of structure on the mechanical properties materials. Definition of different mechanical properties and experimental techniques to measure them. Elastic, viscoelastic, and plastic deformation. Introduction to fracture. Prerequisite: MSE 170. Offered: Sp.

MSE 398 Leadership Seminar (1, max. 4)

Weekly seminar with program alumni, or academic and government leaders presenting their workforce

experience and insights with students. Includes varied topics related to leadership in the Materials Science and Engineering profession, such as career planning, management skills, interpersonal skills, entrepreneurship, ethics, and strategic decisions. Credit/no-credit only. Offered: W.

MSE 399 Undergraduate Research Seminar (1)

Introduces MSE majors to various research projects available to MSE faculty laboratories. Credit/no-credit only. Offered: W.

MSE 431 Failure Analysis and Durability of

Materials (3) Treats the areas of failure analysis and durability in a wide range of materials applications. Reviews concepts in mechanical and environmental behavior of materials. Includes instruments available to engineers, both destructive and nondestructive, and case studies. Prerequisite: MSE 333; MSE 342; MSE 362; CEE 220 Offered: W.

MSE 442 Materials Processing II (3) Develops a basic understanding of both engineering and science aspects of ceramic processing. Fundamentals of powder processing and characterization, green body formation, sintering, microstructural development and properties. Prerequisite: MSE 342. Offered: A.

MSE 443 Process Principles in Ferrous and Non-Ferrous Materials Production (3) Ironmaking and steelmaking processes analyzed by methods of material and heat balances, computational thermodynamics, and process kinetics. Hydrometallurgical and electrometallurgical operations. Process optimization. Prerequisite: MSE 321. Offered: Sp.

MSE 450 Magnetism, Magnetic Materials, and Related Technologies (3) Introduces magnetism, magnetic materials, and related applications. Discusses intrinsic and phenomenological concepts of magnetism, ordered magnetic materials, structure-sensitive properties, magnetic phenomena, small particles, thin films, and applications (magnetic recording, permanent magnets, and spin-electronics).

MSE 452 Functional Properties of Materials II (3)

Functional materials including dielectrics, ferroelectrics, piezoelectrics, pyroelectrics, optoelectronics, and magnetic materials. Detailed discussion of fundamental relations between the

chemical composition, crystal structure, microstructure, and physical properties. Description of general devices and applications of these functional materials. Prerequisite: MSE 352. Offered: W.

MSE 462 Mechanical Behavior of Materials II (3)

Structural influences on mechanical properties of materials and strengthening mechanisms. States of stress and strain, failure criteria, multiaxial loads. Dynamic loading, kinematic and isotropic hardening, plasticity; Flaws and material reliability, probabilistic failures, fracture and toughening mechanisms. Stress life fatigue, fatigue crack growth, viscoelasticity, viscoplasticity. Prerequisite: AA 210; CEE 220; MSE 362. Offered: Sp.

MSE 463 Corrosion and Wear of Materials (3)

Mechanisms of corrosion, thermodynamics, kinetics of corrosion. Passivity; Pourbaix diagrams; corrosion rate testing and measurements; forms of corrosion; effects of alloy and environmental variables; corrosion testing. Wear mechanisms: adhesive, abrasive, erosive. Fretting; surface roughness, wear testing. Coatings for corrosion and wear protection. Offered: Sp.

MSE 466 Energy Materials, Devices, and Systems (3)

David S. Ginger Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Prerequisite: either PHYS 431, E E 421, MSE 311, MSE 312, MSE 313, MSE 351, MSE 352, CHEM E 456, CHEM 455, or CHEM 475, any of which may be taken concurrently. Offered: jointly with CHEM 466/CHEM E 440; A.

MSE 471 Introduction to Polymer Science and

Engineering (3) Introduction of preparative methods of polymers; physical chemistry of polymeric molecules in solution, liquid and solid phase; thermodynamics of polymers; methods of characterization; mechanical properties; fabrication techniques; properties of commercial polymers. Offered: A.

MSE 473 Noncrystalline State (3) Chemistry and physics of inorganic glass and amorphous semiconductors; structure, properties, and processing of vitreous materials. Prerequisite: MSE 342; MSE 351. Offered: Sp.

MSE 475 Introduction to Composite Materials (3) Microstructural design and processing of composite materials; polymeric, metallic, and ceramic matrices; fibers and fiber-reinforced composites, thermal, mechanical, and electrical properties. Offered: A.

MSE 476 Introduction to Optoelectronic Materials (3) Introduces the optical properties of dielectrics, semiconductors, and metals, and their applications in optoelectronic and photonic devices used in telecommunications, biomedical, and renewable energy industries. Prerequisite: CSE 142 or AMATH 301; Completion or concurrent enrollment in MSE 331; or permission of instructor.

MSE 477 Data Science and Materials Informatics (3) Introduction to data science approaches and their applications to materials science research. Basic skills in data mining, data processing, and machine learning for materials research topics using Python taught through case studies and other methodologies. Prerequisite: CSE 160 or CSE 163; recommended: proficiency in Python, achieved through coursework or independent study. Offered: jointly with CHEM 441.

MSE 478 Materials and Device Modeling (3) Implementation of computational and data science methods in materials science discovery and device modeling to gain physical and statistical insights of materials design. First-principles methods, multiscale simulations, and continuum modeling will be introduced within the framework of active machine learning with application of both computational and data science methods to materials study. Prerequisite: MSE 477/CHEM 441. Offered: jointly with CHEM 442.

MSE 479 Big Data for Materials Science (3) Introduces the challenges and opportunities of the big data era for materials science and chemistry research. Students will gain basic knowledge and skills of data management using high performance computing, including automated data processing, batch processing, and cloud based computational tools that are suitable for materials science research.

Prerequisite: MSE 477/CHEM 441. Offered: jointly with CHEM 443.

MSE 481 Science and Technology of Nanostructures (3) Comprehensive introduction to the developing field of nanoscience and nanotechnology. Includes materials properties as a function of length-scale and dimensionality, applications in medicine/biology, electronics, magnetism, and electro-mechanical systems. Cooperative learning approaches involving student participation with team assignments, class activities, lectures, and laboratory visits. Offered: W.

MSE 482 Biomaterials/Nanomaterials in Tissue Engineering (3) Provides fundamental understanding of biomaterials, implant applications, and their design consideration. Includes the fundamentals of synthesis, properties, and biocompatibility of metallic, ceramic, polymeric, composite, and biological materials and their applications for both hard and soft tissue replacement, and controlled drug delivery.

MSE 483 Nanomedicine (3) Covers methods of synthesis and characterization of nano-sized materials and specific considerations for use in biological systems.

MSE 484 Electronic and Optoelectronic Polymers (3) NW Covers the chemistry, physics, materials science, and applications of semiconducting and metallic conjugated polymers. Examines the structural origins of the diverse electronic and optoelectronic properties of conjugated polymers. Exemplifies applications by light-emitting diodes, lasers, solar cells, thin film transistors, electrochromic devices, biosensors, and batteries. Prerequisite: either CHEM 453 or CHEM 455. Offered: jointly with CHEM 484; ASp.

MSE 485 Introduction to Electronic Packaging and Materials (3) The governing equations of transport phenomena: mechanical, thermal, and electromagnetic behavior, thermomechanical and electromagnetic properties of packaging materials, electromagnetic characteristics of circuit and transmission lines, thermal management and reliability analysis of packaging, interconnect and material processing technology. Prerequisite: MSE 170. Instructors: Taya Offered: jointly with M E 485; AW.

MSE 486 Fundamentals of Integrated Circuit Technology (3) Processing physics, chemistry, and technology, including evaporation, sputtering, epitaxial growth, diffusion, ion implantation, laser annealing, oxidation, chemical vapor deposition, photoresists. Design considerations for bipolar and MOS devices, materials and process characterization. Future trends. Prerequisite: EE 331 or MSE 351. Offered: jointly with E E 486; AW.

MSE 487 Laboratory in Electronic Packaging and Materials (1) *Taya, Stoebe* Laboratory course to accompany M E 485 Experiments related to design, processing and reliability of electronic packaging used in consumer electronics. Co-requisite: M E 485. Offered: jointly with M E 487.

MSE 488 Materials in Manufacturing (3) Primary manufacturing processes used for developing engineering materials components from metals, polymers, ceramics, and composites.

MSE 489 Additive Manufacturing: Materials, Processing and Applications (3) Additive manufacturing processes for polymers, metals, ceramics and composite materials. Operating principles, key process parameters important to the part build process, and the importance of design. Microstructure of the build parts, dependence on processing conditions, the mechanical and physical properties, defects and relevant post-processing treatments for each material system. Hybrid processes, and adoption in various fields. Offered: jointly with M E 402; Sp.

MSE 490 Composite Materials in Manufacturing (3) Manufacturing processes for composite materials, with a focus on thermosets. Composite manufacturing process from raw materials manufacturing to shipping final products. Controlling parameters leading to defects. Balance between design and quality system manufacturing controls, relationship of process development to engineering design, and procedures for materials and process changes. Identification and repair of manufacturing anomalies. Offered: Sp.

MSE 491 Design in Materials Engineering I (2) Integration of technical materials engineering concepts with professional components related to materials engineering. Reviews materials design, teamwork, leadership, engineering economics, and

ethics. Beginning of a two-quarter, team design project on materials engineering. Prerequisite: MSE 313 and MSE 352. Offered: W.

MSE 492 Design in Materials Engineering II (2) Integration of technical materials engineering concepts with professional components related to materials engineering. Reviews process design, manufacturability, and quality control. Completes the two-quarter team design project on materials engineering. Prerequisite: MSE 491. Offered: W.

MSE 497 Undergraduate Research (1-5, max. 12) Research in materials under faculty supervision other than the MSE senior project. Cannot be used toward the technical elective requirements in the MSE major. Credit/no-credit only. Offered: AWSpS.

MSE 498 Special Topics (1-5, max. 15) Special topics in materials science and engineering offered as a course with lectures, conferences, or laboratory. Offered: AWSpS.

MSE 499 Senior Project (*-, max. 5) Materials science and engineering field or laboratory investigations in group or individual setting. Final written report and oral presentation required. Offered: AWSpS.

MSE 501 Advanced Processing of Inorganic Materials (3) Discusses advanced processes of inorganic materials including metals, ceramics, and electronic materials, such as high temperature processing, sintering, solidification, single crystal growth from liquid, and vapor phase deposition. Emphasizes both the fundamentals and practical approaches of these processing techniques. Offered: A, even years.

MSE 502 Sol-Gel Processing (3) Fundamentals of colloid science and the physics and chemistry of the sol-gel process. Emphasizes the synthesis and applications of various materials, such as multi-component oxides, nano-composites, meso- and microporous materials, organic/inorganic hybrids, and biomaterials that have important applications in both leading technologies and modern industries. Offered: A, odd years.

MSE 504 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices.

Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Cannot be taken for credit if credit received for EE P 504. Offered: jointly with E E 504/M E 504.

MSE 510 Bonding, Crystallography, and Symmetry-Related Properties of Materials (3) Rigorous introduction to the fundamentals of bonding, symmetry, crystallography, and related properties. Quantum mechanical foundation of cohesion and properties of solids. Geometric approach to understanding symmetry elements in 2-D and 3-D, including point groups, space groups, stereographic projections, and bravais lattices. Tensor properties of crystals related to crystallography and symmetry. Offered: A.

MSE 512 Experimental Transmission Electron Microscopy (3) Fundamentals of electron optics as applied to microscopy; applications of contrast theories and electron diffraction with emphasis on defects and multiphase structures in crystalline solids. Prerequisite: MSE 510. Offered: W, odd years.

MSE 513 Transmission Electron Microscopy Laboratory (2) One four-hour laboratory and one two-hour discussion/demonstration per week; metallic, ceramic, electronic biological sample preparation techniques; diffraction, imaging, and spectroscopy techniques in electron microscopy. Prerequisite: MSE 512 which may be taken concurrently. Offered: W, odd years.

MSE 515 Advanced Transmission Electron Microscopy (3) Principles of image formation in crystalline and amorphous materials at the atomic resolution level; high spatial resolution electron diffraction with emphasis on convergent beam electron diffraction; quantitative elemental compositional and chemical analysis with energy dispersive X-ray spectroscopy and electron energy loss spectroscopy; high voltage electron microscopy. Prerequisite: MSE 512 and MSE 513.

MSE 520 Seminar (1, max. 6) Review of research problems in recent literature. Registration required for all graduate students. Credit/no-credit only. Offered: AWSp.

MSE 524 Applied Rate Phenomena (3) Introduction to rate theory and transport processes. The principal thrust is on applications in ceramics and metallurgy. Prerequisite: basic course in transport phenomena or permission of instructor. Offered: W.

MSE 525 Kinetics and Phase Transformations (3) Thermodynamic basis for kinetic processes, including diffusion and phase transformation kinetics. Diffusion problems and solution methodologies, statistical treatment of diffusion, solid-liquid and solid-solid transformations, ordering transitions. Special topics related to grain growth, sintering, martensitic transformations. Prerequisite: MSE 322 and MSE 421 or equivalent. Offered: Sp.

MSE 529 Semiconductor Optoelectronics (4) Covers optical processes in semiconductors; optical waveguide theory; junction theory; LEDs; lasers photodetectors; photovoltaics; and optical modulators and switches. Prerequisite: E E 485. Offered: jointly with E E 529.

MSE 539 Renewable Energy I (4) *John D. MacKenzie* Covers the underlying physics, manufacturing and performance of current and emerging photovoltaic solar cell and module technologies in a comparative approach. The course will also present practical aspects of the solar resource, module integration, systems and energy production. Recommended: Undergraduate physics and chemistry at the engineering or science level. Students without some previous solid state physics, electronic materials, or semiconductor device coursework may require extra reading. Offered: jointly with M E 539; W.

MSE 541 Defects in Materials (3) Detailed study of the general properties and effects of point, line, and planar defects in crystalline solids. Prerequisite: MSE 331 or equivalent. Offered: W.

MSE 542 Data Science and Materials Informatics (3) Introduction to data science approaches and their applications to materials science research. Basic skills in data mining, data processing, and machine learning for materials research topics using Python taught through case studies and other methodologies. Prerequisite: either CHEM E 545/CHEM 545/MSE 545 (or equivalent) , CHEM E 546/CHEM 546/MSE 546 (or equivalent) , or proof of proficiency in Python. Offered: jointly with CHEM 541.

MSE 543 Materials and Device Modeling (3)

Implementation of computational and data science methods in materials science discovery and device modeling to gain physical and statistical insights of materials design. First-principles methods, multiscale simulations, and continuum modeling will be introduced within the framework of active machine learning with application of both computational and data science methods to materials study.

Prerequisite: either MSE 477/CHEM 441, MSE 542/CHEM 541, CHEM E 545/CHEM 545/MSE 545, or CHEM E 546/CHEM 546/MSE 546 (or equivalents) .
Offered: jointly with CHEM 542.

MSE 544 Big Data for Materials Science (3)

Introduces the challenges and opportunities of the big data era for materials science and chemistry research. Students will gain basic knowledge and skills of data management using high performance computing, including automated data processing, batch processing, and cloud based computational tools that are suitable for materials science research. Prerequisite: either MSE 477/CHEM 441 or MSE 542/CHEM 541. Offered: jointly with CHEM 543.

MSE 545 Data Science Methods for Clean Energy

Research (3) *Jim Pfaendtner* Survey of modern data science methods taught in the context of materials for clean energy (e.g., batteries and solar energy) . Covers data visualization, statistics, machine learning and data management. Instruction, homework and term project are implemented using Python.
Offered: jointly with CHEM 545/CHEM E 545; W.

MSE 546 Software Engineering for Molecular Data

Scientists (3) *Jim Pfaendtner* Introduces basic principles of scientific software development in the Python in the context of Molecular Data Science. The course covers command line tools, Python from the perspective of molecular data science methods, software development and collaboration principles, e.g. version control. Grades are based on homework and group projects. Offered: jointly with CHEM 546/CHEM E 546; W.

MSE 547 Data Science Capstone Project (3) *David A.*

C. Beck Involves teams of graduate students from molecular, materials or clean energy focused disciplines working on Data Science oriented research and engineering projects solicited from internal and external partners. Employ modern team-based software engineering principles and

cutting edge Data Science methods, including but not limited to machine learning, statistics, visualization and data management. Prerequisite: CHEM E 545 and CHEM E 546; recommended: prior exposure to data science fundamentals and software development. Offered: jointly with CHEM 547/CHEM E 547; Sp.

MSE 550 Magnetism, Magnetic Materials, and Related Technologies (3)

Introduce magnetism, magnetic materials, and related applications. Discusses intrinsic and phenomenological concepts of magnetism, ordered magnetic materials, magnetic phenomena, small particles, thin films, and applications (magnetic recording, permanent magnets, and spin-electronic) . Offered: Sp.

MSE 555 Biomimetics: Bioinspired Design and Processing of Materials (4)

How biological organisms produce materials with controlled structure, chemistry, and hierarchy to attain physical properties far superior to traditional engineering materials. Fundamental biological building materials, their synthesis, and their self-assembly with emphasis on examples of soft and hard tissues. Offered: W, even years.

MSE 560 Organic Electronic and Photonic

Materials/Polymers (3) Physical and material concepts determining properties of organic electronic and photonic materials. Discusses electronic structure, physico-chemical characterization, and device application. Includes introduction of electronic band structure of polymers, electrically conducting polymers; organic nonlinear optical electroluminescent materials; polymer optical fibers; tow-photon absorption materials for 3-D microfabrication. Offered: jointly with CHEM 564/MOLENG 530; W.

MSE 562 Introduction to Electronic Composites (3)

Taya Fundamentals of microstructure-macro-property relation of electronic composites. This course covers applications (computers, laser packages, medical devices, MEMS, avionics) , functions (mechanical, thermal, electromagnetic, and optical) , microstructure-macro-property relations, processing issues, and modeling of electronic composites. Offered: jointly with M E 562; Sp.

MSE 563 Advanced Composites: Design and Manufacturing (3) Manufacturing and processing techniques of metal-, polymer-, and ceramic-matrix composites; design considerations related to manufacturing techniques; non-destructive testing of composite structures. Fiber-matrix interfacial features and interactions. Interfacial thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: MSE 475 or M E 450 or equivalent by permission of instructor. Offered: jointly with M E 563; Sp.

MSE 565 Electron Theory of Materials (3) Solid-state concepts of materials. Atomic bonding, statistical mechanics, Brillouin zone theory. Applications to conduction, optical, and magnetic properties of metals, semiconductors, and insulators. Offered: W, odd years.

MSE 566 Energy Materials, Devices, and Systems (3)
D. Ginger Jr Provides project based training for synthesis & characterization of new energy materials, for generation and storage, and the integration of renewables into energy systems using instruments at the Clean Energy Research Training Testbed. Topics include nanoparticle synthesis, solar cells, impedance analysis, characterization with solar simulator, coin cell battery assembly & testing, photochemistry, semiconductor w/ 2D materials, grid simulation Offered: jointly with CHEM 566/CHEM E 540; A.

MSE 568 Active and Sensing Materials (3) *Taya* Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Examples of the active and sensing materials include: shape memory alloys (SMAs), ferromagnetic SMAs, ferroelectric, pyroelectric and piezoelectric materials, thermoelectrics, electroactive and conducting polymers, photoactive polymers, photovoltaics, and electrochromic materials. Offered: jointly with M E 568; Sp.

MSE 570 Graduate Tutorial in Materials Science and Engineering I (2) Physical and chemical structures of materials and their relationship to properties. Understanding and applying the following material science concepts: atomic bonding, crystallography, defects and diffusion, thermodynamics, phase diagrams, and phase transformations. Recommended: introductory undergraduate course in materials science. Offered: A.

MSE 571 Graduate Tutorial in Materials Science and Engineering II (2) Mechanical, electrical, dielectric, optical, and thermal properties of materials; applying these concepts. Prerequisite: MSE 570. Offered: W.

MSE 576 Introduction to Optoelectronic Materials (3) Introduces the optical properties of dielectrics, semiconductors, and metals, and their applications in optoelectronic and photonic devices used in telecommunications, biomedical, and renewable energy industries.

MSE 582 Biomaterials/Nanomaterials in Tissue Engineering (3) Provides fundamental understanding of biomaterials, implant applications, and their design consideration. Includes the fundamentals of synthesis, properties, and biocompatibility of metallic, ceramic, polymeric, composite, and biological materials and their applications for both hard and soft tissue replacement, and controlled drug delivery.

MSE 583 Nanomedicine (3) Covers methods of synthesis and characterization of nano-sized materials and specific considerations for use in biological systems.

MSE 588 Materials in Manufacturing (3) Primary manufacturing processes used for developing engineering materials components from metals, polymers, ceramics, and composites.

MSE 589 Additive Manufacturing: Materials, Processing and Applications (3) Additive manufacturing processes for polymers, metals, ceramics and composite materials. Operating principles, key process parameters important to the part build process, and the importance of design. Microstructure of the build parts, dependence on processing conditions, the mechanical and physical properties, defects and relevant post-processing treatments for each material system. Hybrid processes, and adoption in various fields. Offered: jointly with M E 506; Sp.

MSE 590 Composite Materials in Manufacturing (3) Manufacturing processes for composite materials, with a focus on thermosets. Composite manufacturing process from raw materials manufacturing to shipping final products. Controlling parameters leading to defects. Balance between

design and quality system manufacturing controls, relationship of process development to engineering design, and procedures for materials and process changes. Identification and repair of manufacturing anomalies. Offered: Sp.

MSE 598 Engineering Materials Problems (4)

Involves a concentrated project which may include the design of a system or process, or analysis of a set of data related to the materials engineering area. Requires a professional quality report and an oral presentation of the results. Offered: AWSpS.

MSE 599 Special Topics in Materials Science (1-5, max. 15) Studies of special advanced topics in materials science. Prerequisite: permission of instructor. Offered: AWSpS.

MSE 600 Independent Study or Research (*-)
Offered: AWSpS.

MSE 700 Master's Thesis (*-) Offered: AWSpS.

MSE 800 Doctoral Dissertation (*-) Offered: AWSpS.

MECHANICAL ENGINEERING

M E 123 Introduction to Visualization and Computer-Aided Design (4) VLPA/NW Adee

Methods of depicting three-dimensional objects and communicating design information. Development of three-dimensional skills through freehand sketching and computer-aided design using parametric solid modeling. Offered: AWSpS.

M E 124 Visualization and Computer-Aided Design Laboratory (2) VLPA/NW Adee Methods of depicting three-dimensional objects and communicating design information. Development of three-dimensional visualization skills through computer-aided design using parametric solid modeling. Offered: AWSpS.

M E 230 Kinematics and Dynamics (4) NW

Kinematics of particles, systems of particles, and rigid bodies; moving reference frames; kinetics of particles, systems of particles, and rigid bodies; equilibrium, energy, linear momentum, angular momentum. Prerequisite: A A 210. Instructors: Fabien

M E 299 Independent Project (1-3, max. 10)

Research on special topics under supervision of a faculty member. May include design and construction projects. May not be used to satisfy upper-division major requirements Credit/no-credit only. Offered: AWSpS.

M E 323 Engineering Thermodynamics (5)

Engineering thermodynamics, including thermodynamic concepts and properties, the first and second laws of thermodynamics, energy conversion, refrigeration, humidification, and combustion. Engineering design applications. Prerequisite: either CHEM 142 or CHEM 144; MATH 126; PHYS 121. Instructors: Kramlich

M E 331 Introduction to Heat Transfer (4) Study of heat transfer by conduction, radiation, and convection; elementary heat-exchanger design. Prerequisite: either M E 333 or CEE 342. Instructors: Emery

M E 333 Introduction to Fluid Mechanics (5)

Introduction to the basic fluid laws and their application. Conservation equations, dynamic similarity, potential flow, boundary-layer concepts, effects of friction, compressible flow, fluid machinery, measurement techniques. Prerequisite: AMATH 301; M E 323; either MATH 307 or AMATH 351. Instructors: Riley

M E 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with CHEM E 341/ENVIR 341; A.

M E 354 Mechanics of Materials Laboratory (5)

Properties and behavior of engineering materials including stress-strain relations, strength, deformation mechanisms, strength, deformation, fracture, creep, and cyclic fatigue. Introduces experimental techniques common to structural engineering, interpretation of experimental data, comparison of measurements to numerical/analytical predictions, and formal, engineering report writing. Lecture and laboratory. Prerequisite: MSE 170, CEE 220. Instructors: Tuttle

M E 355 Introduction to Manufacturing Processes

(4) Study of manufacturing processes, including interrelationships between the properties of the material, the manufacturing process, and the design of components. Interpretation of experimental data, comparison of measurements to numerical/analytical predictions, and formal, engineering report writing. Prerequisite: M E 354. Instructors: Ramulu

M E 356 Machine Design Analysis (4) Analysis, design, and selection of mechanical and electromechanical subsystems and elements, such as gears, linkages, cams, motors, and bearings. Prerequisite: M E 354. Instructors: Chung

M E 373 Introduction to System Dynamics (5) Mathematical modeling, analysis, and design of physical dynamic systems involving energy storage and transfer by lumped-parameter linear elements. Time-domain response by analytical methods and numeric simulation. Laboratory experiments. Prerequisite: either AMATH 351 or MATH 307; either AMATH 352 or MATH 308; E E 215; M E 230. Instructors: Garbini

M E 374 Systems Dynamic Analysis and Design (5) Extension of M E 373. Frequency response analysis, generalized impedance concepts and applications, Fourier series analysis and Laplace transform techniques. Modeling and analysis of electromechanical actuators and rotating machinery. Laboratory experiments and design projects. Prerequisite: AMATH 301; M E 373. Instructors: Garbini

M E 395 Introduction to Mechanical Design (4) Design process and methodology; decision making; optimization techniques; project planning; engineering economics; probabilistic and statistical aspects of mechanical design; ethical and legal issues. Prerequisite: M E 123; M E 323; IND E 315 or MATH 390/STAT 390 either of which may be taken concurrently. Instructors: Cooper

M E 402 Additive Manufacturing: Materials, Processing and Applications (3) Additive manufacturing processes for polymers, metals, ceramics and composite materials. Operating principles, key process parameters important to the part build process, and the importance of design. Microstructure of the build parts, dependence on

processing conditions, the mechanical and physical properties, defects and relevant post-processing treatments for each material system. Hybrid processes, and adoption in various fields. Offered: jointly with MSE 489; Sp.

M E 406 Corrosion and Surface Treatment of Materials (3) *R. Kent* Corrosion fundamentals and forms (galvanic, crevice, pitting, stress corrosion, erosion, hydrogen, and leaching) . Principles of design, materials selection, cathodic protection and surface treatments (coatings, carburizing, nitriding, and plating) applied to reduce corrosion. Failure analysis applied to case studies.

M E 409 Introduction to Numerical Control and Computer-Aided Manufacturing (3) Control system fundamentals, numerical control (NC) machine control systems, and the design aspect of NC machine tools, programming methods of NC machines, computer-aided manufacturing, CNC, DNC, and process optimization. Prerequisite: M E 355 which may be taken concurrently. Instructors: Ramulu

M E 410 Nanodevices: Design and Manufacture (3) *Chung* Examines design, fabrication, and manufacture of nano devices with state-of-the-art nanotechnology. Covers classification and selection of nanoscale materials and manufacturing methods: Includes nanodevice design projects. Offered: A.

M E 411 Biological Frameworks for Engineers (3) *Sniadecki* Introduces the fundamentals of biology for an engineer. Covers mechanisms and biomechanics of DNA, proteins, cells, connective tissue, musculoskeletal tissue, and cardiovascular tissue, integration principles of living systems, structure-function relationships, and techniques to study biology and medicine, and tissue engineering. Offered: A.

M E 412 Biomechanics of Movement (3) *K. Steele* Introduction to the dynamics and control of human movement and other biological systems. An overview of the major challenges in movement biomechanics and experience with the engineering tools we use to address these challenges. Course includes weekly assignment, hands-on labs, and a final project. Prerequisite: ME 374, or permission of instructor Offered: W.

M E 414 Engineering Innovation in Health (4) *Eric J. Seibel, Jonathan D Posner* Introduces the role of Innovation and engineering in the design of medical devices and healthcare technologies, applicable both to medical practice and healthcare-focused engineering. May serve as the first course in a medically related senior design project sequence. Discusses medical practice, clinical needs finding, FDA regulation, insurance reimbursement, intellectual property, and the medical device design process. Offered: jointly with E E 414; A.

M E 415 Sustainability and Design for Environment (3) *Cooper* Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with CEE 495/ENVIR 415.

M E 419 Biomechanics Seminar (1, max. 4) *N. Sniadecki, K. Steele* Weekly seminar on biomechanics research, presented by faculty members, researchers, and graduate students from UW, other institutions, and industry. Credit/no-credit only. Offered: W.

M E 425 HVAC Engineering (4) Heating, ventilating, and air conditioning of built environment. Human comfort, psychometric processes, load computations, fluid distribution, and controls. Design analysis of HVAC system is taught in the lectures and applied in the class project. Prerequisite: M E 323; M E 331. Instructors: Emery

M E 426 Renewable Energy II (3) *B. POLAGYE* Explores renewable energy principles and practices of energy conversion, focusing on energy conversion from wind and water. Prerequisite: M E 333.

M E 430 Advanced Energy Conversion Systems (4) Advanced and renewable energy conversion systems and technologies are treated. Included are high efficiency combined cycles; renewable energy conversion involving solar, wind, and biomass; direct energy conversion and fuel cells; and nuclear energy. Environmental consequences of energy conversion and environmental control are discussed. Prerequisite: M E 323. Instructors: Kramlich

M E 431 Advanced Fluid Mechanics (4) Advanced topics in fluid mechanics, including kinematics, potential theory and vortex dynamics, viscous flow, turbulence, experimental and numerical methods, and design. Prerequisite: M E 333. Instructors: Mescher

M E 432 Gas Dynamics (3)

M E 433 Turbomachinery (4) *Aliseda* Thermodynamics, gas dynamics, and fluid mechanics of axial and centrifugal compressors, pumps, and turbines. Selection of components for engineering applications. Design problems and/or laboratory experiments to illustrate operating characteristics of turbomachines.

M E 440 Advanced Mechanics of Materials and Solids (3) Study of mechanics of deformable bodies, including three-dimensional stress and strain tensors and their transformations. Equations of compatibility, continuity and equilibrium. Elastic constants. Failure criteria including fracture, yield, and instability. Deflection relations for complex loading and shapes. Indeterminate problems. Design applications and numerical methods. Prerequisite: M E 354.

M E 442 Renewable Energy (4) *NW P. MALTE* Introduction to renewable energy. Principles and practices: solar, wind, water, and biomass energy conversion. Prerequisite: either M E 323, CHEM E 325, A A 260, or E E 351. Offered: jointly with CHEM E 442; W.

M E 445 Introduction to Biomechanics (4) *J. SANDERS* Presents the mechanical behavior of tissues in the body and the application to design of prostheses. Tissues studies include bone, skin, fascia, ligaments, tendons, heart valves, and blood vessels. Discussion of the structure of these tissues and their mechanical response to different loading configurations. An important part of the class is a final project. Offered: jointly with BIOEN 440; Sp.

M E 450 Introduction to Composite Materials and Design (3) *Tuttle* Stress and strain analysis of continuous fiber composite materials. Orthotropic elasticity, lamination theory, failure criterion, and design philosophies, as applied to structural polymeric composites.

M E 459 Introduction to Fracture Mechanics (3)

Deformation processes leading to fracture, and linear elastic fracture mechanics. Fatigue crack propagation. Fracture control and failure analysis. Prerequisite: M E 354; M E 356. Instructors: Ramulu

M E 460 Kinematics and Linkage Design (3) *Ganter*

Synthesis of linkage-type mechanisms using graphical and computer methods.

M E 461 Mechanics of Thin Films (3) *Wang*

Provides an overview of the thin film deposition processes; the stress and microstructure development during film growth; the mechanisms of adhesion; delamination and fracture; and the state-of-the-art characterization techniques for the microstructure and mechanical properties of thin films, coatings, and nanomaterials. Offered: A.

M E 469 Applications of Dynamics in Engineering (4)

Application of the principles of dynamics to selected engineering problems, such as suspension systems, gyroscopes, electromechanical devices. Includes introduction to energy methods, Hamilton's principle and Lagrange equations, and the design of dynamic system. Prerequisite: M E 374. Instructors: Storti

M E 470 Mechanical Vibrations (3)

Single-degree-of-freedom linear systems techniques. Matrix techniques for multi-degree-of-freedom linear systems. Applications in vibration isolation, transmission, and absorption problems and instrumentation. Prerequisite: M E 373. Instructors: Reinhall

M E 471 Automatic Control (4)

Dynamic system modeling; control system stability and performance analysis; compensator design by Bode and root-locus methods. Prerequisite: M E 374. Instructors: Berg

M E 473 Instrumentation (4)

Principles and practice of industrial and laboratory measurement. Dynamics of instrument response; generalized performance analysis of sensor systems; theory of transducers for motion, force, pressure, flow, and other measurements. Lecture and laboratory. Prerequisite: M E 374. Instructors: Garbini

M E 477 Embedded Computing in Mechanical

Systems (4) Analysis of electromechanical systems employing microcomputers for control or data acquisition. Microcomputer architecture, memory

organization, C language programming, interfaces, and communications. Particular emphasis on design of hardware and software interfaces for real-time interaction with mechanical systems. Weekly laboratory. Prerequisite: M E 374. Instructors: Garbini

M E 478 Finite Element Analysis (4)

Development of theory and concepts of finite element analysis. Applications in all areas of mechanical engineering, including mechanics of solids, heat transfer, and design of dynamical systems. Weekly computer exercises. Prerequisite: M E 123; M E 374; either MATH 308 or AMATH 352. Instructors: Reinhall

M E 480 Introduction to Computer-Aided

Technology (4) Principles of computer-aided technology. Computer-aided design, engineering, drafting, and manufacturing; computer-aided design systems, geometry, computer graphics, hardware, computer-aided vehicle/system design synthesis. System demonstrations, laboratories, and site visits. Prerequisite: M E 123; AMATH 301. Instructors: Ganter

M E 481 Internal Combustion Engines (4)

Internal combustion engines including spark and compression ignition piston engines, with focus on engine performance and the thermodynamics, combustion, emissions, and efficiency of engines. Impact of greenhouse gas constraints on engines. Prerequisite: either M E 323, A A 260, or CHEM E 325. Instructors: Kramlich, Malte

M E 485 Introduction to Electronic Packaging and Materials (3)

The governing equations of transport phenomena: mechanical, thermal, and electromagnetic behavior, thermomechanical and electromagnetic properties of packaging materials, electromagnetic characteristics of circuit and transmission lines, thermal management and reliability analysis of packaging, interconnect and material processing technology. Prerequisite: MSE 170. Instructors: Taya Offered: jointly with MSE 485; AW.

M E 487 Laboratory in Electronic Packaging and

Materials (1) *Taya, Stoebe* Laboratory course to accompany M E 485 Experiments related to design, processing and reliability of electronic packaging used in consumer electronics. Co-requisite: M E 485. Offered: jointly with MSE 487.

M E 490 Naval Architecture (3)**M E 494 Mechatronics Design Preparation (1)**

Design laboratory preparation. Covers the development of functional specifications; exploration of prior art; static and dynamic modeling. Prerequisite: M E 471; M E 473. Instructors: Garbini Offered: W.

M E 495 Mechanical Engineering Design (4) Design laboratory involving the identification and synthesis of engineering factors to plan and achieve specific project goals. Current literature and prerequisite texts used as reference sources. Prerequisite: M E 395. Instructors: Cooper

M E 496 Technology-Based Entrepreneurship (3) Concentrates on hands-on aspects of innovation and entrepreneurial enterprise development. Examines relationships between innovation, iterative prototyping, and marketing testing. Students identify market opportunities, create new technology-based products and services to satisfy customer needs, and construct and test prototypes. Offered: jointly with IND E 496; Sp.

M E 498 Special Topics in Mechanical Engineering (1-5, max. 6) Lecture and/or laboratory. Maximum of 6 credits may be applied toward an undergraduate degree.

M E 499 Special Projects (1-5, max. 6) Written report required. Offered: AWSpS.

M E 500 Advanced Composite Structural Analysis (3) Covers advanced stress analysis methods for composite structures made of beams, laminates, sandwich plates, and thin shells; stress and buckling analyses of solid and thin-walled composite beams; shear deformable theory for bending of thick laminated plates; and stress and fracture mechanics analysis of bonded joints. Prerequisite: A A 532. Offered: jointly with A A 535; Sp, odd years.

M E 501 Modern Manufacturing Processes (3) *Ramulu* General survey and introduction to modern manufacturing engineering processes. Fundamental principles and practices of modern manufacturing processes. Case studies and exercises relating the course material directly to modern industrial practice. Offered: A.

M E 503 Continuum Mechanics (3) Reviews concepts of motion, stress, energy for a general continuum; conservation of mass, momentum, and energy; and the second law; constitutive equations for linear/nonlinear elastic, viscous/inviscid fluids, and general materials; and examples/solutions for solid/fluid materials. Offered: jointly with A A 503; A.

M E 504 Introduction to Microelectro Mechanical Systems (4) Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. MEMS design and layout. MEMS CAD tools. Mechanical and electrical design. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances. Cannot be taken for credit if credit received for EE P 504. Offered: jointly with E E 504/MSE 504.

M E 506 Additive Manufacturing: Materials, Processing and Applications (3) Additive manufacturing processes for polymers, metals, ceramics and composite materials. Operating principles, key process parameters important to the part build process, and the importance of design. Microstructure of the build parts, dependence on processing conditions, the mechanical and physical properties, defects and relevant post-processing treatments for each material system. Hybrid processes, and adoption in various fields. Offered: jointly with MSE 589; Sp.

M E 507 Incompressible Fluid Mechanics (3) Covers inviscid and viscous incompressible flows, exact solutions of laminar flows, creeping flows, boundary layers, free-shear flows, vorticity equation, and introduction to vortex dynamics. Offered: jointly with A A 507; W.

M E 508 Theory and Design for Mechanical Measurements (3) Fundamental concepts of mechanical measurements, principles of sensors and transducers, signal conditioning and data acquisition, advanced experiment planning and analysis, and applications in mechanical engineering.

M E 510 Mathematical Foundations of Systems Theory (4) Mathematical foundations for system theory presented from an engineering viewpoint. Includes set theory; functions, inverse functions; metric spaces; finite dimensional linear spaces; linear operators on finite dimensional spaces;

projections on Hilbert spaces. Applications to engineering systems stressed. Offered: jointly with A A 510/CHEM E 510/E E 510.

M E 511 Biological Frameworks for Engineers (3)

Sniadecki Introduces the fundamentals of biology for an engineer. Covers mechanisms and biomechanics of DNA, proteins, cells, connective tissue, musculoskeletal tissue, and cardiovascular tissue, integration principles of living systems, structure-function relationships, and techniques to study biology and medicine, and tissue engineering. Offered: A.

M E 512 Biomechanics of Movement (3) *K. Steele*

Introduction to the dynamics and control of human movement and other biological systems. An overview of the major challenges in movement biomechanics and experience with the engineering tools we use to address these challenges. Course includes weekly assignment, hands-on labs, and a final project. Prerequisite: ME 374, or permission of instructor Offered: W.

M E 514 Engineering Innovation in Health (4) *J. Posner, E. Seibel, K. Steele*

Introduces the role of innovation and engineering in the design of medical devices and healthcare technologies, applicable both to medical practice and other healthcare-related needs. May serve as the first course in a medically-related graduate design project sequence. Discusses medical practice, clinical needs finding, regulatory approval, insurance reimbursements, intellectual property, and the medical device design process. Offered: A.

M E 515 Life Cycle Assessment (3) *Cooper*

Presents and discusses the computation structure and data sources for environmental Life Cycle Assessment. Uses Life Cycle Assessment to analyze materials, products, and services. The analysis either identifies opportunities for improvements or selects a superior alternative on the basis of pollution prevention and resource conservation. Offered: W.

M E 516 Advanced Manufacturing and Energy Technologies (3) *C. Cobb*

Advanced manufacturing and processing methods for energy devices and systems will be examined, including but not limited to the following application areas: batteries, fuel cells, solar cells, and sensors. This course will study the role of manufacturing in clean energy, discuss

current challenges, and investigate opportunities for performance improvement. Recommended: An undergrad training in mechanical or materials science engineering. Prior coursework or experience in the following areas is required: M E 355 or equivalent, M E 395 or equivalent, M E 354 or equivalent, and M E 333 or equivalent. Offered: Sp.

M E 519 Biomechanics Seminar (1, max. 4) *N. Sniadecki, K. Steele*

Weekly seminar on biomechanics research, presented by faculty members, researchers, and graduate students from UW, other institutions, and industry. Credit/no-credit only. Offered: W.

M E 520 Seminar (-1, max. 20) The graduate seminar series presents speakers of varied interests, industries, and professions. Credit/no-credit only. Offered: AWSp.

M E 521 Thermodynamics (3)

Fundamental concepts of temperature, thermodynamic properties, and systems. The first, second, and combined laws. Development of the relations of classical thermodynamics. Introduction to statistical thermodynamics. Prerequisite: M E 323 and graduate standing in mechanical engineering or permission of instructor. Instructors: Kramlich Offered: A.

M E 522 Thermodynamics (3)

Topics from statistical thermodynamics, including the Boltzmann, Bose-Einstein, and Fermi-Dirac statistics. Solutions of the Schrodinger wave equation and evaluation of the partition function for translation, rotation, and vibration. Prerequisite: M E 521 or permission of instructor. Instructors: Malte

M E 523 Energy and Environment Seminar (1, max. 20)

Malte Student discussions of topics in combustion science and technology, alternative fuels, renewable energy, environmental consequences of energy conversion, and design for environment. Also, presentations by outside experts. May be repeated for credit. Credit/no-credit only. Offered: AWSp.

M E 524 Combustion (3)

Chemical and physical processes of combustion with applications to design of combustors, fuel selection, and consideration of environmental effects. Prerequisite: graduate standing in mechanical engineering or permission of

instructor. Instructors: Kramlich Offered: Sp, odd years.

M E 525 Applied Acoustics I (3) Introduces acoustics through various applications such as medical ultrasound, underwater sound, noise control and vibrations. Includes linear acoustics, wave equation, planewave solutions, acoustics scales; reflection, refraction, scattering and diffraction, acoustic sources, radiation from transmission through plates. Prerequisite: graduate standing in Engineering, allied field, or permission of instructor. Instructors: Dahl, Reinhall Offered: Sp.

M E 526 Special Topics in Acoustics (3) Advanced study of special topics in acoustics, such as medical ultrasound, underwater sound, noise control and vibrations. Prerequisite: ME 525, or permission of instructor. Instructors: Dahl, Reinhall Offered: A.

M E 527 Musculoskeletal Biomechanics (4) Engineering principles and mechanics applied to the musculoskeletal system including structure-function property relationships of musculoskeletal tissues, the biomechanics of joint systems, and applications of biomechanics in industry and research. Offered: jointly with BIOEN 520.

M E 528 Acoustics of Environmental Noise (4) Offered: jointly with CEWA 554.

M E 529 Advanced Energy Conservation Systems (4) *Kramlich* Covers advanced energy conversion systems and technologies, including high efficiency combined cycles, advanced rankine, integrated gasification combined cycle, nuclear, biomass thermal conversion, and fuels cells. Discusses environmental consequences. Offered: A.

M E 530 Radiative Heat Transfer (3) *Mescher* Covers black and gray body radiation, radiative material properties, radiation exchange between surfaces, radiation in participating media, and combined radiation with conduction or convection. Offered: W.

M E 531 Conductive Heat Transfer (3) Analysis of steady-state and transient heat conduction in single- and multidimensional systems by mathematical, graphical, numerical, and analogical methods. Prerequisite: graduate standing in mechanical engineering or permission of instructor.

M E 532 Convective Heat Transfer (3) Introduction to fluid flow and boundary-layer theory as applicable to forced- and natural-convection heat transfer. Condensation and boiling heat transfer. Prerequisite: graduate standing or permission of instructor. Instructors: Kramlich Offered: Sp.

M E 534 Fluid Mechanics II (3) Review of basic principles, some exact solutions and their interpretation, waves (water waves, sound waves, shock waves), boundary layers, jets and wakes, flow stability, turbulence, applications. Prerequisite: M E 507 or permission of instructor. Instructors: Riley Offered: W.

M E 535 Computational Techniques in Mechanical Engineering (3) Advanced heat transfer studies of interest to mechanical engineers. Subject coverage varies from year to year. Prerequisite: permission of instructor. Instructors: Emery Offered: Sp.

M E 536 Micro and Nanoscale Fluid Transport Phenomena (3) *Posner, Shen* Focuses on fundamental fluid transport physics at the micro/ and nanometer scale for applications in micro/nanofluidic devices. Presents the core concepts of low-Reynolds number Newtonian fluid mechanics; mass transfer; charged double layers; electrokinetically driven flow and transport; and surface tension. Discusses state of the art micro and nanoscale total analytical devices. Offered: WSp.

M E 537 Topics in Fluid Mechanics (3) Selected fluid mechanics relevant to current advances in research and application. Topics selected vary with faculty and student interest, but have included flow stability, special topics in turbulence, and turbulent reacting flows.

M E 538 Advanced Fluid Mechanics (4) *J. RILEY* Advanced topics in fluid mechanics, including kinematics; potential theory and vortex dynamics; viscous flow; turbulence; numerical methods; and design. Offered: A.

M E 539 Renewable Energy I (4) *John D. MacKenzie* Covers the underlying physics, manufacturing and performance of current and emerging photovoltaic solar cell and module technologies in a comparative approach. The course will also present practical aspects of the solar resource, module integration, systems and energy production. Recommended:

Undergraduate physics and chemistry at the engineering or science level. Students without some previous solid state physics, electronic materials, or semiconductor device coursework may require extra reading. Offered: jointly with MSE 539; W.

M E 540 Renewable Energy II (3) *Malte* Explores renewable energy, principles and practices of energy conversion, focusing on wind and hydrokinetic energy. Offered: Sp.

M E 541 Fatigue of Materials (3) *Ramulu* Macro and micro aspects of fatigue of metals and fatigue mechanisms. Analytical methods for fatigue and life assessment in advanced materials. Offered: W.

M E 543 Fluid Turbulence (3) Methods of characterizing fluid turbulence; probability concepts; spatial and temporal velocity correlations; spectral energy transfer; turbulent diffusion; isotropic turbulence and Kolmogoroff's hypothesis; Taylor's hypothesis; hot-wire measurement techniques. Prerequisite: 3 credits of graduate level fluid mechanics or permission of instructor. Offered: W, even years.

M E 544 Advanced Turbulence Modeling Techniques (3) The Reynolds stress transport equations; plane homogeneous shear flow; modeling the pressure-strain, diffusion, and dissipation rate correlation tensors; one and two-equation turbulence models; near-wall turbulence and wall functions; limitations of length scale and eddy viscosity modeling. Prerequisite: 3 credits of turbulence-related coursework. Instructors: Riley Offered: Sp, even years.

M E 546 Micro-Scale Heat Transfer (3) *Mescher* Covers advanced heat conduction and radiation principles, emphasizing micro-scale applications. Offered: Sp, odd years.

M E 548 Linear Multivariable Control (3) Introduction to MIMO systems, successive single loop design comparison, Lyapunov stability theorem, full state feedback controller design, observer design, LQR problem statement, design, stability analysis, and tracking design. LQG design, separation principle, stability robustness. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 548/E E 548.

M E 549 Estimation and System Identification (3) Fundamentals of state estimation for linear and nonlinear systems. Discrete and continuous systems. Probability and stochastic systems theory. Models with noise. Kalman-Bucy filters, extended Kalman filters, recursive estimation. Numerical issues in filter design and implementation. Prerequisite: either A A 547, E E 547, or M E 547. Offered: jointly with A A 549/E E 549.

M E 550 Nonlinear Optimal Control (3) Calculus of variations for dynamical systems, definition of the dynamic optimization problem, constraints and Lagrange multipliers, the Pontryagin Maximum Principle, necessary conditions for optimality, the Hamilton-Jacobi-Bellman equation, singular arc problems, computational techniques for solution of the necessary conditions. Offered: jointly with A A 550/E E 550.

M E 551 Elasticity I: Elastostatics (3) *Taya* Elastostatics, including general formulations of 2D and 3D elastostatic problems (stress function method, complex variable method, displacement potential method). Eshelby's method is emphasized and used to solve 2D and 3D problems with special application to composite materials. Offered: W.

M E 552 Viscoelasticity and Plasticity (3) *Taya* Covers viscoelasticity, including the stress-strain equations in terms of convolution integral, Fourier transform, and Laplace transform modes. Plasticity focuses on generalized plastic behavior.

M E 553 Adhesion Mechanics (3) Introduction to adhesive systems and test/evaluation techniques. Stress/strain analysis methods used with adhesive joints. Examples of practical applications. Prerequisite: graduate student status or permission of instructor. Instructors: Tuttle Offered: Sp, even years.

M E 555 Thermoelasticity (3) Basic equations of thermoelasticity for isotropic elastic solids. Analysis of disks, cylinders, spheres, beams, and plates under steady temperature and sudden and slow heating and cooling. Introduction to thermoelastic stability. Prerequisite: M E 551 or permission of instructor. Instructors: Emery

M E 556 Experimental Stress Analysis I (3) Theory and practice of experimental techniques including

strain gages and strain gage-based devices, thermocouples, LVDTs, and transducer design. Lecture and laboratory. Prerequisite: graduate standing or permission of instructor. Instructors: Tuttle Offered: A.

M E 557 Experimental Stress Analysis II (3) Theory and practice of optical mechanics, including interferometric techniques (moire and holographic), geometric moir methods, and photoelasticity. Lecture and laboratory. Prerequisite: graduate standing or permission of instructor. Instructors: Tuttle Offered: W, even years.

M E 559 Introduction to Fracture Mechanics (3) *Ramulu* Applications of linear fracture mechanics to failure analysis and fracture control based on actual case studies. Fracture toughness and fatigue testing techniques, crack initiation, and propagation fatigue life prediction of mechanical components subjected to environmental effects. Offered: W.

M E 561 Mechanics of Thin Films (3) *Wang* Provides an overview of the thin film deposition processes; the stress and microstructure development during film growth; the mechanisms of adhesion; delamination and fracture; and the state-of-the-art characterization techniques for the microstructure and mechanical properties of thin films, coatings, and nanomaterials. Offered: A.

M E 562 Introduction to Electronic Composites (3) *Taya* Fundamentals of microstructure-macro-property relation of electronic composites. This course covers applications (computers, laser packages, medical devices, MEMS, avionics), functions (mechanical, thermal, electromagnetic, and optical), microstructure-macro-property relations, processing issues, and modeling of electronic composites. Offered: jointly with MSE 562; Sp.

M E 563 Advanced Composites: Design and Manufacturing (3) Manufacturing and processing techniques of metal-, polymer-, and ceramic-matrix composites; design considerations related to manufacturing techniques; non-destructive testing of composite structures. Fiber-matrix interfacial features and interactions. Interfacial thermodynamics applied to selection of fiber-matrix combinations. Prerequisite: MSE 475 or M E 450 or

equivalent by permission of instructor. Offered: jointly with MSE 563; Sp.

M E 564 Mechanical Engineering Analysis (3)

Application of mathematical methods to the description and analysis of systems in mechanical engineering. Analogies in heat transfer, fluid flow, stress distribution, dynamics, and feedback control. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Instructors: Storti Offered: A.

M E 565 Mechanical Engineering Analysis (3)

Applications of vectors, matrices, and partial differential equations to mechanical engineering systems, including computational techniques and analogies. Prerequisite: graduate standing in mechanical engineering or permission of instructor. Instructors: Storti Offered: W.

M E 567 Micro- and Nanostructured Biosensors (3)

Focuses on biosensors based on micromachining and nanotechnology. The working principles on molecular detection and analysis are introduced with the fabrication process, system integration and evaluation. Helps students to classify biosensors detecting molecules, design the fabrication process and identify the evaluation methods. Offered: jointly with MOLENG 567; W.

M E 568 Active and Sensing Materials (3) *Taya*

Fundamental knowledge of the nano-structure property relations of active and sensing materials, and their devices. Examples of the active and sensing materials include: shape memory alloys (SMAs), ferromagnetic SMAs, ferroelectric, pyroelectric and piezoelectric materials, thermoelectrics, electroactive and conducting polymers, photoactive polymers, photovoltaics, and electrochromic materials. Offered: jointly with MSE 568; Sp.

M E 572 Methodologies for Engineering Design:

Conceptual Design (3) Methodologies particularly useful in the conceptual or preliminary phase of a design. The design process. Impact of formulating independent functional requirements. Physical and functional coupling in design. Case studies in conceptual design of products and processes. Prerequisite: graduate standing or permission of instructor. Instructors: Kumar Offered: W, even years.

M E 574 Introduction to Applied Parallel Computing for Engineers (3) *D. Storti*

Utilization of GPU-based parallel computing for engineering applications. Basics of hardware and software for GPU-based parallel computing. Introduction to GPU programming, language extensions, and interfaces. Introduction to parallel methods for numerical analysis and digital design. Applications in imaging, inspection, and computer-aided design. Hands-on experience creating GPU-powered parallel applications. Prerequisite: Introductory computing; graduate standing or permission of instructor; recommended: Some introductory computing experience and graduate standing in engineering
Offered: W.

M E 578 Convex Optimization (4) Basics of convex analysis: Convex sets, functions, and optimization problems. Optimization theory: Least-squares, linear, quadratic, geometric and semidefinite programming. Convex modeling. Duality theory. Optimality and KKT conditions. Applications in signal processing, statistics, machine learning, control communications, and design of engineering systems. Prerequisite: A A 510, CHEM E 510, E E 510, or M E 510. Offered: jointly with A A 578/CSE 578/E E 578; W.

M E 580 Geometric Methods for Non-Linear Control Systems (3) Analysis and design of nonlinear control systems focusing on differential geometric methods. Topics include controllability, observability, feedback linearization, invariant distributions, and local coordinate transformations. Emphasis on systems evolving on Lie groups and linearly uncontrollable systems. Offered: jointly with A A 580/E E 580; Sp, even years.

M E 581 Digital Control System Design (4) *M. BERG* Digital control system design by classical methods. Discrete-time systems and the z-transform. Modeling sampled-data systems. Frequency response of discrete time systems and aliasing. Nyquist stability criterion and gain and phase margins. Discrete-time control law determination by direct z-plane root locus and loop shaping methods. Includes hands-on-with-hardware projects. Prerequisite: AA/EE 447 or ME 471. Offered: jointly with A A 581/E E 581; W.

M E 582 Introduction to Discrete Event Systems (3) Modeling DES with automata and Petri nets.

Languages. State estimation and diagnostics. Control specifications. Feedback control. Dealing with uncontrollability and unobservability. Dealing with blocking. Timed automata and Petri nets. Prerequisite: A A 447/E E 447/ M E 471. Instructors: Berg Offered: jointly with A A 582/E E 582; Sp, even years.

M E 583 Nonlinear Control Systems (3) Analysis of nonlinear systems and nonlinear control system design. Phase plane analysis. Lyapunov stability analysis. Describing functions. Feedback linearization. Introduction to variable structure control. Prerequisite: A A 447/E E 447/M E 471. Offered: jointly with A A 583/E E 583; A.

M E 585 System Identification and Adaptive Control (3) Theory and methods of system identification and adaptive control. Identification of linear-in-parameter systems, using recursive LS and extended LS methods; model order selection. Indirect and direct adaptive control. Controller synthesis, transient and stability properties. Offered: jointly with A A 585/E E 585.

M E 586 Biology Inspired Robotics (3) *S. Fuller* Principles and practices for converting insights from biology into functioning robotic systems. Concepts vary from year to year and can include passive dynamic stability, soft and flexure-based robotics, model-free control, mechanical intelligence, and machine learning. Term project. Prerequisite: M E 373 or equivalent Offered: A.

M E 588 Dynamics and Vibrations (3) Variational techniques, Hamilton's principle, Lagrange's equations applied to dynamics of particles and rigid bodies. Vibration analysis of multi-degree-of-freedom and continuous systems. Prerequisite: graduate standing in engineering or permission of instructor. Instructors: Shen Offered: A.

M E 589 Vibrations (3) Study of systems with nonlinear damping and restoring forces excited by deterministic or random inputs. Applications in measurement, testing, and design of mechanical systems. Nonlinear systems are emphasized. Prerequisite: M E 588 or permission of instructor. Instructors: Storti Offered: W, even years.

M E 591 Robotics and Control Systems Colloquium (1, max. 30) Colloquium on current topics in robotics

and control systems analysis and design. Topics presented by invited speakers as well as on-campus speakers. Emphasis on the cross-disciplinary nature of robotics and control systems. Credit/no-credit only. Offered: jointly with A A 591/CHEM E 591/E E 591.

M E 592 Mechatronics Master's Project (1-6, max. 9) *Santosh Devasia, Joseph L Garbini, Sawyer Buckminster Fuller* Special project in mechatronics and robotics research areas under the supervision of a faculty member. Offered: AWSpS.

M E 593 Feedforward Control (3) Design feedforward controllers for precision output tracking; inversion-based control of non-minimum-phase systems; effect of plant uncertainty on feedforward control; design of feedforward controllers for applications such as vertical take off and landing aircraft, flexible structures and piezo-actuators. Prerequisite: A A 547/E E 547/M E 547. Instructors: Devasia Offered: jointly with A A 593/E E 593; Sp, even years.

M E 594 Robust Control (3) Basic foundations of linear analysis and control theory, model realization and reduction, balanced realization and truncation, stabilization problem, coprime factorizations, Youla parameterization, matrix inequalities, H-infinity and H2 control, KYP lemma, uncertain systems, robust H2, integral quadratic constraints, linear parameter varying synthesis, applications of robust control.

Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 594/E E 594; Sp, odd years.

M E 597 Networked Dynamics Systems (3) Provides an overview of graph-theoretic techniques that are instrumental for studying dynamic systems that coordinate their states over a signal-exchange network. Topics include network models, network properties, dynamics over networks, formation control, biological networks, observability, controllability, and performance measures over networks. Prerequisite: A A 547/E E 547/M E 547. Offered: jointly with A A 597/E E 597.

M E 598 Graduate Projects (1-6, max. 9) Graduate student special projects completed under the supervision of a faculty member. Maximum of 9 credits may be applied toward graduation. Prerequisite: Permission of faculty supervisor and graduate program coordinator Offered: AWSpS.

M E 599 Special Topics (1-5, max. 18) Topics of current interest in Mechanical Engineering. Offered: AWSpS.

M E 600 Independent Study or Research (*-) Written report required. Offered: AWSpS.

M E 700 Master's Thesis (*-) Offered: AWSpS.

M E 800 Doctoral Dissertation (*-) Offered: AWSpS.

COLLEGE OF THE ENVIRONMENT

SCHOOL OF AQUATIC AND FISHERY SCIENCES

FISH 101 Water and Society (5) I&S/NW Examines ecological and social issues associated with water resources as human populations increase and climate warms. Offered: W.

FISH 230 Economics of Fisheries and Oceans (5) I&S/NW, QSR C. ANDERSON Examines how and why people and businesses make choices that lead to over-fishing, hypoxic zones, and oil spills in aquatic environments. Applies economic principles to understand how alternative policies might change these decisions, and how distributional effects influence politically feasible solutions. Offered: jointly with ECON 230; Sp.

FISH 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with BIOL 250/OCEAN 250; AS.

FISH 260 Recreational Fisheries: Science, Management, and Policy (3/5) I&S/NW Grue Provides an overview of Washington's recreational fisheries emphasizing science, management, and policy. Optional laboratory focuses on science and technology behind fishing tactics, tackle, and equipment, ways to minimize impacts and enhance conservation, and politics associated with opportunities for recreational anglers. Suitable for students with or without a strong science background. Offered: Sp.

FISH 261 Recreational Fisheries Seminar (1) Christian E Grue Overview of issues and perspectives associated with management of Washington's recreational fisheries: opportunity; science and technology behind tactics, tackle and equipment; ways to minimize environmental impacts and enhance conservation of target and non-target species; etiquette; and challenges of enforcing

regulations. Suitable for undergraduate students with or without a science background. Offered: Sp.

FISH 270 Aquatic Ecophysiology (5) NW Focuses on fundamental physiology, with an emphasis on processes relevant to living in a variety of aquatic environments. Includes a broad survey of taxa, from prokaryotes to mammals, and a variety of aquatic habitats. Prerequisite: BIOL 200. Offered: jointly with MARBIO 270/OCEAN 270.

FISH 274 Introduction to Data Analysis for Aquatic Sciences (3) Basic knowledge of data acquisition, manipulation, and visualization are necessary for conducting biological research. Students will be introduced to bash, R, and Jupyter Notebooks, but the concepts learned will easily apply to other computational work. By the end of this course students will be able to import data into R, perform analysis on that data, and export the results to graphs, and presentations. Prerequisite: BIOL 180. Offered: A.

FISH 290 Scientific Writing and Communication (3) Designed to teach undergraduate students how to gather information on scientific questions; critically read scientific writing; learn the structure and functions of scientific papers to effectively communicate; learn techniques for effective communication of science in oral and poster presentations; and understand the ethical boundaries associated with scientific communication. Offered: AW.

FISH 296 Study Abroad: Aquatic and Fishery Sciences (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and must be individually evaluated. Credit not does not apply to major requirements without approval.

FISH 300 Exploring Opportunities in Marine Science (1) Explores academic, research, and career opportunities in the field of marine science and helps prepare students for graduation. Intended for junior and transfer students studying marine science. Credit/no-credit only. Offered: jointly with MARBIO 300/OCEAN 300; W.

FISH 310 Biology of Shellfishes (5) NW Aquatic invertebrates with emphasis on taxa with economic and cultural significance. Dramatic diversity, adaptation to environment, and evolutionary forces highlighted. Laboratories, field trips. Offered: Sp.

FISH 311 Biology of Fishes (3/5) NW Covers morphological, physiological, behavioral, and ecological diversity of fishes of the world; designed to provide a basic foundation for advanced courses in all areas of aquatic sciences. 3-credit option does not include laboratory. Offered: jointly with BIOL 311; W.

FISH 312 Fisheries Ecology (3/5) NW Ecological characteristics of fishes and shellfishes in the important freshwater and marine habitats of North America. Relationship between physical aspects of the habitats and community structure. Impacts of human activities on diversity and abundance. Prerequisite: BIOL 220 or FISH 270. Offered: Sp.

FISH 323 Conservation and Management of Aquatic Resources (5) NW Topics include population dynamics, extinction risk, meta-populations, marine reserves, bioeconomics, protection of endangered species, sustainable harvesting, and management institutions. Examines case studies such as salmon, albatross, and whales as representative of conservation issues in aquatic sciences. Sampling, experimental design, computer skills, and research writing. Offered: A.

FISH 324 Aquatic Animal Physiology and Reproduction (3/5) NW Adaptations of aquatic animals to environmental challenges. Energy pathways from feeding and digestion through maintenance (metabolism, movement, repair), homeostasis (respiration, osmoregulation, thermoregulation), growth and reproduction (sex determination, manipulation, sex change). Roles of sensory, nervous, and endocrine systems in mediating environmental information. Hands-on laboratory. Prerequisite: either BIOL 220, B BIO 220 or FISH 270/MARBIO 270/OCEAN 270. Offered: W.

FISH 328 Forestry-Fisheries Interactions (4) NW Offered: jointly with ESRM 328.

FISH 330 Climate Change Impacts on Marine Ecosystems (5) NW Links physics of climate to marine ecosystem processes, exploring both

observed climate impacts from the past and projected ecosystem changes due to human-caused climate change in the future. Case studies include polar, sub-arctic, temperate, tropical, and upwelling ecosystems, and ocean-acidification and its projected impacts. Recommended: Requires high school or college physics and algebra with a basic understanding of Newton's Laws and the ability to comprehend and construct vector diagrams. Offered: jointly with ENVIR 330; Sp.

FISH 340 Genetics and Molecular Ecology (5) NW Application of molecular markers to ecology, evolution, and the management of living resources. Emphasis on understanding the strengths and weaknesses of the approach based on case studies. Prerequisite: BIOL 200. Offered: jointly with BIOL 340; A.

FISH 370 Marine Evolutionary Biology (5) NW Emphasizes geobiological patterns of marine evolutionary biology environment; processes of evolution; marine prokaryote and eukaryote diversity; and applications of evolutionary principles to ocean change, and conservation and management of marine biodiversity. Prerequisite: either FISH 270/OCEAN 270/MARBIO 270 or BIOL 220. Offered: jointly with MARBIO 370/OCEAN 370; Sp.

FISH 404 Diseases of Aquatic Animals (5) NW Overview of communicable and noncommunicable diseases that affect fish and shellfish. Major pathogens of free-ranging as well as captive animals discussed. Students learn to recognize, prevent, and control economically and ecologically important disease syndromes. Offered: Sp, even years.

FISH 406 Parasite Ecology (5) NW Introduces students to disease ecology theory, with emphasis placed on the ecological processes that govern parasite transmission. Topics include parasite diversity, evolution, and taxonomy, distribution, ecology, and physiological effects of parasites on human and wildlife hosts, and parasites as players in food webs. Pre-req: BIOL 180 Prerequisite: BIOL 180; recommended: Offered: A.

FISH 423 Aquatic Invasion Ecology (4) NW *Julian D. Olden* Explores the patterns, drivers, and consequences of species invasions in freshwater, estuary, and marine ecosystems. Focuses on the science and management needs for preventing,

controlling, and eradicating invasive species. Topics illustrated with cases from the Pacific Northwest and the world. Prerequisite: either BIOL 462 or BIOL 180. Offered: W.

FISH 424 Biology and Culture of Aquatic Organisms (5) NW Explores the concept of sustainability and the interrelationship between environment, aquatic species, and culture of aquatic animal and plant species globally. Current practices, animal biology and health, near-shore ecosystem conservation, water quality, and strategies to improve the sustainability of aquaculture for food production and species conservation. Offered: Sp, odd years.

FISH 427 Tropical Marine Biology (5) NW By examining the biogeography, evolution, and ecology of coral reefs, mangroves, and sea grass beds, provides an integrated overview of tropical-systems biology. Integrates ecological and physiological concepts in order to show how anthropogenic stressors such as increased temperature, pollution, and ocean acidification can impact the resilience of tropical marine ecosystems. Laboratory research project. Prerequisite: either FISH 270/MARBIO 270/OCEAN 270 or BIOL 220; and either FISH 290, FHL 333, or MARBIO 305. Offered: W.

FISH 428 Stream and Watershed Restoration (5) NW Overview of restoration principles and techniques with specific application to freshwater aquatic systems. Develops knowledge and skills to assess ecosystems conditions, identify and prioritize restoration opportunities, and evaluate them from a scientific and economic perspective. Prerequisite: either BIOL 356, ESRM 304, or FISH 312. Offered: Sp, even years.

FISH 437 Fisheries Oceanography (4) Investigates how the environment influences distributions and abundances of marine vertebrate and invertebrate species. Uses studies to understand fish and zooplankton life histories, predict trends in populations, reduce uncertainty in resource management, and to decouple anthropogenic from natural effects on aquatic populations. Offered: W.

FISH 441 Integrative Environmental Physiology (3/5) NW Comparative advanced aquatic physiology focusing on the functional response of organisms to natural and human-associated environmental stress. Offered: A.

FISH 444 Conservation Genetics (5) NW Advanced genetic concepts and methods related to species' conservation and management. Includes genetic diversity and evolution, small populations and fragmentation, genetic viability, management of wild and captive populations, reintroductions, hatchery-wild interactions and forensics. Labs include molecular techniques. Offered: W.

FISH 447 Watershed Ecology and Management (3) NW *G. HOLTGRIEVE* Investigation of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and function of flowing aquatic ecosystems and their catchments. Topics include river/stream hydrology, geomorphology, nutrient spiraling, food webs, and global change. Case studies explore human interactions with rivers and approaches to river management. Prerequisite: BIOL 180 or ESRM 201 or FISH 101. Offered: jointly with ESRM 447; Sp.

FISH 448 Watershed Ecology and Management Lab (2) Hands-on examination of river and stream ecosystems with emphasis on physical and biological processes, field methods, analysis of data, and writing scientific papers, includes field trips. Prerequisite: ESRM 447 or FISH 447 which may be taken concurrently. Offered: jointly with ESRM 448; Sp.

FISH 450 Salmonid Behavior and Life History (3/5) NW Behavior, ecology, life history, and conservation of salmon and trout, including their distribution, homing migration, reproduction, ecology of juveniles in different freshwater habitats, seaward migration, and the ecological and evolutionary factors affecting them. Offered: A.

FISH 452 Marine Geospatial Information Science (3) NW Introduces the use of Geographic Information Systems (GIS), seafloor mapping, hydrographic surveying, and spatial analysis in ocean science. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with OCEAN 452; A.

FISH 454 Ecological Modeling (5) NW *T. Essington* Examines concepts in ecological modeling focusing on the rationale, interpretation, and motivation for modeling in ecological sciences. Explores individual,

population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Offered: jointly with Q SCI 454; W.

FISH 455 Fish and Wildlife Toxicology (3/5) NW

Overview of fish/wildlife toxicology: history of the field; regulations; methods used to assess risks contaminants pose to fish/wildlife; classes of contaminants and their direct, sublethal and indirect effects; and contemporary threats of contaminants to fish/wildlife, their habitats and prey. Includes laboratory. Offered: jointly with ESRM 457; W.

FISH 458 Advanced Ecological Modeling: Applying Ecological Models to Manage and Conserve Natural Resources (5) NW *Trevor A. Branch*

Models of fish and wildlife population abundance, including age-structured models, the interaction between human exploitation and protected areas, calculating extinction risk, and examining the effect of alternative management strategies on natural populations. A core part of the course is fitting models to data using both maximum likelihood and Bayesian approaches, and increasing the programming abilities of students by implementing models in R. Recommended: FISH 454/Q SCI 454; and familiarity with the programming language R. Offered: jointly with Q SCI 458; Sp.

FISH 461 Resource Economics for Management and Policy (4) I&S, DIV

Examines how and why resource users make decisions leading to over fishing and pollution. Introduces market and non-market economic tools that support the natural resource management process. Evaluates incentives presented by alternative policies, with an emphasis on regional and global fishery management case studies. Prerequisite: either FISH 230/ECON 230, ENVIR 235/ESRM 235/ECON 235, or a 300-level FISH course. Offered: A.

FISH 464 Arctic Marine Vertebrate Ecology (4) NW

Explores the structure and function of Arctic ecosystems, life history, and adaptations of vertebrates, and how species are affected by climate warming. Emphasizes upper-level trophic interactions, evolutionary drivers, food chains, energy transport paths, and influence of sea ice. Case studies provide background on Arctic conservation and management. Prerequisite: BIOL 180. Offered: W, odd years.

FISH 473 Limnology (3) NW Ecology, conservation, and management of inland aquatic ecosystems. Explores interactions among biological, chemical, and physical features of lakes and other aquatic habitats. Prerequisite: BIOL 180. Offered: jointly with BIOL 473; A.

FISH 474 Limnology Laboratory (2) NW Examination of biota of fresh waters, survey of limnological methods, analysis of data, and writing of scientific papers. Prerequisite: BIOL 473/FISH 473/CEE 462, which may be taken concurrently. Offered: jointly with BIOL 474/CEE 463; A.

FISH 475 Marine Mammalogy (3/5) NW Evolution, taxonomy, physiology, life history, and behavior of marine mammals; the techniques of studying and the management and conservation of them. Offered: Sp.

FISH 477 Seminar in Marine Biology (3) NW Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with BIOL 477/OCEAN 477; W.

FISH 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation.

Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with BIOL 478/ENVIR 478.

FISH 479 Research in Marine Biology (1-15, max. 15)

Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with BIOL 479/MARBIO 479/OCEAN 479; AWSps.

FISH 480 Human Dimensions of Fishery Management (3) I&S/NW

Techniques and philosophy for conservation, management, and development of harvested marine populations. Emphasis on integration of ecological, sociological, and economic dimensions of institutional decision

making for policy formation in uncertain environments. Offered: jointly with SMEA 480.

FISH 489 Peer Teaching Assistants in Aquatic and Fishery Sciences (1-5, max. 10) Designed to prepare graduate and public school teaching by developing mentoring and communication skills through direct experience. Skills gained through attending lectures and weekly preparation sessions, directed discussions with faculty and TAs, and teaching course lab or discussion sections. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

FISH 491 Aquatic Ecological Research in Alaska (12) NW Intensive, full-time research training experience where a team of students works on focused research problems guided by a group of faculty, postdoctoral, and graduate student mentors. Examines behavioral ecology, limnology, and population dynamics. Students also choose specific research questions for their own exploration. Course location: Alaska. Offered: S, even years.

FISH 492 Ecology and Conservation of Marine Birds and Mammals (9/15) NW An intensive, field-based course that offers motivated students the opportunity to learn about these ecologically and culturally important marine animals and the conservation problems they face. Emphasizes first-hand learning and individual research projects. Offered: jointly with FHL 492/MARBIO 492; S.

FISH 493 Capstone 1: Proposal (1) Includes defining a capstone research question, conducting a literature review, preparing a project proposal and budget, reviewing peer proposals, and attending/critiquing the quarterly capstone symposium. Prerequisite: FISH 290. Offered: AWSp.

FISH 494 Capstone 2: Research (3-) Self-directed research or project under direction of a faculty member. Includes defining research question, determining methodology, data collection and analysis. Required for graduation for majors. Prerequisite: FISH 290; FISH 493; Q SCI 381. Offered: AWSpS.

FISH 495 Capstone 3: Research Synthesis (-3) Self-directed research project under direction of a faculty member. Data analysis, writing a paper, and presenting findings. Required for graduation for

majors. Pre-requisite: FISH 494. Prerequisite: FISH 494 Offered: AWSpS.

FISH 496 Study Abroad: Aquatic and Fishery Sciences (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and must be individually evaluated. Credit not does not apply to major requirements without approval.

FISH 497 Special Topics in Aquatic and Fishery Sciences (1-15, max. 15) NW One-time offerings of topics in fisheries by resident or visiting faculty.

FISH 498 Internship/Experiential Learning (1-15, max. 15) Structured, practical training in the fishing industry, government agencies, and other areas utilizing fisheries, food science, or quantitative science expertise. Experiences are supervised and evaluated. Written reports required. Credit/no-credit only. Offered: AWSpS.

FISH 499 Undergraduate Research (1-15, max. 15) Individual research within the School of Aquatic and Fishery Sciences. Each project supervised by an individual faculty member. Written reports required. Offered: AWSpS.

FISH 502 Marine Geospatial Information Science (3) Introduces the use of Geographic Information Systems (GIS), seafloor mapping, hydrographic surveying, and spatial analysis in ocean science. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with OCEAN 502; A.

FISH 507 Special Topics in Fisheries (1-15, max. 15)

FISH 510 Current Topics in Genetics and Physiology (1-5, max. 15) Contemporary problems and issues in genetics and physiology as they relate to aquatic and fisheries sciences.

FISH 511 Current Topics in Evolution, Ecology, and Behavior (1-5, max. 15) Contemporary problems and issues in evolution, ecology, and behavior as they relate to aquatic and fisheries sciences.

FISH 512 Current Topics in Quantitative Science (1-5, max. 15) Contemporary problems and issues in

quantitative science as they relate to aquatic and fisheries sciences.

FISH 513 Current Topics in Management, Conservation, and Restoration (1-5, max. 15)

Contemporary problems and issues in management, conservation, and restoration as they relate to aquatic and fisheries sciences.

FISH 514 Current Topics Aquaculture, Utilization, and Pathology (1-5, max. 15)

Contemporary problems and issues in aquaculture, utilization, and pathology as they relate to aquatic and fisheries sciences.

FISH 520 Advanced Ecology of Marine Fishes (4)

Focuses on the unique ecological challenges facing marine fishes, including individual, population, community, and ecosystem-scale processes. In-depth discussions of issues based on extensive reading of primary literature and analysis.

FISH 521 Research Proposal Writing for Graduate Students (4)

Practice in reading, writing, critiquing, and evaluating research grant and contract proposals. Lecture and discussion of funding resources, structure of proposals, proposal review, evaluation criteria, and agency feedback. Examples of successful and unsuccessful grant applications. Preparing proposals and critiquing others' efforts. Offered: W.

FISH 522 Hot Topics in Aquatic and Fishery Sciences (2)

Discussion of the primary literature of aquatic and fishery sciences. All readings are current, high profile papers which spark a new avenue of investigation, set out a new paradigm, or define a central problem, etc. Credit/no-credit only. Offered: A.

FISH 526 Ecology of Aquatic Ecosystems (3)

Explores natural and human-driven processes regulating the structure and functioning of freshwater and marine ecosystems. Topics include biogeochemistry, energy, and material flows among habitats, evolution in ecological time, commonality of marine and freshwater habitats, and the issues of scale in understanding ecosystem dynamics.

FISH 530 Application of Bioenergetics Models to Aquatic Food Webs (4)

Modeling framework quantifying bioenergetics, including consumption,

growth, nutrient recycling and contaminant bioaccumulation; links physiology and behavior of individual organisms to ecological processes within populations and aquatic food webs. Common applications include estimating predation, carrying capacity, or growth potential in different habitats. Offered: Sp, odd years.

FISH 531 Aquatic Food Web Processes (4)

Examines how temporal-spatial variability in environmental conditions, nutrient, food supply, predation, and competition among species and life stages regulate species in freshwater and marine food webs. Demonstrates how behavior and physiology of individuals are mechanistically linked to distribution, trophic interactions, and processes relevant to ecosystem-based management. Offered: Sp, even years.

FISH 538 Fisheries Acoustics (3-5)

Horne Studies the use of sound as an aquatic sampling tool and application of acoustic technologies to resource management and aquatic research. Topics include: sonar equation, survey design, equipment use, and abundance estimates. Uses case studies in bio-acoustic predation, habit evaluation, ocean observatories, and marine renewable energy. Offered: A.

FISH 539 U.S. Fisheries Management and Policy (3)

Examination of basic laws and policies in the US that govern fisheries management and their implementation by managers at federal, tribal, state, and international levels. Includes lectures, guest speakers, and field trips. Offered: jointly with SMEA 539.

FISH 541 Integrative Environmental Physiology (3/5)

Comparative advanced aquatic physiology focusing on the functional response of organisms to natural and human-associated environmental stress. Includes lecture, laboratory work, and team-based research project.

FISH 545 Applied Population Genetics (3)

Collection, analysis, and interpretation of genetic data (allele frequencies, microsatellite data, DNA sequences) for detection of population structure, population assignment, estimation of population size, and phylogenography. Includes discussion of scientific papers and analysis of example data sets.

FISH 546 Bioinformatics for Environmental Sciences

(3) Examines how to incorporate molecular information into environmental and conservation sciences, with an emphasis on analysis of DNA and RNA sequence information. Prerequisite: introductory biology, genetics, and statistics courses.

FISH 547 River Ecology and Watershed

Management (3) Investigation of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and dynamics of flowing aquatic ecosystems and the riparian zone. Case studies explore human interactions with rivers and approaches to river management.

FISH 552 Introduction to R Programming for Natural

Scientists (2) Introduces R, a freely available and widely used platform for statistical analysis. Covers reading, storing, and manipulating data; introductory graphics; basic statistical analyses; and fitting linear models. Credit/no-credit only. Offered: A.

FISH 553 Advanced R Programming for Natural

Scientists (2) Covers the use of maximum likelihood estimation and programming in R. Uses R functions to estimate parameters of models and to quantify uncertainty. Prerequisite: FISH 552; Q SCI 381 or Q SCI 482, or permission of instructor. Credit/no-credit only. Offered: A.

FISH 554 Beautiful Graphics in R (2) Branch

Explores how to create beautiful scientific graphics in the open-source language R. Covers the theory of visualization, critically examines elements of good and bad graphics, and teaches students how to translate data in their graduate theses into publication-quality graphics. Offered: W.

FISH 555 Age-Structured Models in Fisheries Stock

Assessment (4) *Ray W Hilborn* Age-structured models as the basis for many stock assessments of commercially important species. Parameter estimation, analysis of uncertainty, and evaluation of alternative harvest strategies for such models constitute the core of most fisheries population dynamics. Prepares students to participate in stock assessments as conducted by NMFS and other agencies. Prerequisite: either FISH 454, FISH 458, or permission of instructor; recommended: FISH 458 or

familiarity with stock assessment models, maximum likelihood estimation. Offered: Sp, odd years.

FISH 556 Spatio-temporal Models for Ecologists (5)

Applied skills for the understanding, interpretation, and development of new models for spatial patterns in marine, terrestrial, or human communities. Mixed-effects models will be implemented using flexible techniques in R. Statistical properties will be learned using simulation experiments, real-world data, and a class project. Prerequisite: FISH 552 and FISH 553; and either FISH 454, FISH 458, ESRM 451/Q SCI 451, FISH 558, FISH 559, SEFS 590, STAT 516 and STAT 517, or permission of instructor; recommended: Knowledge of the R programming language Knowledge of likelihood-based statistics Intermediate background in statistical analysis Offered: Sp, even years.

FISH 557 Estimation of Population Parameters (4)

Statistical analysis of population data; design and analysis of mark-recapture experiments on natural populations; laboratory work on computers. Offered: W, even years.

FISH 558 Decision Analysis in Natural Resource Management (4)

Focuses on age and size-structured population models; Bayesian methods; Sample Importance Resample algorithm; Markov chain Monte Carlo algorithm; policy evaluation; and risk analysis and uncertainty in fisheries management. Offered: A, odd years.

FISH 559 Numerical Computing for the Natural

Resources (5) Focuses on generalized linear and mixed effects models; numerical integration and differentiation; Bayesian and maximum likelihood parameter estimation; root finding; ADMB and WinBUGS coding; and risk analysis. Offered: A, even years.

FISH 560 Applied Multivariate Statistics for

Ecologists (4) Use and interpretation of multivariate analysis, including the majority of approaches in common use by ecologists. Emphasizes the conceptual understanding and practical use of the methods, illustrated with ecological case studies. Prerequisite: Q SCI 482 or equivalent.

FISH 561 Resource Economics for Management and

Policy (4) Examines how and why resource users make decisions leading to over fishing and pollution.

Introduces market and non-market economic tools that support the natural resource management process. Evaluates incentives presented by alternative policies, with an emphasis on regional and global fishery management case studies. Offered: A.

FISH 562 Ecosystem Based Fisheries Management (2) Theory and practice of ecosystem based fisheries management. Areas of emphasis includes by-catch avoidance, the interaction between physical and biotic habitat and fish productivity, trophic ecosystem models, area based management and dynamics of fishing fleets. Offered: Sp, odd years.

FISH 563 Ecosystem Based Fisheries Management Laboratory (2) Laboratory covering the theory and practice of ecosystem based fisheries management. Areas of emphasis includes by-catch avoidance, the interaction between physical and biotic habitat and fish productivity, trophic ecosystem models, area based management and dynamics of fishing fleets. Recommended: either Fish 454, Fish 458, or Fish 558; R programming experience. Offered: Sp, odd years.

FISH 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with BIOL 567/SEFS 567; W.

FISH 578 Graduate Topics in Sustainable Fisheries (2, max. 6) Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Case studies. Conservation/restoration in practice. Post-seminar discussion section led by speaker on topics covered in lecture. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Credit/no-credit only.

FISH 581 Case Study Research: Design and Methods (3) Provides in-depth training in case study theory, design, and methods. Designed for exploring prospectus ideas or beginning analysis of thesis research. Through readings, discussions, exercises, and lectures, students learn how to select units of analysis, control data quality, and collect, analysis, and report data. Offered: jointly with SMEA 581.

FISH 600 Independent Study or Research (*-) Credit/no-credit only.

FISH 700 Master's Thesis (*-) Credit/no-credit only.

FISH 800 Doctoral Dissertation (*-) Credit/no-credit only.

ATMOSPHERIC SCIENCES

ATM S 100 Climate, Justice, and Energy Solutions (5) NW/I&S, DIV Dargan M Frierson Presents visions of the future when the climate crisis is solved. Describes paths towards reaching these goals. Solutions include building a resilient society with clean energy, sustainable agriculture, climate justice, and a just transition for workers.

ATM S 101 Weather (5) NW The earth's atmosphere, with emphasis on weather observations and forecasting. Daily weather map discussions. Highs, lows, fronts, clouds, storms, jet streams, air pollution, and other features of the atmosphere. Physical processes involved in weather phenomena. Intended for nonmajors. Offered: AWSpS.

ATM S 103 Hurricanes and Thunderstorms: Their Science and Impact (3) NW/I&S Explores the science, history, and impacts of thunderstorms and hurricanes. Includes basic processes responsible for thunderstorms and hurricanes and for the lightning, hail, high winds, and storm surges that accompany them. Presents significant historical examples, along with the impact on human activities, strategies for personal safety, and societal adaptation. Offered: Sp.

ATM S 111 Global Warming: Understanding the Issues (5) I&S/NW Kat Huybers, Dargan M Frierson Presents a broad overview of the science of global warming. Includes the causes, evidence, and societal and environmental impacts from the last century. Recounts future climate projections and societal decisions that influence greenhouse gas emission scenarios and our ability to adapt to climate change. Presents ways to identify disinformation versus correct science. Offered: AWSpS.

ATM S 211 Climate and Climate Change (5) NW/I&S The nature of the global climate system. Factors influencing climate including interactions among the

atmosphere, oceans, solid earth, and biosphere. Stability and sensitivity of climate system. Global warming, ozone depletion, and other human influences. Intended for nonmajors. Offered: AWSp.

ATM S 212 Air Pollution: From Urban Smog to the Ozone Hole (5) I&S/NW *Alexander, Jaegle, Thornton*

Introduction to air pollution on local, regional, and global scales, with focus on the sources, transformation, and dispersion of pollutants responsible for urban smog, acid rain, climate change, and the ozone hole. Health and environmental effects of air pollutants, technological solutions, and international policy regulations.

ATM S 220 Exploring the Atmospheric Sciences (1, max. 2) NW Focuses on current research in the atmospheric sciences and the related implications for public health, business, and environmental policy. Credit/no-credit only.

ATM S 290 The Weather Challenge (1, max. 8) NW *McMurdie* Includes participation in a national weather forecast contest; weekly discussion on forecast models, forecasting methods, and unique considerations for specific forecast locations. Prerequisite: either ATM S 101 or ATM S 301. Credit/no-credit only. Offered: AW.

ATM S 301 Introduction to Atmospheric Sciences (5) NW Composition and structure of the atmosphere. Clouds and weather phenomena. Thermodynamic processes. Solar and terrestrial radiation. Air motions. Daily weather discussions and forecasts. For majors and nonmajors. Prerequisite: minimum grade of 2.0 in each of MATH 124; MATH 125; MATH 126; PHYS 121; PHYS 122; and PHYS 123. Offered: A.

ATM S 321 The Science of Climate (3) NW Evolution and present state of earth's climate. Emphasis on physical processes determining the climate of the earth's atmosphere and surface: radiative transfer, energy balance, hydrologic cycle, and atmospheric and oceanic energy transport. Factors controlling climate change. Prerequisite: minimum of grade of 2.0 each of MATH 124; MATH 125; MATH 126; PHYS 121; PHYS 122; PHYS 123. Offered: Sp.

ATM S 340 Introduction to Thermodynamics and Cloud Processes (3) NW Examines thermodynamics and hydrostatics. Studies cloud and precipitation

processes with emphasis on the microphysics. Prerequisite: ATM S 301. Offered: W.

ATM S 341 Atmospheric Radiative Transfer (3)

Comprehensive introduction to atmospheric radiation, including solar and infrared radiation, the earth's radiation budget, and remote sensing. Prerequisite: ATM S 301. Offered: Sp.

ATM S 350 Ecological Climatology (3) NW Focuses on the connections between ecosystems and climate including physical, chemical and biological interactions. Investigates global scale implications and the expected response of a coupled earth system under past and future climate change. Recommended: MATH 120 or equivalent; and either PHYS 114; PHYS 115; PHYS 116, or PHYS 121; PHYS 122; PHYS 123 Offered: A.

ATM S 358 Fundamentals of Atmospheric Chemistry (3) NW Review of basic principles of physical chemistry; evolution and chemical composition of earth's atmosphere; half-life, residence and renewal time; sources, transformation, transport and sinks of gases in the troposphere; atmospheric aerosols; chemical cycles; air pollution; stratospheric chemistry. Offered: Sp.

ATM S 361 Meteorology and the Media: Broadcast and Online Weather Communication (3, max. 6) I&S Students practice presenting with a green chroma-key screen and camera, and write a daily weather blog for publication. Discusses the history and future of media-driven meteorology. Invited speakers present, and students take field trips to a local television station and the National Weather Service. Prerequisite: ATM S 101 or ATM S 301.

ATM S 370 Atmospheric Structure and Analysis (5) NW Structure and evolution of extratropical cyclones, fronts, and convective systems. Surface and upper air analysis techniques. Radar and satellite data. Real-world applications of basic dynamical principles. Introduction to operational products and forecasting. Prerequisite: ATM S 301. Offered: W.

ATM S 380 Weather and Climate Prediction (3) NW Applies weather and climate models to solve problems in atmospheric sciences. Includes visualization of atmospheric phenomena and Earth's energy and hydrologic cycles; and basics in

numerical modeling and high-performance computing. Prerequisite: MATH 126; PHYS 122; either ATMS 101, ATM S 111, ATM S 211, ATM S 301, ASTR 150, ASTR 321, or ESS 201. Offered: W.

ATM S 390 Honors Tutorial in Atmospheric Sciences (*, max. 6) Review and discussion of selected problems in atmospheric sciences. Introduction to research methods. Presentation of a research paper. Offered: AWSpS.

ATM S 431 Boundary-Layer Meteorology (3) NW Introduction to boundary-layer meteorology. Surface energy budgets, structure and evolution of boundary layers, and basic ideas of turbulence theory. Prerequisite: either ATM S 340 or PHYS 224. Offered: A.

ATM S 441 Atmospheric Motions I (3) NW Basic equations governing atmospheric motions and their elementary applications; circulation and vorticity; dynamics of midlatitude disturbances. Prerequisite: either AMATH 353 or MATH 309; MATH 324. Offered: A.

ATM S 442 Atmospheric Motions II (5) NW Wave dynamics, numerical prediction, development of midlatitude synoptic systems, and general circulation. Includes laboratory exercises. Prerequisite: ATM S 441. Offered: W.

ATM S 444 Design and Application of Ensemble Prediction Systems (4) NW Covers the fundamental of chaos theory to help compare and contrast traditional, deterministic forecasting versus ensemble forecasting. Explores the various components of an ensemble prediction system. Introduces decision science to show how to apply probabilistic weather information in optimal decision making. Prerequisite: ATM S 370; either STAT/MATH 390 or Q SCI 381; AMATH 301. Offered: Sp.

ATM S 451 Instruments and Observations (5) NW Principles of operating instruments for measuring important atmospheric parameters (e.g., temperature, humidity, aerosol concentration). Concepts of sensitivity, accuracy, representativeness, time response. Manipulation of output data including signal processing and statistical analysis. Experimental design and implementation of the design in actual field

experiments is included. Prerequisite: ATM S 370; either STAT/MATH 390 or Q SCI 381.

ATM S 452 Weather Forecasting and Advanced Synoptic Meteorology (5) NW Basic forecasting techniques. Application of numerical modeling and statistical approaches. Structure, evolution, and forecasting of convective systems. Radar applications. Diurnal and topographically-forced circulations. Aviation meteorology. Laboratories include extensive practice in forecasting and surface map analysis. Prerequisite: ATM S 370; ATM S 442; either STAT/MATH 390 or Q SCI 381. Offered: Sp.

ATM S 458 Air Pollution Chemistry (4) NW Global atmosphere as a chemical system emphasizing physical factors and chemical processes that give rise to elevated surface ozone, particulate matter, and air toxics; international issues of air pollution transport and changing tropospheric background composition; and regulatory control strategies and challenges. Aimed at science and engineering majors. Offered: jointly with CHEM 458; A.

ATM S 475 Current Research in Climate Science Seminar (3, max. 6) Weekly lectures focusing on a particular aspect of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ESS 475/OCEAN 475; A.

ATM S 480 Air-Quality Modeling (3) NW Evaluation of air-quality models relating air pollution emissions to environmental concentrations. Emphasis on models used for air pollution permits. Emphasizes current problems. Prerequisite: MATH 125. Offered: jointly with CEE 480; W.

ATM S 487 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Prerequisite: ATM S 321.

ATM S 490 Current Weather Analysis (1, max. 6) NW Reviews and analyzes current weather situations

and forecasts. Promotes active discussion between the leader and attendees, and provides exposure to practical aspects of forecasting, the structure of synoptic and local weather phenomena, and applications of basic meteorological concepts. Credit/no-credit only. Offered: AWSp.

ATM S 492 Readings in Meteorology or Climatology (*, max. 15) Credit/no-credit only. Offered: AWSpS.

ATM S 495 EarthGames Studio (2-6, max. 15) D. *FRIERSON* Students will work in teams to create their own video games or interactive digital experience relating to climate change or other pressing environmental issues. Credit/no-credit only. Offered: AWSpS.

ATM S 497 Undergraduate Internship (1-5, max. 30) Internship experience with a public agency or private company, supervised and approved by a faculty member. Requires preparation of a professional report reflecting on the experience. Credit/no-credit only. Offered: AWSpS.

ATM S 498 Honors Synthesis and Communication (1-5, max. 6) Students synthesize prior knowledge and experience gained through hands-on, applied work with academic research or off campus internship experience under the guidance of a faculty advisor. Students refine their writing skills and practice their presentation skills by conveying information orally and visually by making a formal presentation. Prerequisite: ATM S 497 or ATM S 499; recommended: internship or research experience. Offered: Sp.

ATM S 499 Undergraduate Independent Research (1-5, max. 30) Individual research supervised by a faculty member. May involve laboratory work, fieldwork, or surveys. Credit/no-credit only. Offered: AWSpS.

ATM S 501 Fundamentals of Physics and Chemistry of the Atmosphere (5) Fundamentals of hydrostatics, thermodynamics, radiation, cloud physics, and atmospheric chemistry. Offered: A.

ATM S 502 Introduction to Synoptic Meteorology (3) Overview of weather systems; atmospheric observations and data assimilation. Elementary manual and computer-aided synoptic analysis techniques. Interpretation of satellite and ground-

based observations. Kinematics. Fronts and frontogenesis; life cycles of extratropical cyclones; related mesoscale phenomena. Numerical weather prediction; interpretation of forecast products. Offered: Sp.

ATM S 503 Atmospheric Motions I (3) Basic equations governing atmospheric motions and their elementary applications; circulation and vorticity; dynamics of midlatitude disturbances. Offered: A.

ATM S 504 Atmospheric Motions II (5) Wave dynamics, numerical prediction, development of midlatitude synoptic systems, and general circulation. Prerequisite: either ATM S 441 or ATM S 503. Offered: W.

ATM S 505 Introduction to Fluid Dynamics (4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with AMATH 505/OCEAN 511; A, odd years.

ATM S 508 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes, chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with CHEM 523/OCEAN 523.

ATM S 509 Geophysical Fluid Dynamics I (4) Dynamics of rotating stratified fluid flow in the atmosphere/ocean and laboratory analogues. Equations of state, compressibility, Boussinesq approximation. Geostrophic balance, Rossby number. Poincare, Kelvin, Rossby waves, geostrophic adjustment. Ekman layers. Continuously stratified dynamics: Inertia-gravity waves, potential vorticity, quasigeostrophy. Prerequisite: OCEAN 511 or ATM S 505/AMATH 505. Offered: jointly with OCEAN 512; W.

ATM S 510 Physics of Ice (3) Structure of the water molecule. Crystallographic structures of ice. Electrical, optical, thermal, and mechanical properties of ice. Growth of ice from vapor and liquid phases. Offered: jointly with ESS 531.

ATM S 511 Snow and Ice on the Earth's Surface (3) Snow and ice climatology. Formation of the ice crystals in clouds. Snow metamorphism. Transfer of radiative, sensible, and latent heat at snow and ice surfaces. Remote sensing of snow and ice. Growth and melt of sea ice. Climatic records from ice. Prerequisite: permission of instructor. Offered: jointly with ESS 532.

ATM S 512 Dynamics of Snow and Ice Masses (3) Rheology of snow and ice. Sliding and processes at glacier beds. Thermal regime and motion of seasonal snow, glaciers, and ice sheets. Avalanches and glacier surges. Deformation and drift of sea ice. Response of natural ice masses to change in climate. Prerequisite: permission of instructor. Offered: jointly with ESS 533.

ATM S 519 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; methods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ESS 519/OCEAN 518; Sp, odd years.

ATM S 520 Atmospheric Sciences Colloquium (1, max. 24) Seminars on current research in advanced topics related to atmospheric sciences, conducted by faculty and visiting professors/scientists. Includes presentation of doctoral dissertations by department graduate students. For Atmospheric Sciences graduate students only. Prerequisite: permission of department. Credit/no-credit only. Offered: AWSp.

ATM S 521 Seminar in Atmospheric and Climate Dynamics (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

ATM S 523 Seminar in Atmospheric Physics and Chemistry (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite:

permission of instructor. Credit/no-credit only. Offered: AW.

ATM S 524 Seminar in Climate Dynamics and Energy Transfer (*, max. 24) Directed at current research in the subject. For advanced students. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

ATM S 525 Seminar - Topics in Atmospheric Chemistry (1-3, max. 6) Seminar for atmospheric scientists, chemists, engineers in problems associated with the chemical composition of the atmosphere. Covers wide variety of topics, ranging from the natural system to urban pollution and global atmospheric change. Prerequisite: ATM S 301 or permission of instructor. Offered: jointly with CEWA 553.

ATM S 532 Atmospheric Radiation: Introductory (3) Fundamentals of radiative transfer; absorption and scattering by atmospheric gases; elementary applications to constraints on the thermal structure, photochemistry, and remote sensing. Prerequisite: PHYS 225 or permission of instructor. Offered: Sp.

ATM S 533 Atmospheric Radiation: Advanced (3) Optical properties and particle absorption and scattering; solutions of radiative transfer equation in multiple scattering atmospheres; applications to atmospheric and surface energy balance and remote sensing. Prerequisite: ATM S 532/ESS 571 or permission of instructor.

ATM S 534 Remote Sensing of the Atmosphere and Climate System (3) Satellite systems for sensing the atmosphere and climate system. Recovery of atmospheric and surface information from satellite radiance measurements. Applications to research. Prerequisite: ATM S 532 or ATM S 533.

ATM S 535 Cloud Microphysics and Dynamics (3) Basic concepts of cloud microphysics, water continuity in clouds, cloud dynamics, and cloud models. Prerequisite: ATM S 501 or permission of instructor. Offered: jointly with ESS 573; Sp.

ATM S 536 Mesoscale Storm Structure and Dynamics (3) Techniques of observing storm structure and dynamics by radar and aircraft, observed structures of precipitating cloud systems, comparison of observed structures with cloud

models. Prerequisite: either ATM S 535, ATM S 504, or ATM S 509.

ATM S 542 Synoptic and Mesoscale Dynamics (3)
Quasi-geostrophic theory, baroclinic instability, symmetric instability, tropical disturbances, frontogenesis, orographic disturbances, convective storms. Prerequisite: ATM S 509/OCEAN 512 and AMATH 402 or equivalents. Offered: Sp.

ATM S 544 Design and Application of Ensemble Prediction Systems (4) Covers the fundamental of chaos theory to help compare and contrast traditional, deterministic forecasting versus ensemble forecasting. Explores the various components of an ensemble prediction system. Introduces decision science to show how to apply probabilistic weather information in optimal decision making. Prerequisite: ATM S 501; ATM S 502; and ATM S 552 or permission of instructor. Offered: Sp.

ATM S 545 General Circulation of Atmosphere (3)
Requirements of the global angular momentum, heat, mass, and energy budgets upon atmospheric motions as deduced from observations. Study of the physical processes through which these budgets are satisfied. Prerequisite: ATM S 509/OCEAN 512 or permission of instructor. Offered: A.

ATM S 547 Boundary Layer Meteorology (3)
Turbulence, turbulent fluxes, averaging. Convection and shear instability. Monin-Obukhov similarity theory, surface roughness. Wind profiles. Organized large eddies. Energy fluxes at ocean and land surfaces, diurnal cycle. Convective and stably stratified boundary layers. Cloud-topped boundary layers. Remote sensing. Boundary layer modeling and parameterization. Prerequisite: ATM S 505, AMATH 505, or OCEAN 511.

ATM S 551 Atmospheric Structure and Analysis I: Synoptic Scale Systems (4) Extratropical cyclones and cyclogenesis. Jet streams. Upper waves in the westerlies. Diagnosis of vertical motions. Fronts and frontogenesis. Prerequisite: ATM S 502 and ATM S 509/OCEAN 512.

ATM S 552 Objective Analysis (3) Review of objective analysis techniques commonly applied to atmospheric problems; examples from the meteorological literature and class projects. Superposed epoch analysis, cross-spectrum analysis,

filtering, eigenvector analysis, and optimum interpolation techniques. Offered: W.

ATM S 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the ocean, land, and ice sheets. Offered: jointly with ESS 554/OCEAN 554.

ATM S 555 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ASTR 555/ESS 581.

ATM S 556 Planetary-Scale Dynamics (3) Zonally symmetric circulations, planetary waves, equatorial waves, dynamics of the middle atmosphere, trace constituent transport, nonlinear aspects of atmospheric flows. Prerequisite: ATM S 542 or permission of instructor.

ATM S 558 Atmospheric Chemistry (3)
Photochemistry of urban, rural, and marine tropospheric air, and of the natural and perturbed ozone in the middle atmosphere. Unity of the chemistries in these apparently different regimes. Prerequisite: ATM S 458 or ATM S 501 or CHEM 457 or permission of instructor. Offered: Sp.

ATM S 559 Climate Modeling (3) Principles of Earth system modeling. Emphasis on atmosphere, ocean sea ice, and land-surface components. Climate forcing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeochemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Instructors: Bitz, Thompson Offered: jointly with ESS 559/OCEAN 558.

ATM S 560 Atmosphere/Ocean Interactions (3)
Observations and theory of phenomena of the coupled atmosphere-ocean system. El Nino/Southern Oscillation; decadal tropical variability; atmospheric teleconnections; midlatitude atmosphere-ocean variability. Overview of essential ocean and atmospheric dynamics, where appropriate. Prerequisite: OCEAN 512/ATM S 509 Offered: jointly with OCEAN 560.

ATM S 564 Atmospheric Aerosol and Multiphase Atmospheric Chemistry (3) Physics and chemistry of particles and droplets in the atmosphere. Statistics of size distributions, mechanics, optics, and physical chemistry of atmospheric aerosols. Brownian motion, sedimentation, impaction, condensation, and hygroscopic growth. Prerequisite: permission of instructor.

ATM S 565 Atmospheric Chemistry Modeling (3) In this course we will discuss the foundations of mathematical models for atmospheric chemistry. Our focus will be on three-dimensional numerical models that simulate transport, chemistry, emissions, and deposition of chemical species in the atmosphere. Prerequisite: ATM S 558

ATM S 571 Advanced Physical Climatology (3) Physical processes that determine the climate of Earth and its past and future changes. Greenhouse effect. Climate modeling. Radiative and dynamical feedback processes. Orbital parameter theory. Critical analysis of climate change predictions. Prerequisite: permission of instructor. Offered: A.

ATM S 575 Large Scale Dynamics of the Tropical Atmosphere (3) Observations and underlying dynamics of large-scale tropical circulations. Factors that determine regions of large-scale persistent precipitation in the tropics, thermal forcing of atmospheric circulations by these regions, and temporal variability of the forcing and response. Prerequisite: ATM S 509/OCEAN 512, ATM S 542.

ATM S 581 Numerical Analysis of Time Dependent Problems (5) Numerical methods for time-dependent differential equations, including explicit and implicit methods for hyperbolic and parabolic equations. Stability, accuracy, and convergence theory. Spectral and pseudospectral methods. Prerequisite: either AMATH 581, AMATH 584/MATH 584, AMATH 585/MATH 585, or permission of instructor. Offered: jointly with AMATH 586/MATH 586; Sp.

ATM S 582 Advanced Numerical Modeling of Geophysical Flows (3) Topics of current interest including: efficient time differencing, semi-implicit and multiple time-step techniques. Semi-lagrangian schemes. Treatment of poorly resolved gradients. Flux-corrected transport. Positive definite advection schemes. Aliasing error and nonlinear instability.

Wave permeable boundary conditions. Prerequisite: ATM S 581 and AMATH 586 or MATH 586.

ATM S 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ENVIR 585/ESS 585/SMEA 585; Sp.

ATM S 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ESS 586/OCEAN 586.

ATM S 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ESS 587/OCEAN 587.

ATM S 588 The Global Carbon Cycle and Climate (3) *Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ESS 588/OCEAN 588; W.

ATM S 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ESS 589/OCEAN 589.

ATM S 591 Special Topics (1-4, max. 9) Lecture series on topics of major importance in the atmospheric sciences. Prerequisite: permission of instructor.

ATM S 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ESS 593/OCEAN 593; W.

ATM S 596 Climate Science Capstone Project ([1-5]-, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ESS 596/OCEAN 596; AWSpS.

ATM S 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

ATM S 700 Master's Thesis (*-) Offered: AWSpS.

ATM S 800 Doctoral Dissertation (*-) Offered: AWSpS.

COLLEGE OF THE ENVIRONMENT SPECIAL PROGRAMS

COLLEGE OF THE ENVIRONMENT

C ENV 190 Introductory Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment.

C ENV 401 FieldNotes - An Undergraduate Journal (2, max. 6) *Julian D. Olden* FieldNotes, an undergraduate journal connecting UW with the greater Puget Sound community, highlights student-led environmental research and outreach. FieldNotes, publishes two issues annually, features research communications, community features, and vivid imagery to ensure multi-faceted storytelling. Provides a platform for students to actively learn and engage in science communication. Credit/no-credit only. Offered: ASp.

C ENV 410 MESA Introductory Tutor Training Workshop (1) Tutor skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: ASp.

C ENV 420 MESA Introductory Tutor Training Seminar (1-2) Second course in the tutor training program. Continued development of tutoring skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: AW.

C ENV 425 MESA Tutoring Practicum (1-3, max. 15) Trained MESA tutors work in small groups with Seattle middle and high school students in math and science. Develop tutoring skills, share best practices, and problem solve through online interactions with the MESA tutoring program. Credit/no-credit only. Offered: AWSp.

C ENV 430 MESA Advanced Tutor Training Seminar (1-2) Advanced tutor training program. Continued development of tutoring skills and cultural competence training designed to prepare tutors to work in small groups with Seattle middle and high school students in math and science. Credit/no-credit only. Offered: A.

C ENV 490 Special Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment depending on curricular needs and interests of students and faculty.

C ENV 500 Communicating Science to the Public Effectively (3) Teaches emerging scientists how to effectively communicate their research to the public. Uses lessons and tools such as group discussion, feedback, and practice. Credit/no-credit only. Offered: W.

C ENV 590 Special Topics in Environment (1-5, max. 15) Covers topics related to all areas of the environment depending on curricular needs and interests of students and faculty.

SCIENCE TEACHING

SCI T 501 Observational Science and Experimental Design for Teachers (2) Students consider the nature of scientific exploration; practice using observations, evidence, and explanation to make hypotheses; and explore case studies demonstrating various experimental designs. Combines on-line activities, readings, hands-on activities, presentations, and discussions. Offered: A.

SCI T 502 Data Analysis and Visualization for Teachers (2) Students gain experience analyzing and visualizing data sets, evaluate the use of common data visualization tools, and create graphs of their own data sets. Combines on-line activities, readings, hands-on activities, presentations, and discussions. Offered: W.

SCI T 503 Science Communication for Teachers (2) Students examine effective communication of scientific research. Students critically evaluate example presentation from on-campus departmental seminars, practice communicating their own scientific research to mentors and peers, and deliver a formal oral presentation. Offered: Sp.

EARTH AND SPACE SCIENCES

ESS 100 Dinosaurs (2) NW Biology, behavior, ecology, evolution, and extinction of dinosaurs, and a history of their exploration. With dinosaurs as focal point, course also introduces the student to how hypotheses in geological and paleobiological science are formulated and tested.

ESS 101 Introduction to Geology and Societal Impacts (5) I&S/NW Introduction to the processes, materials and structures that shape Earth. Emphasizes the dynamic nature of the earth's tectonic system and its relationship to physical features, volcanism, earthquakes, minerals and rocks and geologic structures. The course emphasizes the intrinsic relationship between human societies and geologic processes, hazards and resources. Not open for credit to students who have taken ESS 210. Optional field trips. Prerequisite: No prerequisite classes required. Offered: AWSpS.

ESS 102 Space and Space Travel (5) I&S/NW Explores the sun, solar storms, observations from

space and from Earth; Earth's space environment, radiation belts and hazards, plasma storms and auroras, rockets and propulsion, human exploration efforts, societal impact, planetary systems and resources, and project highlighting space and its exploration. Open to non-majors. Offered: AWSp.

ESS 103 Earth's Origin and Transformations Over 4.6 Billion Years (1) NW Explores history and evolution of Earth, from the Big Bang to present day. Emphasizes disparate timescales over which Earth processes operate - planetary formation, plate tectonics, evolution of life, geologic climate change, and catastrophes such as earthquakes, volcanoes, meteor impacts, and mass extinctions. Sets stage for understanding the origins of extraordinary geologic features in the Pacific Northwest. Credit/no-credit only.

ESS 104 Prehistoric Life (3) NW Fossils and how they are preserved. What fossils tell us about past life and environments. How the history of life unfolded and what caused the great events in biological evolution. Open to non-science majors, but also lays a foundation for higher-level geobiology courses.

ESS 105 The Earth: Its Processes and Hazards (5) NW Introduction to physical and environmental geology. Focuses on both large-scale tectonics forces that create Earth's continents and oceans, and surficial forces that shape Earth's landscapes. Emphasizes processes that endanger human populations (such as earthquakes, volcanic eruptions, and floods). Not open for credit to students who have taken ESS 101.

ESS 106 Living with Volcanoes (3) I&S/NW Explores volcanoes and volcanic eruptions on Earth and in the solar system. Examines how volcanoes work and how they affect the environment, life, and human societies. Illustrates principles using local examples of recent volcanism and ancient examples of mega-eruptions. Evaluates the possibility of predicting future eruptions.

ESS 115 Astrobiology: Life in the Universe (5) NW *David C. Catling, Roger Buick, Victoria S Meadows, Woodruff T Sullivan* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts

majors. Offered: jointly with ASTBIO 115/ASTR 115/BIOL 114/OCEAN 115.

ESS 119 Introduction to Laboratories (1, max. 3)

Reviews research being performed in visited and independent research opportunities and possibilities. Includes weekly visits to labs in ESS and related fields. Credit/no-credit only.

ESS 201 Earth's Climate System (3) NW *Eric Steig*

Earth's dynamic environment, global energy balance, interplay of chemical, physical, and biological processes shaping the Earth's surface and climate. Emphasis on quantitative methods for measuring, evaluating, and understanding contemporary changes relative to the last several thousand years. Prerequisite: either MATH 124, MATH 134, or Q SCI 291; recommended: An introductory background in earth sciences, chemistry or physics is helpful, but not required. Offered: Sp.

ESS 202 Earthquakes (5) I&S/NW Earthquakes of the Pacific Northwest and around the world - their cause and relationship to plate tectonics; why, where, and when they occur. How earthquakes affect human life: shaping landscape, hazards. Laboratory explores physical processes associated with earthquakes. One field trip. Open to non-science majors.

ESS 203 Glaciers and Global Change (5) I&S/NW

Explores how glaciers record climate change and human activities through bubbles of ancient air and trace impurities in the ice. Also reviews glaciers impact on societies through sea-level, coastlines, water supplies, and transportation routes. Open to non-science majors.

ESS 204 The Paleobiology and Geobiology of Mass Extinctions (3-4) NW *P. Ward*

Covers the origin and diversification of life on Planet Earth, and abrupt die-offs in mass extinctions. Explores how new instrumentation and experimentation in biology and chemistry, and improved sampling of the fossil record in geology, combine with astrobiology and geobiology to revise out history of Earth and its life. Prerequisite: a minimum grade of 1.7 in ESS 100.

ESS 205 Access to Space (5) NW

Group development of student experiments to the outer rim of our atmosphere and the beginning of space; investigation of stratosphere, mesosphere, thermosphere, magnetosphere, development of

exploration packages; basic electronic fabrication, global positioning, radio tracking, expectations at high altitudes. Open to all disciplines. No previous experience of electronics required.

ESS 209 Interdisciplinary Earth Sciences Field Seminar (3-12, max. 12) NW Miscellaneous field-based and experiential learning activities in earth and space sciences.

ESS 211 Physical Processes of the Earth (5) NW

Introductory structural geology and geomorphology. Deformation of soil, sediment, and rock. Erosional and depositional processes and landforms. Structural, geomorphic, and climatic interactions in major tectonic regimes. Use of geologic maps and cross sections. One optional overnight field excursion. Prerequisite: a minimum grade of 2.0 in either MATH 124, MATH 134, or Q SCI 291, either of which may be taken concurrently; and a minimum grade of 2.0 in either both PHYS 114 and PHYS 117, or PHYS 121. Offered: A.

ESS 212 Plate Tectonics and Materials of the Earth (5) NW *Juliet Crider*

Origin, composition and structure of the Earth; identification of important rock-forming minerals; identification and description of igneous, metamorphic, and sedimentary rocks; magmatic, metamorphic, and sedimentary processes; formation of continental and oceanic crust; driving mechanisms for plate tectonics; comparison of Earth to other planets. Prerequisite: either CHEM 110, a passing score on the General Chemistry Placement Exam, or a score of 1 or higher on the Chemistry AP test; recommended: high school or college chemistry; and high school or college pre-calculus. Offered: W.

ESS 213 Evolution of the Earth (5) NW

Introduction to paleontology, types of stratigraphy, and radiometric dating. The physical, chemical, biological, and plate tectonic evolution of the earth's crust, seawater, and atmosphere. Comparison with other planets. Climate changes and man as a geologic agent. Two one-day field excursions. Prerequisite: a minimum grade of 2.0 in either ESS 210, ESS 211, or ESS 212. Offered: Sp.

ESS 230 Rivers and Beaches (3/5) NW

Introduction to Earth surface environments, the processes that shape them, how humans affect them and are affected by them. Field trips examine mountains,

rivers, deltas/estuaries, beaches, and environments beyond. Focuses on linkages between these environments to illustrate coupling between landscapes and seascapes. Offered: jointly with OCEAN 230.

ESS 290 Special Topics (1-10, max. 20) NW Selected topics in earth and space sciences.

ESS 298 Exploring Opportunities in Earth and Space Sciences (2) Explores topics related to majoring in and pursuing a career in STEM broadly and ESS specifically. Topics include networking, finding community in college, societal attitudes toward and pressures around STEM majors, diversity and equity issues in STEM and ESS, mental health, and undergraduate research, graduate school, and careers in the geosciences and related fields. Credit/no-credit only.

ESS 301 Geology of the Northwest (5) NW Geologic history of Washington, Oregon, and Idaho. Emphasis on use of geologic principles in interpreting evidence found in landscapes and rocks. Weekend field trips optional. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211, or ESS 212.

ESS 305 Geology of the National Parks (5) NW Reviews a wide range of fundamental geological processes, using North American parks and monuments as examples of natural laboratories. Includes plate-tectonic history, volcanism, mountain-building, and glacial, fluvial, and a host of other geomorphic forces as preserved in geologic exposures of National Parks. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211, or ESS 212.

ESS 306 Planetary Geology (5) NW Up-to-date survey of geological features and processes on and within planets and their moons deduced from sampling, remote sensing, spacecraft imagery, and theory. Comparative discussion of volcanism, tectonics, surface processes, and thermal evolution. Examination of moon rocks and meteorites. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211, or ESS 212.

ESS 307 Diversity Outreach Program in Earth and Space Sciences (3-5) I&S/NW, DIV Students will lead Earth and Space Sciences outreach events to underserved and underrepresented populations in the Northwest. Gain an understanding to the

barriers to education and participate in events to remove some of these barriers. Prerequisite: either ASTR 101, ASTR 102, ASTR 150, BIOL 180, BIOL 240, CHEM 120, CHEM 142, CHEM 143, CHEM 145, ESS 101, ESS 102, ESS 211, ESS 212, ESS 213, ESS 472, PHYS 114, or PHYS 121.

ESS 310 Mathematical Methods in the Earth Sciences (5) NW Presents mathematical methods for Earth Sciences applications. Focuses on setting up equations and on the quality of written solutions. Prerequisite: either Q SCI 292, MATH 125 or MATH 135; either PHYS 114/PHYS 117 or PHYS 121.

ESS 311 Geomechanics (5) NW Introduction to continuum mechanics: elasticity, fluid dynamics, diffusion, porous flow, multiphase flow, dimensional analysis, and natural convection. Example applications: earthquakes and rock mechanics, flow of glaciers, slope stability, debris flows, groundwater flow, contaminant transport, flow in rivers and channels, mantle and magma convection. Prerequisite: a minimum grade of 2.0 in either MATH 125, MATH 135, or Q SCI 292; a minimum grade of 2.0 in either both PHYS 114 and 117, or PHYS 121; and a minimum grade of 2.0 in ESS 211; recommended: Previous experience with MATLAB. Offered: W.

ESS 312 Earth Materials (5) NW Crystallography, crystal chemistry, and characteristics of rock-forming and ore minerals. Description, phase equilibria, origin, and associations of igneous, sedimentary, and metamorphic rocks. Laboratory study of hand specimens. One one-day field excursion. Prerequisite: a minimum grade of 2.0 in either CHEM 142 or CHEM 145; and a minimum grade of 2.0 in ESS 212; recommended: ESS 211 and ESS 213. Offered: Sp.

ESS 313 Geobiology (5) NW Introduction to the early record of life on earth. Environmental factors leading to life's diversification. The role of life in biomineralization. The history of biodiversity. The role of life in landform and soil formation. Laboratory exercises demonstrate specimens and techniques. Prerequisite: minimum 2.0 in either CHEM 142 or CHEM 145; minimum 2.0 in ESS 213. Offered: A.

ESS 314 Geophysics (5) NW Introduction to geophysical methods including refraction and

reflection seismology, gravity, magnetics, electrical resistivity, heat flow, and geodesy. Laboratory exercises explore interpretation of geophysical data to determine elastic wave speed, density, magnetic susceptibility, and electrical conductivity at depth. Prerequisite: a minimum grade of 2.0 in either MATH 126, MATH 136, or ESS 310; and a minimum grade of 2.0 in either both PHYS 115 and PHYS 118, or PHYS 122. Offered: A.

ESS 315 Environmental Earth Science (5) NW

Analysis of geologic constraints upon human activity and the environmental consequences of such activity. Topics include hillslope processes, fluvial and groundwater processes, earthquake and volcanic hazards, and environmental aspects of deforestation and atmospheric pollution. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211, or ESS 212. Offered: jointly with ENVIR 313.

ESS 316 Geochemistry (5) NW Geochemical processes and differentiation of the Earth. Crystal chemistry and elemental affinities, thermodynamics of geologic processes, trace element and isotopic fractionation, radioisotopes, geochronology, cosmochemistry, weathering, introductory aqueous geochemistry and exploration of global geochemical cycles. Laboratory exercises explore and model geochemical processes. Prerequisite: a minimum grade of 2.0 in either CHEM 142 or CHEM 145; a minimum grade of 2.0 in either MATH 125, MATH 135, or Q SCI 292; and a minimum grade of 2.0 in ESS 212. Offered: Sp.

ESS 326 Geomorphology (5) NW Introduction to landforms and surficial deposits. Emphasis on landscape-forming processes. Intended for students who wish to take additional courses in geomorphology. Prerequisite: either PHYS 114 or PHYS 121.

ESS 345 The Environment of Fuel and Mineral Deposits (3) NW/I&S Fuels and nonmetallic ores as the substrate of industrial civilization. Provides non-majors with sufficient information about these resources to allow for informed decisions of related geological, environmental, and societal issues. Prerequisite: either ESS 210, ESS 211, or ESS 212.

ESS 400 Field Geology (12) NW Six weeks of geologic mapping in a variety of rock types in the Western United States. Enhances students' knowledge of

geologic phenomena and processes. Development of skills in mapping, field interpretation, and report writing. Students responsible for own living expenses while in the field. Prerequisite: ESS 211; ESS 212 ; ESS 213; one course selected from ESS 311, ESS 312, ESS 313, ESS 314, or ESS 316. Offered: S.

ESS 401 Field Geology with GIS (12) NW Geologic mapping in a variety of rock types in the Western United States coupled with and augmented through geospatial analyses. Enhances students' knowledge of geologic phenomena and processes. Development of skills in mapping, field interpretation, GIS/remote sensing analysis, and report writing. Students responsible for own living expenses while in the field. Prerequisite: ESS 211; ESS 212; ESS 213; ESS 420; and either ESS 311, ESS 312, ESS 313, ESS 314, or ESS 316. Offered: S.

ESS 402 International Field Geology (3-12, max. 12) NW Supervised field study, international travel, and exploration. Work may include independent research projects and experiential learning in outdoor environments. Prerequisite: No prerequisites required but related experience is encouraged.

ESS 403 Global Tectonics (5) NW Introduction to large-scale plate tectonics processes and observations including motions on a sphere, polar-wander paths, plate-boundary seismicity, focal mechanisms, gravity, magnetics, and heat flow. Also includes observations and theories of plate deformation and continental dynamics with emphasis on Western North America. Prerequisite: PHYS 121; recommended: either MATH 126, MATH 136, or ESS 310; PHYS 123; either ESS 311 or 314; a background in quantitative analysis using a computer based environment like MATLAB.

ESS 408 Great Geological Issues (3) NW History and development of geological and paleontological theories and controversies; philosophy and methodology that have driven scientific inquiry in the earth sciences.

ESS 410 Marine Geology and Geophysics (4) NW *William Wilcock* Explores the geological and geophysical processes that form and shape the ocean basins and continental margins. Prerequisite: either OCEAN 310 or ESS 211 Offered: jointly with OCEAN 410; A.

ESS 411 Geophysical Continuum Mechanics (5) NW

Analysis of stress and strain. Measurement and interpretation of strain in geological materials. Elasticity applied to determine stress in the Earth's lithosphere. Creep of solids and flow of geological materials. Prerequisite: either MATH 136, both MATH 307 and MATH 308, or both AMATH 351 and AMATH 352.

ESS 412 Introduction to Seismology (3) NW

Examines stress and strain, the wave equation, travel times, amplitude and phase, reflection seismology, surface waves, and source theory, including moment tensors, radiation patterns, far-field wave shapes, source spectra, stress drop, and magnitude. Prerequisite: either MATH 136, both MATH 307 and MATH 308, or both AMATH 351 and AMATH 352; recommended: ESS 411 and PHYS 123.

ESS 414 Geophysics: Fluids (3) NW Introduction to geophysical fluid dynamics. An overview of fluids in geophysics with emphasis on the oceans. A nonrigorous development of the equations of motion with examples drawn from oceanography and solid earth geophysics. Prerequisite: either MATH 136, both MATH 307 and MATH 308, or both AMATH 351 and AMATH 352; and PHYS 322.

ESS 415 Space and Plasmas (3) NW Survey of various phenomena occurring in outer regions of Earth's atmosphere, ionosphere, magnetosphere, and Van Allen radiation belts. Laboratory applications include plasma thrusters and fusion. Concepts include charged particles in magnetic fields, drift motion, plasma, magnetohydrodynamic waves. Prerequisite: PHYS 321; recommended: PHYS 322.

ESS 418 Geoscience Communication (4) Covers principles of organizing, developing, and writing geoscience information including abstracts, presentations, scientific articles, correspondences, and proposals. Reviews writing conventions, use of illustrations, style, and tone. Prerequisite: Two of ESS 201, ESS 205, ESS 211, ESS 212, ESS 213, any of which may be taken concurrently.

ESS 420 Introduction to Geographic Information Systems for the Earth Sciences (5) S. WALTERS Examines principles of GISA applied to the geological sciences. Covers basics of GIScience, data types, and GIS analyses. Includes hands-on analysis applied to geologic patterns and phenomena: sources

geological data; geological mapping; measures of topography; hydrologic flow patterns; and topics of the students' own interests. Offered: ASp.

ESS 421 Introduction to Geological Remote Sensing (4) NW Principles of image interpretation for geologists. Study of land forms, structure, lithology, surface processes using aircraft and satellite data. Use of digital multispectral images and radar images for geological mapping.

ESS 422 Field Methods in Remote Sensing (4) NW Explores the use of field instrumentation to remotely sense the environment with applications to landslides, glaciers, surface topography, and change detection. Also covers wave propagation, surface scattering, absorption and reflectance; data processing, analysis, and interpretation; field data collection strategies. Prerequisite: ESS 211; recommended: PHYS 116 or PHYS 123; ESS 421.

ESS 425 Tectonic Geomorphology (3) A. Duvall Advanced-level survey of tectonic geomorphology topics, focusing on the interplay between tectonic and surface processes that shape the landscape in regions of active deformation and at time scales ranging from days to millions of years. Prerequisite: either ESS 311, ESS 326, ESS 426, or ESS 427.

ESS 426 Fluvial Geomorphology (5) Hydraulic and morphological characteristics of streams and valley floors. Landscape evolution by stream erosion and deposition. Field exercises emphasize quantitative analysis of fluvial processes, channel forms, acquisition of various skills, such as mapping, topographic surveying, report writing. Prerequisite: either ESS 311 or ESS 326.

ESS 427 Hillslope Geomorphology (5) NW Theoretical, laboratory, and field study of hillslope evolution by mass wasting and water erosion. Prerequisite: either ESS 311 or ESS 326.

ESS 431 Principles of Glaciology (4) NW Covers snow deposition and metamorphism, avalanches, heat and mass balance at snow and ice surfaces, glacier flow, ice sheets, sea ice, permafrost, methods of paleoclimate reconstruction, Ice Age theories. Prerequisite: PHYS 121.

ESS 433 Environmental Change in the Glacial Ages (5) NW Physical, biological evidence of climatic

change during Quaternary Period; emphasizing stratigraphy, chronology. Impact of alternating glacial/interglacial cycles on earth's terrestrial, marine environments. Theories on causes of climatic variation.

ESS 439 Petrology of Igneous Rocks (5) NW

Systematic study of the major families of volcanic and plutonic igneous rocks with emphasis on tectonic setting, phase relations, geochemistry, and models of their origin and evolution throughout geologic time. Laboratory emphasizes thin-section study of rocks using transmitted and reflected light. Prerequisite: ESS 316.

ESS 441 Petrology and Petrography of Sedimentary Rocks (5) NW

Mineralogy, textures, and origin of sedimentary rocks, using petrographic microscope. Prerequisite: ESS 316.

ESS 445 Economic Geology (4) NW *JOHN O. STONE*

Formation and geologic context of metallic and non-metallic ore deposits and energy resources. Covers chemical and physical concentration processes, deposit types, and geology of key mineral commodities. Includes an overview of mineral and energy economics, mineral exploration and Washington state mineral resources. Prerequisite: ESS 211; ESS 212; ESS 213; and ESS 316, which may be taken concurrently.

ESS 447 Engineering Geology: Methods and Application (4)

Applies the application of geologic principles to geotechnical and environmental problems; includes investigation and characterization of soil and rock properties. Includes two weekend field trips. Prerequisite: either ESS 210, ESS 211, or ESS 212; and either ESS 311, ESS 411, ESS 463, or CEE 220.

ESS 448 Analytical Paleobiology (5) NW

Introduction to the principles and analytical methods in the study of paleobiology, morphology, and systematics. Topics include paleobiogeography, morphology-based phylogenetics, evolutionary rates, biodiversity curves, functional morphology, morphometrics, and paleoecology. Emphasis on application of methods using fossil and modern specimens. Prerequisite: either BIOL 280, BIOL 354, or ESS 213. Offered: jointly with BIOL 438; A.

ESS 449 Paleobiology Field Methods and Research (3-5) NW

Introduces field methods and research in various areas of biology, e.g., paleontology, ecology, climate change, and mycology. Includes two or more weeks away from campus at field site. Offered: jointly with BIOL 475; S.

ESS 450 Paleobiology (3) NW

Biological evolution over the past 500 million years, considering how the reciprocal interactions between environment and evolution have influenced the major episodes in life's history and providing a background for assessing the evolutionary impact of modern environmental change.

ESS 451 Invertebrate Paleontology (5) NW

Important larger invertebrate groups; morphology, classification, stratigraphic distribution, evolution, paleoecology. Offered: jointly with BIOL 451.

ESS 452 Vertebrate Paleontology (5) NW *C. SIDOR*

Examines fossil vertebrate life, focusing on systematics and morphology of major lineages (fish, reptiles, bird, and early mammal relatives). Examines fossil and modern vertebrates from the Burke Museum collection in the lab. Weekend field trip. Prerequisite: either BIOL 354, BIOL 452, BIOL 453 or ESS 100. Offered: jointly with BIOL 450.

ESS 453 Fossil Mammals (5) NW

Evolutionary relationships of fossil mammals, from mammal-like reptiles of late Paleozoic to diverse Cenozoic groups. Morphology, adaptations, extinctions, evolutionary patterns. Structures and relationships of most major groups. Field trip. Prerequisite: either ESS 100 or ESS 452.

ESS 454 Hydrogeology (4) NW

Covers the analysis of groundwater flow systems, geologic controls, and hydrologic properties; basics of chemistry and solute transport in groundwater; and the use of numerical models. Considers local examples and groundwater resource management. Prerequisite: either ESS 311 or ESS 314; recommended: either MATH 126, MATH 136, or ESS 310; a background in quantitative analysis using spreadsheets or MATLAB

ESS 455 Stratigraphy (4) NW

Systematic study of stratified rocks and space-time implications. Principles of stratigraphy, including biostratigraphy, magnetostratigraphy, seismic stratigraphy, subsurface analysis. Basin analysis, evolution of

sedimentary basins and continental margins.

Prerequisite: ESS 213.

ESS 456 Sedimentary Geology and Depositional Environments (4) NW *Alexis Licht* Principles of sedimentary geology, including survey of modern processes that produce sedimentary rocks and sequences. Recognition of various depositional environments represented in the geologic record, including terrestrial, marine terrigenous, and carbonate environments. Two field trips required. Prerequisite: ESS 213; recommended: ESS 311 and either ESS 326, ESS 425, ESS 426, or ESS 427

Prerequisite: ESS 213; recommended: ESS 311 and either ESS 326, ESS 425, ESS 426, or ESS 427

ESS 457 Environmental Geochemistry (4) NW

Geochemistry of natural waters, emphasizing applications in geology. Topics include groundwater composition, weathering, mineral adsorption, equilibrium computer modeling, clay minerals, organic geochemistry, and groundwater quality. Prerequisite: either ESS 316, CHEM 152, or CHEM 155.

ESS 460 Cosmogenic Nuclides in Geomorphology (3) NW

Use of cosmic-ray-produced nuclides to date rock surfaces and analyze geomorphic processes. Nuclide production by cosmic radiation above and below ground; tracer methods; exposure dating; coupling of cosmogenic nuclide data to geomorphic models. Open to undergraduate students only. Prerequisite: either ESS 311 or ESS 316.

ESS 461 Geological Time (3) NW Principles of radiometric dating. Methods applicable to Earth history from planetary formation to the recent past. Radiocarbon dating; geological dating with long-lived isotopes; uranium series, trapped charge and cosmogenic isotope techniques. Applications in archaeology, climate change, geomorphology, tectonics, and Earth evolution.

ESS 462 Volcanic Processes (4) NW Pre-eruption, eruption, and post-eruption processes. Examines triggers of magma ascent, controls on volatile build-up and loss, magma fragmentation, magma-groundwater interaction, eruption column dynamics, gravity-controlled eruptive phenomena, syn- and post-eruption lahars and other re-working of deposits. Prerequisite: either ESS 311, ESS 312, or ESS 316.

ESS 463 Structure and Tectonics (5) NW Geometry, kinematics, and tectonic setting of major types of structures, including those in contractional fold-and-thrust belts; extended crust; strike-slip-dominated regimes; and shear zones. Laboratory exercises develop basic tools of structural geology.

Prerequisite: ESS 211; ESS 212; and ESS 213.

ESS 467 Seismic Exploration (3) NW *E. Roland Saenger*

Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to geologic investigations, tectonics and mineral exploration. Practice in the interpretation of subsurface structure. Prerequisite: ESS 311 or ESS 314, or OCEAN 285 and OCEAN 310. Offered: jointly with OCEAN 412; Sp.

ESS 471 Introduction to Space Physics (3) NW

Introduces several areas of space physics, the physical principles that apply therein, and the methods by which significant observations are made. Covers electromagnetic and plasma processes from the center of the sun to the surface of the earth. Prerequisite: PHYS 123.

ESS 472 Rockets and Instrumentation (2-4, max. 12)

Students launch science payloads to high altitude using high power amateur rockets, providing design, fabrication, test, integration, and management experience; covers science motivation, engineering aspects, and delivery systems. Project may vary each year.

ESS 475 Current Research in Climate Science Seminar (3, max. 6)

Weekly lectures focusing on a particular aspect of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ATM S 475/OCEAN 475; A.

ESS 480 Advanced Methods in Isotope Geochemistry (3, max. 18) NW

Studies new developments in isotope geochemistry. Topics vary by quarter and may include clumped isotopes, triple-oxygen isotopes, rate isotopes, mass-independent fractionation, and their incorporation into Earth system models. Introduces theory, measurement, and applications to processes in Earth, ocean, atmospheric, planetary, and climate science.

Prerequisite: either ESS 316, ESS 424, ESS 457, or ESS 459.

ESS 482 Environmental Geochemistry Laboratory

(4) NW Laboratory techniques and experiments relevant to analyses of natural waters. Topics include alkalinity measurements, iron analyses, colorimetric analyses, heavy metal adsorption and geochemical modeling. Prerequisite: ESS 316 or ESS 457.

ESS 488 Space Law and Policy (5) I&S Saadia M.

Pekkanen Law and policy foundations of outer space activities. Essential origins, sources, and role of space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with A A 490/JSIS B 444.

ESS 489 Honors Seminar (3) Covers current scientific topics in earth and space sciences; philosophy and methodology of science strategies for developing research projects; scientific education and career planning. May require colloquium or local conference attendance. Offered: A.

ESS 490 Special Topics (1-10, max. 20) NW

ESS 491 US Geology Seminar and Field Trip (1)

Supervised preparation for geological field study and domestic fieldwork. Work may include independent research projects focused on the field study region and experiential learning in outdoor environments. Recommended: introductory geology course. Credit/no-credit only. Offered: W.

ESS 492 Education in the Earth Sciences (2-3, max.

12) NW Seminar in earth science education and laboratory teaching practicum. Teaching experience gained through assisting earth science instructors in college or K-12 classrooms, laboratories, and field settings. Earth science pedagogical logistics, teaching methods, laboratory classroom, and field teaching methods are covered in seminar sessions. Prerequisite: either ESS 101, ESS 210, ESS 211, ESS 212, or ESS 213. Credit/no-credit only. Offered: AWSpS.

ESS 495 NASA Science and Engineering Research

Seminar (1, max. 4) NW Review of current space science-related research. Emphasis varies, but topics

may include planetary geology, astronomy, global change, aeronautical engineering, and remote sensing. Credit/no-credit only.

ESS 498 Independent Study (1-5, max. 15)

Independent coursework in selected Earth & Space Sciences topics supervised by a faculty member in an area of shared scholarship. Designed for advanced students seeking additional education in a specific subject. Prerequisite: Permission of instructor.

ESS 499 Undergraduate Research (*, max. 15)

ESS 501 Geochemical Systems (3)

Geochemical systems through time, from solar system origin to present. Explores fundamental geochemical concepts using current research issues and discussion. Concepts include radiogenic and stable isotope systematic, thermodynamics, high and low temperature chemistry of rocks and water, geochemical cycles through Earth's history. Prerequisite: graduate student standing or permission of instructor. Instructors: Nelson

ESS 502 The Solid Earth (3)

Concepts of internal earth processes: Earth as heat engine and chemical processor, style of mantle convection, origin and evolution of the Earth's magnetic field, Cascadia subduction and hazards. Introduces seismology, fluid dynamics, heat flow, gravity, and geomagnetism. Focuses on the analysis, critique, and communication of ideas from scientific literature.

ESS 503 Introduction to Solar Terrestrial Physics (3)

Introduces several areas of space physics, the physical principles that apply therein, and the methods by which significant observations are made. Covers electromagnetic and plasma processes from the center of the sun to the surface of the Earth. Prerequisite: PHYS 123.

ESS 504 The Earth Surface (3)

Investigates the coupled tectonic and geomorphic processes that shape the surface of the Earth, creates the surface environment that sustains humanity and other life systems, and produces natural hazards. Introduces modern tools, techniques, and theories applicable to analysis of this coupled dynamic system.

ESS 505 The Cryosphere (4)

Covers snow deposition and metamorphism, avalanches, heat and mass balance at snow and ice surfaces, glacier flow, ice

sheets, sea ice, permafrost, methods of paleoclimate reconstruction, and Ice Age theories. Prerequisite: PHYS 121. Instructors: Waddington, Warren Offered: A.

ESS 508 Great Geological Issues (3) History and development of geological and paleontological theories and controversies; philosophy and methodology that have driven scientific inquiry in the earth sciences. Requires a term paper analyzing primary material. Prerequisite: graduate standing in earth sciences, or in history of science, or permission of instructor.

ESS 509 Applied Geology Investigations (3) Introduction to problems and techniques of applied geology. Studies the interactions among land use, infrastructure, and the dynamic landscape of the Pacific Northwest. Focus on field techniques, recording and presentation of observations. Includes mid-September and weekend field trips. Prerequisite: graduate standing in ESS; recommended: undergraduate degree in geology or a closely related field, including a geologic field methods course. Offered: A.

ESS 510 Field Methods in Applied Geology II (3) Application of applied geology core curriculum to field problems. Includes nine-day intensive, mid-June field course held on the Olympic Peninsula and coastal Puget Sound. Prerequisite: ESS 509; three of ESS 420, ESS 454, ESS 526, ESS 527, or ESS 547. Instructors: Troost Offered: S.

ESS 511 Geophysical Continuum Mechanics (5) Analysis of stress and strain. Measurement and interpretation of strain in geological materials. Elasticity applied to determine stress in the Earth's lithosphere. Creep of solids and flow of geological materials. Includes advanced, research-oriented problems. Prerequisite: MATH 307 and MATH 308 or equivalent.

ESS 512 Seismology (3) Examines stress and strain, the wave equation, travel times, amplitude and phase, reflection seismology, surface waves, and source theory, including moment tensors, radiation patterns, far-field wave shapes, source spectra, stress drop, and magnitude. Prerequisite: either ESS 511 or PHYS 123 and one of MATH 307 or MATH 308.

ESS 514 Geophysics: Fluids (3) Geophysical fluid dynamics. Fluids in geophysics with emphasis on the oceans. Development of the equations of motion with examples drawn from oceanography and solid earth geophysics. Includes advanced, research-oriented problems. Prerequisite: PHYS 322, MATH 307, and MATH 308 or equivalent.

ESS 515 Geophysics: Space (3) Various phenomena occurring in outer regions of Earth's atmosphere, ionosphere, magnetosphere, and Van Allen radiation belts. Laboratory applications include plasma thrusters and fusion. Concepts include charged particles in magnetic fields, drift motion, plasma, magnetohydrodynamic waves. Includes advanced, research-oriented problems. Prerequisite: PHYS 321 or equivalent; recommended: PHYS 322.

ESS 517 Early Earth Evolution (3) Geological, biological, and environmental evolution of the Earth over the first 4 billion years of its history, as an analogue for the development of other habitable planets.

ESS 518 Technical Communication in Applied Geosciences (1, max. 3) Reading, writing, and presentation of technical information in the geosciences. Topics vary by quarter Offered: AWSp.

ESS 519 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; methods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ATM S 519/OCEAN 518; Sp, odd years.

ESS 520 Application in Geographic Information Systems for the Earth Sciences (4) *S. WALTERS* Covers applied uses of GIS in the applied earth sciences. Includes hands-on instruction in and discussion of analysis of geologic patterns and phenomena: terrain analysis and interpretation; riverbed modeling; floodplain analysis; rainfall patterns and effects; landslide forecasting; isostatic phenomena; and topics of the students' own interest. Also covers basic instruction in geospatial statistics. Prerequisite: ESS 420 or permission of instructor. Offered: W.

ESS 521 Advanced Geospatial Analysis with Python for the Earth Sciences (4) *Steven Walters* Advanced application of geospatial analysis and spatial numerical methods in the earth sciences, particularly using Python scripting. Hands-on, "workshop" approach exploring topics of interest to students: e.g., 3D (sub-) surface analysis; hydrologic routing/modeling; dynamic landscape change; image interpretation; and pattern analysis/geostatistics. Course activities combine instructional lab exercises with independent project research. Prerequisite: ESS 420 (or equivalent) or permission of instructor; recommended: graduate-level background and/or standing in earth and environmental sciences. Offered: Sp.

ESS 522 Geophysical Data Collection and Analysis (3) Theory and practical application of data collection and analysis applied to geophysical problems. Digital processing of signals; filtering and spectral analysis. Laboratory sessions include problem solving on computer-based processing system.

ESS 523 Geophysical Inverse Theory (5) *Kenneth C Creager* Introduction to the mathematical techniques for estimating properties of physical systems, such as the earth or atmosphere, from data that is insufficient for a precise specification of the system. Emphasis is on the concept of the resolving power of data sets. The ideas developed are quite general and have a wide range of applicability in the field of data interpretation. Offered: Sp, even years.

ESS 524 Numerical Heat and Mass Flow Modeling in the Earth Sciences (3) Numerical solution of steady and transient advective-diffusion equations describing heat and mass transport processes in earth sciences, emphasizing finite-volume methods and their relationship to finite-difference and finite-element methods. Topics include discretization methods; coordinate systems; boundary conditions; accuracy; and stability. Prerequisite: MATH 307; MATH 308 or equivalent; or permission of instructor. Instructors: Waddington Offered: Sp, even years.

ESS 525 Tectonic Geomorphology (3) *A. DUVALL* Advanced-level survey of tectonic geomorphology topics, focusing on the interplay between tectonic and surface processes that shape the landscape in regions of active deformation and at time scales ranging from days to millions of years. Offered: Sp.

ESS 526 Fluvial Geomorphology (5) *Collins* Hydraulic and morphological characteristics of streams and valley floors. Landscape evolution by stream erosion and deposition. Field exercises and independent project emphasize quantitative analysis of fluvial processes, channel forms, acquisition of various skills, such as mapping, topographic surveying, and report writing.

ESS 527 Hillslope Geomorphology (5) *Duvall* Theoretical and applied study of hillslope processes including erosion and deposition; mass wasting; and slope forms and evolution.

ESS 529 Principles of Fluid Dynamics, Heat, and Mass Transfer in Earth Sciences (3) Introduction to the quantitative treatment of transport phenomena with applications to mantle and magma convection, volcanic eruptions, landslides, porous flow, and reaction. Emphasis on the governing equations of fluid dynamics including porous and multiple flow, chaotic convection, mixing, heat transfer, rheology, analytical, numerical, and scaling solutions.

ESS 531 Physics of Ice (3) Structure of the water molecule. Crystallographic structures of ice. Electrical, optical, thermal, and mechanical properties of ice. Growth of ice from vapor and liquid phases. Offered: jointly with ATM S 510.

ESS 532 Snow and Ice on the Earth's Surface (3) Snow and ice climatology. Formation of the ice crystals in clouds. Snow metamorphism. Transfer of radiative, sensible, and latent heat at snow and ice surfaces. Remote sensing of snow and ice. Growth and melt of sea ice. Climatic records from ice. Prerequisite: permission of instructor. Offered: jointly with ATM S 511.

ESS 533 Dynamics of Snow and Ice Masses (3) Rheology of snow and ice. Sliding and processes at glacier beds. Thermal regime and motion of seasonal snow, glaciers, and ice sheets. Avalanches and glacier surges. Deformation and drift of sea ice. Response of natural ice masses to change in climate. Prerequisite: permission of instructor. Offered: jointly with ATM S 512.

ESS 541 Applied Fluvial Geomorphology (4) Application of theory in fluvial geomorphology to framing and addressing questions in basic research and problems in applied contexts such as river

engineering, land use planning, resource management, and river restoration. Prerequisite: either ESS 426, ESS 526, or permission of instructor.

ESS 544 Applied Tsunami Hazard Science (4) Broad introductory overview of tsunami science and physical, social, and economic impacts of tsunami hazards. Designed for scientific, engineering, earth-science professionals, and graduate students interested in tsunami hazard assessment, mitigation, or warning. Prerequisite: MATH 126; PHYS 123; AMATH 301, or equivalents. Instructors: Gonzalez

ESS 546 Continental-Margin Sedimentation (3) *Charles Nittrouer* Detailed evaluation of recent studies into processes forming strata on continental margins, including the diverse time scales ranging from sediment transport to sequence stratigraphy. Highlights the linkages with physical oceanographic processes, the fates of geochemical components, and the relationship to biological communities. Offered: jointly with OCEAN 546.

ESS 547 Engineering Geology: Methods and Application (4) Applies the application of geologic principles to geotechnical and environmental problems; includes investigation and characterization of soil and rock properties. Includes two weekend field trips.

ESS 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the ocean, land, and ice sheets. Offered: jointly with ATM S 554/OCEAN 554.

ESS 557 Vertebrate Paleontology (5) Examines the biology of vertebrate animals, emphasizing their diversity, adaptations, and evolutionary history. Introduces aspects of behavior, physiology, morphology, and ecology that emerge from the comparative study of vertebrates. Laboratory includes local field trips and introduction to regional vertebrate fauna. Offered: jointly with BIOL 557.

ESS 558 Introduction to Graduate Research in Paleobiology (1) Introduction to paleobiology techniques and resources. Credit/no-credit only. Offered: jointly with BIOL 555; A.

ESS 559 Climate Modeling (3) Principles of Earth system modeling. Emphasis on atmosphere, ocean

sea ice, and land-surface components. Climate forcing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeochemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Instructors: Bitz, Thompson Offered: jointly with ATM S 559/OCEAN 558.

ESS 560 Cosmogenic Nuclides in Geomorphology (3) Use of cosmic-ray-produced nuclides to date rock surfaces and analyze geomorphic processes. Nuclide production by cosmic radiation above and below ground; tracer methods; exposure dating; coupling of cosmogenic nuclide data to geomorphic models. Prerequisite: either AMATH 301, AMATH 351, or permission of instructor.

ESS 562 Observational Seismology (1, max. 18) Quarterly research themes introduce students to a variety of digital and analog seismograms and techniques for their interpretation. Students present results of short investigations in an informal seminar setting. Credit/no-credit only.

ESS 563 Theoretical Seismology I (3) Advanced theoretical seismology. Attenuation and physical dispersion. Waves in anisotropic media. Moment-tensor source representation. Lamb's problem. Waves in stratified media: propagator methods, asymptotic ray theory, WKBJ seismograms. Inverse methods and analysis of seismological data. Prerequisite: either ESS 412, ESS 512, or permission of instructor.

ESS 564 Theoretical Seismology II (3) Advanced theoretical seismology. Attenuation and physical dispersion. Waves in anisotropic media. Moment-tensor source representation. Lamb's problem. Waves in stratified media: propagator methods, asymptotic ray theory, WKBJ seismograms. Inverse methods and analysis of seismological data. Prerequisite: ESS 563.

ESS 567 Environmental Geochemistry (4) NW Geochemistry of natural waters, emphasizing applications in geology. Topics include groundwater composition, weathering, mineral adsorption, equilibrium computer modeling, clay minerals, organic geochemistry, and groundwater quality. Offered: W.

ESS 568 Oceanic Lithosphere (3) *William Wilcock*
Basic principles of elasticity, fluid flow, and heat transport with specific applications to the formation and evolution of the oceanic lithosphere. Includes deformation of the earth, flow in porous media, heat transport, and marine seismological and potential field techniques. Prerequisite: OCEAN 540. Offered: jointly with OCEAN 545.

ESS 573 Cloud Microphysics and Dynamics (3) Basic concepts of cloud microphysics, water continuity in clouds, cloud dynamics, and cloud models. Prerequisite: ATM S 501 or permission of instructor. Offered: jointly with ATM S 535; Sp.

ESS 575 Advanced Rockets and Instrumentation (2-4, max. 12) Students launch science payloads to high altitude using high power amateur rockets, providing design, fabrication, test, integration, and management experience; covers science motivation, engineering aspects, and delivery systems. Project may vary each year. Offered: AW.

ESS 576 Space and Laboratory Plasma Physics (3) Discussion of waves, equilibrium and stability, diffusion and resistivity, basic plasma kinetic theory, and wave-particle interactions. Prerequisite: ESS 415, or equivalent, or permission of instructor. Offered: jointly with A A 556; Sp, odd years.

ESS 580 Advanced Methods in Isotope Geochemistry (3, max. 18) Studies new developments in isotope geochemistry. Topics vary by quarter and may include clumped isotopes, triple-oxygen isotopes, rate isotopes, mass-independent fractionation, and their incorporation into Earth system models. Introduces theory, measurement, and applications to processes in Earth, ocean, atmospheric, planetary, and climate science. Prerequisite: one of ESS 316, ESS 424, ESS 457, ESS 459, ESS 501, ESS 554, OCEAN 583, or permission of instructor.

ESS 581 Planetary Atmospheres (3) Problems of origin, evolution, and structure of planetary atmospheres, emphasizing elements common to all; roles of radiation, chemistry, and dynamical processes; new results on the atmospheres of Venus, Mars, Jupiter, and other solar system objects in the context of comparative planetology. Offered: jointly with ASTR 555/ATM S 555.

ESS 582 Environmental Geochemistry Laboratory (4) NW Laboratory techniques and experiments relevant to analyses of natural waters. Topics include alkalinity measurements, iron analyses, colorimetric analyses, heavy metal adsorption and geochemical modeling. Offered: Sp.

ESS 583 Origin of the Solar System (3) Nebular and nonnebular theories of the solar system origin; collapse from the interstellar medium, grain growth in the solar nebula, formation of planetesimals and planets, early evolution of the planets and other possible planetary systems; physical and chemical evidence upon which the ideas concerning the origin of the solar system are based. Offered: jointly with ASTR 557.

ESS 584 Space Law and Policy (5) *Saadia M. Pekkanen* Law and policy foundations of outer space activities. Essential origins, sources, and role of space law, as well as key institutions, forums, and forces shaping the contemporary governance of space activities. Provides a thorough grounding in U.N. treaties, principles, resolutions, regulations, and private international and national space laws and policies. Offered: jointly with A A 590/JSIS B 544; Sp.

ESS 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ENVIR 585/SMEA 585; Sp.

ESS 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ATM S 586/OCEAN 586.

ESS 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate

variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ATM S 587/OCEAN 587.

ESS 588 The Global Carbon Cycle and Climate (3)
Emerson Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models, discuss results of complex models. Offered: jointly with ATM S 588/OCEAN 588; W.

ESS 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ATM S 589/OCEAN 589.

ESS 590 Special Topics (2-10, max. 20)

ESS 592 Professional Practice in Applied Geosciences (1, max. 3) Covers major issues and current topics in the practice of Geosciences: professional licensing, ethics, business trends, environmental regulation, emerging technologies. Includes internships and career guidance, as well as weekly guest speakers. Offered: AWSp.

ESS 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ATM S 593/OCEAN 593; W.

ESS 594 Introduction to Earth and Space Sciences Research (1-2, max. 4) Introduces research of faculty and advanced graduate students to first-year graduate students and provides experience for the formulation, oral presentation, and defense of research proposals and results.

ESS 595 Earth and Space Sciences Research Methods (2, max. 30) Current research methodology and results based on recent literature and on faculty and student research. Designed to develop student

perspective on observational and theoretical methods and on relation of specific research to broader developments in geophysics and interdisciplinary aspects of geophysics through faculty-guided presentations and discussion by students. Credit/no-credit only.

ESS 596 Climate Science Capstone Project ([1-5]-, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ATM S 596/OCEAN 596; AWSpS.

ESS 597 Applied Geoscience Investigation (1-5, max. 10) Independent investigation in applied geosciences guided by a faculty member and commonly in association with an off-campus mentor or stakeholder organization. Must complete project agreement in advance of registration. Prerequisite: ESS 592 and permission of instructor Credit/no-credit only. Offered: AWSpS.

ESS 599 Seminar (1, max. 24) Review of current literature in geophysics and graduate student research with faculty participation. Credit/no-credit only.

ESS 600 Independent Study or Research (*-)
Credit/no-credit only.

ESS 601 Internship (*) Graduate internship and final exam. Prerequisite: permission of instructor. Instructors: Crider, Troost

ESS 700 Master's Thesis (*-)

ESS 800 Doctoral Dissertation (*-)

PROGRAM ON THE ENVIRONMENT

ENVIR 100 Introduction to Environmental Studies (5) I&S/NW Introduces environmental studies through interdisciplinary examination of the ethical, political, social, and scientific dimensions of current and historical environmental issues. Integrates knowledge from different disciplines, and applies insights and methods to actual environmental

problems and situations at scales from local to global. Offered: AWSpS.

ENVIR 101 Orientation to Environmental Studies (1)

Ana Wieman Introduction to the Environmental Studies program and learning community. Weekly group discussions focus on majoring in and pursuing a career in Environmental Studies. Topics include philosophy and structure of the Program on the Environment, connecting academic work to career pursuits, undergraduate research, networking, and connecting with peers and faculty at UW. Credit/no-credit only.

ENVIR 102 International Baccalaureate (IB)

Environmental Systems & Societies (5) I&S Course awarded based on International Baccalaureate (IB) score. Consult the Admissions Exams for Credit website for more information.

ENVIR 103 Society and the Oceans (5) I&S/NW

Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with JSIS B 103/SMEA 103.

ENVIR 110 Introduction to Food and the

Environment (5) I&S/NW *Ray W Hilborn* Relates the production and consumption of food to the major areas of environmental science including energy use, water consumption, biodiversity loss, soil loss, pollution, nutrient cycles, and climate change. Studies the basic science and how food production impacts the key processes.

ENVIR 200 Communication for Environmental Studies (5) VLPA/I&S

Helps develop the skills necessary to engage, analyze, write, and speak about complex environmental issues in a variety of disciplinary contexts with particular values and emphases. Focuses on reading, writing, presentation, and critical analysis of written material. Prerequisite: minimum grade of 2.0 in ENVIR 100; minimum grade of 2.0 in either C LIT 240, ENGL 109 and ENGL 110; ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, ENGL 281, ENGL 297, ENGL 298, or ENGL 299. Offered: AWSp.

ENVIR 201 Climate Governance: How Individuals, Communities, NGOs, Firms, and Governments Can Solve the Climate Crisis (5) NW/I&S, DIV

Nives Dolsak, Patrick John Christie Examines climate change, its causes and impacts (on ecosystems, water availability, extreme weather, communities, health, and food) globally, nationally, and locally. Surveys its solutions (mitigation, adaptation, migration, and just transition), actors that implement them (governments, firms, NGOs, activists, communities, individuals) and approaches they use (regulation, markets, planning, innovation, social movements, behavioral change). Offered: jointly with SMEA 201; A.

ENVIR 211 Environmental Justice (5) I&S, DIV

Examines introductory studies of environmental racism and ecological injustice in the United States and select areas of the world. Reviews environmental justice theories and methods applied to risk science, ecosystem management, biodiversity conservation, and sustainable development. Includes comparative studies of social movements for "eco-justice." Offered: jointly with AES 211/ANTH 211.

ENVIR 221 Environmental History of the U.S. (5)

I&S *Linda Nash* Surveys the relationship between nature and human history, including the impact of the non-human environment on American history and the environmental effects of colonization, urbanization, and consumerism; the cultural construction of nature in different eras and its social implications; the sources and limits of modern environmental politics. Offered: jointly with HSTAA 221; A.

ENVIR 235 Introduction to Environmental Economics (5) I&S/NW

S. RABOTYAGOV Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key environmental issues. Offered: jointly with ECON 235/ESRM 235; SpS.

ENVIR 239 Sustainability: Personal Choices, Broad Impacts (5) I&S/NW

Kristi Straus Introduces implications of and approaches to sustainability through models of sustainability, history of sustainability movements, and sustainability in action. Explores how our personal choices can affect

broader change towards sustainability. Examines personal and global aspects of sustainability through issues such as food, energy, waste, water, population, consumption, design, and well-being. Offered: AWS.

ENVIR 240 The Urban Farm (5) NW Develops students' understanding the ecological connections between food production, human health, and planetary sustainability. Teaches basic skills needed for food production in urban areas and the ethics behind sustainable urban agriculture, including a hands-on component on the farm at the biology greenhouse.

ENVIR 243 Environmental Ethics (5) VLPA/I&S L. NICHOLS Focuses on some of the philosophical questions that arise in connection with environmental studies. Topics to be considered include: the ideological roots of current issues, values and the natural world, public policy and risk assessment, intergenerational justice, and social change. Offered: jointly with PHIL 243.

ENVIR 250 Research Methods in Environmental Studies (5) NW, QSR Introduces the processes involved in research design, including methods for environmental data collection, analysis, and presentation. Introduces ecological and social research methods through case studies, followed by practical lab and field work.

ENVIR 280 Natural History of the Puget Sound Region (5) NW Focuses on identification and ecology of defining organisms in major habitats of the Puget Sound region. Geology, climate, and early human history provide a framework for understanding the distribution and development of these habitats. Emphasizes a variety of techniques for the observation and description of nature.

ENVIR 295 Special Topics in Environmental Studies (1-5, max. 10) Selected topics in environmental studies. Format may range from seminar/discussion to formal lectures to laboratory or modeling work. Offered: AWSpS.

ENVIR 296 Study Abroad - Environmental Studies (1-15, max. 15) Environmental studies course taken through an approved study abroad program, for which there are no direct UW equivalents. Credit

does not apply to major requirements without approval.

ENVIR 300 Analysis of Environmental Cases (5) NW/I&S Guides students through the analysis of environmental case studies. Encourages synthesis of information from diverse sources and stakeholder perspectives. Frameworks are provided to help students work through the complexities of socioecological systems in a systematic way. Culminates with significant group project and presentation. Prerequisite: minimum grade of 2.0 in ENVIR 200 and ENVIR 250.

ENVIR 308 American Indians and the Environment (5) I&S, DIV J. Reid Examines the historical relationships American Indians have possessed with local environments, with special attention to the ways these peoples have adapted to altered environments and new conditions, including migrations, involvement with markets of exchange, overhunting, dispossession, conservation, and mainstream environmentalism. Offered: jointly with AIS 308/HSTAA 308.

ENVIR 313 Environmental Earth Science (5) NW Analysis of geologic constraints upon human activity and the environmental consequences of such activity. Topics include hillslope processes, fluvial and groundwater processes, earthquake and volcanic hazards, and environmental aspects of deforestation and atmospheric pollution. Prerequisite: either ESS 101, ESS 105, ESS 210, ESS 211, or ESS 212. Offered: jointly with ESS 315.

ENVIR 315 Environmental Pedagogy (5) I&S/NW, DIV Tim Billo, Eli E Wheat Introduces the art of teaching in non-traditional settings while exploring inequities in our education system. Designed to help students become effective environmental educators such as park naturalists or interpretive guides while working with organizations serving Seattle's diverse population. Students learn pedagogical philosophy and evaluate education theory while gaining skills to become more effective environmental educators. Offered: W.

ENVIR 330 Climate Change Impacts on Marine Ecosystems (5) NW Links physics of climate to marine ecosystem processes, exploring both observed climate impacts from the past and projected ecosystem changes due to human-caused

climate change in the future. Case studies include polar, sub-arctic, temperate, tropical, and upwelling ecosystems, and ocean-acidification and its projected impacts. Recommended: Requires high school or college physics and algebra with a basic understanding of Newton's Laws and the ability to comprehend and construct vector diagrams. Offered: jointly with FISH 330; Sp.

ENVIR 341 Energy and Environment (3) NW Energy use. Fossil energy conversion. Oil, gas, coal resources. Air impacts. Nuclear energy principles, reactors, fuel cycle. Prerequisite: either MATH 112, MATH 124, or Q SCI 291; either CHEM 120, CHEM 142, CHEM 144, PHYS 114, or PHYS 121. Offered: jointly with CHEM E 341/M E 341; A.

ENVIR 350 Internship (1-5, max. 15) Fieldwork, coursework, or other learning experience conducted off-campus, but supervised by UW faculty. Credit/no-credit only.

ENVIR 360 Environmental Norms in International Politics (5) I&S *Ingebritsen* Surveys development of international environmental consciousness from 1960s to present. Models of "green development"; ways in which norms for resource use have entered global politics. Patterns of state compliance with international environmental agreements, and why states fall short of meeting their international obligations. Offered: jointly with JSIS B 350/SCAND 350.

ENVIR 362 Introduction to Restoration Ecology (5) NW/I&S *J. BAKKER* An introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the success of any restoration project. Includes lectures, readings, case studies, and field trips. Offered: jointly with ESRM 362; A.

ENVIR 371 Anthropology of Development (5) I&S Development refers to social, economic, cultural, political transformations viewed as progress. Studied from anthropological perspectives. Historical, social context for emergence of ideas of development. Role of development in promoting national cultures. Impact of development on individual citizenship, families, rural-urban relations, workers, business, environment. Prerequisite: one 200-level ANTH course. Offered: jointly with ANTH 371.

ENVIR 379 Environmental Sociology (5) I&S/NW *S. ASAH* Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem, community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ESRM 371/SOC 379; A.

ENVIR 384 Global Environmental Politics (5) I&S *K. LITFIN* Examines the globalization of environmental problems, including climate change, ozone depletion, and loss of biodiversity, as well as the globalization of political responses to these problems within the framework of globalization as set of interlinked economic, technological, cultural, and political processes. Offered: jointly with POL S 384.

ENVIR 385 Political Ecology of the World Food System (5) I&S/NW *Karen T Litfin* Investigates the intersection of globalization and food politics, the pivotal role of petroleum in the world food system, and the commodity chains for some foods. Includes an optional service learning component. Offered: jointly with POL S 385.

ENVIR 400 Professional Environmental Communication (5) I&S *P. Sean McDonald* Explores the variety of media and methods for conveying environmental information in the digital age. Examines scholarly literature while focusing on practical professional communication. Students participate in classroom and online discussion, social media assignments, improve presentation style and delivery while building professional communication skills. Offered: W.

ENVIR 415 Sustainability and Design for Environment (3) *Cooper* Analysis and design of technology systems within the context of the environment, economy, and society. Applies the concepts of resource conservation, pollution prevention, life cycle assessment, and extended product responsibility. Examines the practice, opportunities, and role of engineering, management, and public policy. Offered: jointly with CEE 495/M E 415.

ENVIR 416 Ethics and Climate Change (5) I&S. *GARDINER, L. NICHOLS* Critical examination of the ethical issues surrounding climate change. Prerequisite: either one philosophy or one environmental studies course. Offered: jointly with PHIL 416.

ENVIR 417 Advanced Topics in Environmental Philosophy (5) I&S. *GARDINER* Critical examination of issues in environmental philosophy. Topics vary. Prerequisite: one philosophy course. Offered: jointly with PHIL 417.

ENVIR 418 Communication and the Environment (5) I&S Examines how communication about the environment influences beliefs, values, and treatment of the natural world. Topics include new coverage of the environment; media strategies and rhetoric used by activists, government agencies, and industry to address environmental issues; representations of the environment in popular culture; and/or political argumentation about environmental policy. Offered: jointly with COM 418.

ENVIR 431 Ecopsychology (5) I&S. *P. KAHN* Explores psychology of the human relationship with nature. Critically examines how ecopsychology can impact urban sustainability, human health, environmental education, and the design of new technologies. Specific topics include evolutionary psychology; human-animal interaction; biophilia; children and nature; indigenous cultures; and ecotherapy. Offered: jointly with ESRM 431/PSYCH 431; W.

ENVIR 433 Environmental Degradation in the Tropics (5) I&S/NW *Christie* Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with JSIS B 433/SMEA 433.

ENVIR 439 Attaining a Sustainable Society (5) I&S/NW, DIV *Eli E Wheat* Building a sustainable future requires restructuring the global economy and changes in values and lifestyles. How do race, culture, gender, class, and individual experience inform sustainability priorities? How do internalized notions of power and success compliment or undermine our societal efforts towards sustainability? Students explore these questions

through four arenas for change: food, governance, economics, and energy. Offered: W.

ENVIR 459 Culture, Ecology, and Politics (5) I&S, DIV Critical studies of class, gender and race differences in environmental politics. The political-economic dimensions of ecological change. Contemporary environmental movements including the varieties of bioregionalism, deep ecology, ecofeminism, ecosocialism, environmental justice, and social ecology. Offered: jointly with ANTH 459.

ENVIR 460 Power, Privilege, and Preservation (5) NW/I&S, DIV Critically examines strategies of resource managers to integrate local communities and cultures in protected areas management. Explores issues of power, privilege, and injustice and their impacts on individuals, society, and resource management decisions. Examines the potential for more socially just and ecologically sustainable approaches to protected areas management. Offered: jointly with ESRM 460.

ENVIR 476 Introduction to Environmental Law and Process (3) I&S *Bryant* Use and application of key statutes in marine living resources management. Overview of administrative law and process. Basic legal research, reading, and briefing selected judicial opinions. Participatory case study component. Designed for non-law graduate and advanced undergraduate students. Offered: jointly with SMEA 476; A.

ENVIR 478 Topics in Sustainable Fisheries (3, max. 9) I&S/NW Seminar series featuring local, national, and internationally known speakers in fisheries management and conservation. Conservation/restoration in practice. Pre-seminar discussion section focusing on select readings. Topics may include harvest management, whaling, by-catch, salmon, marine protected areas, introduced species, citizen action, co-management, and marine ethics. Offered: jointly with BIOL 478/FISH 478.

ENVIR 480 Sustainability Studio (5, max. 10) Exploration of definitions and critical concepts of sustainability and analysis of sustainability practices on the UW campus. Student research teams analyze specific sustainability practices related to food, water, energy, and climate, among other topics. Sustainability project topic focus is different each quarter.

ENVIR 485 Environmental Planning and Permitting in Practice (5) I&S Todd A Wildermuth Advanced survey of environmental planning and permitting as encountered by environmental and natural resource professionals in Washington State and beyond. Focuses on Washington State acts (SEPA, SMA, GMA) and Federal systems (NEPA, CWA ESA) that shape environmental land use planning and federal planning and permitting systems Offered: jointly with ESRM 485; W.

ENVIR 489 Peer Teaching Assistants in Environmental Studies (1-5, max. 10) Develops and enhances teaching skills through supervised direct teaching experience. Prepares students for graduate school teaching or other teaching by developing leadership, mentoring, and communication skills. Includes attending lectures and weekly preparation sessions, directed discussions with faculty and TAs, and teaching course lab, field, or discussion sections. Credit/no-credit only. Offered: AWSpS.

ENVIR 490 Capstone Preparation (2) Students engage with representatives of established projects or develop a project around their own interests. Students complete a project learning contract and proposal and take part in professional development activities. First in a series of three. Prerequisite: minimum grade of 2.0 in ENVIR 300.

ENVIR 491 Environmental Studies Capstone: Internship and Research ([1-12]-, max. 12) Projects arranged during ENVIR 490 may include internships, directed environmental research, or other experiential learning opportunities working in a professional setting either on campus or with an outside organization. Students complete assignments connecting their hand-on professional experience to scholarly research on related topics. Second in a series of three. Prerequisite: ENVIR 490.

ENVIR 492 Environmental Studies Capstone: Synthesis and Communication (-3) Students synthesize knowledge gained through hand-on, applied work with academic research. Students refine their writing skills, get practice conveying information orally and visually, and make formal presentations. Professional development exercises help students market their experience and expertise. Third in a series of three. Prerequisite: ENVIR 491.

ENVIR 495 Advanced Topics in Environmental Studies (1-5, max. 15) Advanced topics in environmental studies. Offered: AWSpS.

ENVIR 496 Study Abroad - Advanced Environmental Studies (1-15, max. 15) Environmental studies course taken through an approved study abroad program for which there are no direct UW equivalents. Credit does not apply to major requirements without approval.

ENVIR 497 Seminar in Environmental Studies (1-3, max. 6) Intensive and advanced reading and discussion of selected works in interdisciplinary environmental studies. Topics vary. Credit/no-credit only.

ENVIR 498 Independent Study (1-5, max. 15) Independent reading and/or research. Limited to majors and minors in Environmental Studies.

ENVIR 499 Undergraduate Research (1-15, max. 15) Undergraduate research in environmental studies. Offered: AWSpS.

ENVIR 500 Graduate Seminar in Environmental Studies (1-5, max. 15) Exploration of interdisciplinary themes in environmental science communication. Topics vary.

ENVIR 501 Graduate Seminar in Environmental Management (1-5, max. 15) Addresses a contemporary interdisciplinary issue in environmental management by integrating the perspectives and theories of science/technology, public policy, and business. Format emphasizes interactive, hands-on approaches to problem solving, with visiting lectures by academic and/or external practitioners.

ENVIR 502 Business Strategy and the Natural Environment (4) Applies economic and business principles (marketing, accounting, operations) to understand interactions between business and the natural environment and how environmental issues influence business strategy. Theory and case studies explore strategies that both respond to and seek competitive advantage from firms' interactions with the environment.

ENVIR 511 Environmental Management - Keystone Project I (4) First in a two-quarter, project-base course in which graduate students in the Environmental Management Certificate work in teams of an environmental problem for a government, business, or non-profit organization. Keystone projects address a range of issues in environmental management, and integrate aspects of science, policy, and business.

ENVIR 512 Environmental Management - Keystone Project II (4) Second in a two-quarter, project-base course in which graduate students in the Environmental Management Certificate work in teams of an environmental problem for a government, business, or non-profit organization. Keystone projects address a range of issues in environmental management, and integrate aspects of science, policy, and business. Prerequisite: ENVIR 511.

ENVIR 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snaver* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ESS 585/SMEA 585; Sp.

ENVIR 600 Independent Study or Research ([1-5]-) Independent reading and research. Limited to students enrolled in the Program on the Environment's graduate certificate programs.

SCHOOL OF ENVIRONMENTAL AND FOREST SCIENCE

BIORESOURCE SCIENCE AND ENGINEERING

BSE 101 Biomass, Biofuels and Bioproducts (5) I&S/NW *Renata Bura* Provides an introduction to the science and technology of Biofuels, Bioproducts, and Renewable Energy. In particular, the generation and properties of biofuels and specialty products from lignocellulosic sources will be emphasized. Part of this class will concentrate on the social aspects of biomass to biofuels conversion. Prerequisite: None; recommended: high school chemistry and physics,

ideally some exposure to organic chemistry. Offered: S.

BSE 150 Bioresource Science and Engineering Seminar (1) *R. GUSTAFSON* Introduces the science and technology of bioresources, including paper. Faculty, advisers, and guest lectures present on topics throughout the quarter. Credit/no-credit only. Offered: A.

BSE 190 Special Topics (1-5, max. 10) NW *R. BURA* Introduces current topics or courses under development to address the latest issues in bioresource science and engineering.

BSE 201 Introduction to Pulp, Paper, and Bioproducts (3) NW Broad overview of the science and technology of producing pulp and paper. Introduction of the BSE major course sequence and various career options. Examination of Pacific Northwest pulp and paper production facilities. Offered: A.

BSE 202 Pulp and Paper Lab and Field Studies (1) NW Laboratory and field trip studies in pulp and paper technology. Visits to local forest product manufacturing facilities. Required for BSE majors. Credit/no-credit only. Offered: A.

BSE 211 Creativity and Society (5) VLPA/I&S *G. ALLAN* Explores the nature of creativity and innovation in U.S. and other societies. Investigates the processes of thinking and techniques of idea generation in fields such as art, music, science, engineering and medicine. Offered: AWS.

BSE 231 Technical Communication for Process Engineers (3) NW Introduces technical communication skills for process engineers. Topics covered include general communication, technical writing, oral presentations and engineering ethics. Students work individually and in teams to complete oral and written assignments based on modern, industrially relevant bioresource and process engineering problems. Prerequisite: Either C LIT 240, both ENGI 109 and ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 182, ENGL 197, ENGL 198, ENGL 199, or ENGL 281. Offered: A.

BSE 248 Paper Properties (4) NW Acquaints students with raw material characteristics, physical and mechanical concepts, nomenclature, and procedures

related to evaluating paper and paperboard product properties. Emphasizes structural, optical, mechanical, and moisture related properties. Offered: Sp.

BSE 309 Creativity and Innovation (2) VLPA G.

ALLAN Understanding creativity and creative thinking; its challenges and dynamics through knowledge, judgment, planning, and observation. Techniques of creative thinking. Design and development of creative games. Computer-aided creative thinking. Creation, protection, and exploitation of a useful idea, including bargaining and negotiations. Offered: jointly with CHEM E 309; Sp.

BSE 391 Engineering Principles of Biorefineries (5)

NW F. PACHECO DE RESENDE Introduction to biofinery processes, including material and energy balances; sustainability aspects and environmental issues; and process modeling. Application of conservation laws to calculation of flow rates, chemical composition, and heat requirements of non-reactive and reactive systems typical of processes involving lignocellulosic biomass. Prerequisite: A A 260; either CHEM 237 or CHEM 223; MATH 307 Offered: A.

BSE 392 Bioresource Transport Phenomena (5)

NW F. PACHECO DE RESENDE Focuses on transport phenomena involved in the biofinery processes, including: momentum, heat, and mass transfer; paper drying, transport in biochemical and thermochemical processes, and product separation; and computational tools. Application of conservation laws to calculations of flow rates, chemical composition, and heat requirements involving lignocellulosic biomass. Prerequisite: minimum grade of 2.0 in BSE 391. Offered: W.

BSE 399 Undergraduate Internship (1-5, max. 15)

Internship experience with a public agency or private company, supervised and approved by a faculty member. Preparation of professional report reflecting on the experience is required. Credit/no-credit only. Offered: AWSpS.

BSE 406 Natural Products Chemistry (5) NW R.

BURA Provides knowledge of chemistry of aqueous and solvent-rich systems, natural and synthetic polymers, and of interactions with inorganic materials and trace substances present in biomass

processing systems. Covers the chemistry of lignocellulosic biomass components: cellulose, hemicellulose, lignin, and extractives. Presents the fundamental chemistry of biomass conversion process. Prerequisite: either CHEM 223, CHEM 237, or CHEM 335. Offered: A.

BSE 410 Industrial Wastewater Treatment and Reduction (4) Heidi Lois Gough

Applications of mathematics, statistics and chemistry for the engineering design of pollution control for high-strength industrial wastewater, with focus on the pulp, paper and biorefineries industries. Includes design of treatment reactors, settling chambers, sorption operations, and approaches for wastewater reduction. Prerequisite: BSE 201; either BSE 391, CHEM E 310, CEE 350, or CEE 357; and either MATH 307 or AMATH 351; recommended: courses in physics; organic chemistry; differential equations; statistics; and engineering fundamentals Offered: W.

BSE 420 Bioresource Engineering I (4) R. BURA

Covers chemistry and reaction kinetics of conversion of biomass into molecules and fibers for use in making fuels and high value products. Includes chemical, biological, and thermal conversion of biomass. Develops applications of reaction kinetics to design reactor configurations. Prerequisite: BSE 406. Offered: W.

BSE 421 Bioresource Engineering II (4) R. Gustafson

Introduces basic mass transfer processes and physical basis: diffusion, convection, and mass transfer coefficients. Analyzes separation processes used in forest products and bioresources industries: membrane separations, flow through porous media, leaching and extraction, and evaporation. Includes industrial processes: dialysis, reverse osmosis, fiber web formation, pulp washing, and black liquor evaporation. Prerequisite: minimum grade of 2.0 in both BSE 392 and BSE 420. Offered: Sp.

BSE 422 Bioresource Engineering III (4) R.

GUSTAFSON Introduces process simulators and their application to model unit operations and large scale integrated facilities such as biorefineries and pulp and paper mills. Covers applications to optimize processes for production and environmental impact, basic control equipment, process models used in control, types of controllers, and simple controller tuning. Prerequisite: minimum grade of 2.0 in BSE 421. Offered: A.

BSE 426 Bioresource Laboratory (4) R. BURA Covers bioconversion laboratory techniques, focusing on design and operation of conversion processes to produce high value biorenewable products based on chemistry of biomass. Products include ethanol, pulp, glycols, and sugar streams. Includes significant product design component, and hands-on laboratory creation of products based on design. Prerequisite: minimum grade of 2.0 in BSE 420; Q SCI 381 or STAT 311 which may be taken concurrently. Offered: Sp.

BSE 430 Papermaking Processes (5) Examines stock preparation operations (refining, screening, and cleaning) for papermaking and sheet forming as a unit of operations. Considers related unit operations of fluid dynamics and heat transfer as they apply to the commercial process. Covers sheet finishing operations of surface sizing, calendaring, and rewinding. Analyzes physics of fiber webs. Prerequisite: either BSE 392 or CHEM E 340. Offered: A.

BSE 436 Pulp and Paper Laboratory II (4) Paper testing, paper additives, flocculation, drainage, retention, heat transfer, and fluid dynamics in papermaking from virgin and recycled raw materials. Prerequisite: BSE 430. Offered: W.

BSE 480 Bioresource Design I (4) I&S/NW R. GUSTAFSON Design and production of biomass derived products meeting given specifications and financial constraints, integrating coursework knowledge to solve complex, open-ended design problems. Specific considerations in design include: economic, marketability, environmental, sustainability, ethical, health and safety, social, and political. Prerequisite: minimum grade of 2.0 in BSE 406; 2.0 in BSE 420; 2.0 in BSE 430. Offered: W.

BSE 481 Bioresource Design II (5) I&S/NW R. GUSTAFSON Comprehensive design of pulp and paper processes, including: economic feasibility studies; process equipment design, optimization, and control; and overall process integration and layout. Safety and ethics in the design process. Prerequisite: BSE 480. Offered: Sp.

BSE 489 Foreign Study (1-5, max. 15) Individual foreign study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSpS.

BSE 490 Special Topics (1-5, max. 15) Individual tutorial study of topics or courses under development to address the latest scientific developments in forest resources. Offered: AWSp.

BSE 497 Pulp and Paper Internship (1, max. 3) Technical and economic analysis of commercial pulp and paper installations. Structured visits to industrial operations to observe technical aspects of pulp and paper curriculum in practice. Preparation of visitation reports and analysis in seminar setting. Offered: AWSpS.

BSE 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Offered: AWSpS.

ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT

ESRM 100 Introduction to Environmental Science (5) I&S/NW R. HARRISON Covers the importance of the environment in society with particular emphasis on worldwide distribution and uses of resources, the role of natural and man-made environments, and causes of environmental degradation. Introduces ethics of conservation and recycling. Cannot be taken for credit if ESC 110 already taken. Offered: AWSpS.

ESRM 101 Forests and Society (5) I&S/NW K. VOGT Survey course covering forest ecosystems of the world, history of forestry and forest conservation, how forest ecosystems function, wildlife in forests, environmental issues in forestry, forest management, economics and products, and new approaches to forest management. Open to majors and nonmajors. Cannot be taken for credit if CFR 101 already taken. Offered: ASp.

ESRM 150 Wildlife in the Modern World (5) I&S/NW Covers major wildlife conservation issues in North America. Some global issues are also treated. Examples of topics include the conservation of large predators, effects of toxic chemicals on wildlife, old-growth wildlife, conservation of marine wildlife, recovery of the bald eagle, and gray wolf. Offered: A.

ESRM 190 Special Topics (1-5, max. 10) NW Introduces current topics or courses under

development to address the latest issues in environmental science and resource management.

ESRM 200 Society and Sustainable Environments (5) I&S/NW *S. ASAH, P. KAHN* Introduces the application of social concepts and theories to understanding and managing urban, urbanizing, and wildland landscapes in a sustainable manner. Of particular interest are factors that shape patterns on the landscape and resulting social and economic benefits. Explores landscapes across the urban to wildland gradient. Offered: WSp.

ESRM 201 Sustaining Pacific Northwest Ecosystems (5) I&S/NW *D. BUTMAN, S. DOTY* Introduces the principles of ecology across an urban to wildland gradient and discusses how these landscapes can be sustainably managed. Explores basic ecological theories, plant communities, soil, climate, pollution, hydrology, and wildlife in classroom, labs, and field trips. Offered: ASp.

ESRM 210 Introductory Soils (5) NW Physical, chemical, and biological properties that affect distribution and use patterns of this important ecosystem component. Includes soil morphology and genesis, plant nutrition and nutrient cycling, soil water, microbiology, and application of soil properties to environmental concerns. One Saturday field trip. Offered: A.

ESRM 235 Introduction to Environmental Economics (5) I&S/NW *S. RABOTYAGOV* Introduces environmental and natural resource economics. Discusses fundamental economic concepts, including markets and private property. Includes basic tools used in the economic assessment of environmental problems and applies these methods to key environmental issues. Offered: jointly with ECON 235/ENVIR 235; SpS.

ESRM 250 Introduction to Geographic Information Systems in Forest Resources (5) NW, QSR Applications of GIS technology to forest science and management. Fundamentals of GIS systems: data sources, preprocessing, map analysis, output; remote sensing as a source of GIS data, image analysis, and classification. Emphasis on GIS as a source of management and technical information requests. Offered: AWSpS.

ESRM 300 Principles of Sustainability (2) NW/I&S Overview of principles of sustainability, including discussion of current literature, presentation, and discussion with practitioners, and methods for balancing social, economic, and ecological consequences of proposed policies and actions. Students develop a plan to further their studies in natural resources and environmental sustainability. Prerequisite: ESRM 200 or ESRM 201, either of which may be taken concurrently. Credit/no-credit only. Offered: W.

ESRM 304 Environmental and Resource Assessment (5) NW, QSR *Daniel Vogt, Eric Turnblom* The processes of measuring, monitoring, and assessment; illustrated in diverse environmental and resource case studies. Explores the scientific method, hypothesis testing, sampling, and experimental designs, the role of questionnaires and polling techniques, remote sensing techniques, and population measurements. Prerequisite: ESRM 200 or ESRM 201, either of which may be taken concurrently. Offered: ASpS.

ESRM 311 Soils and Land Use (3) NW Intended for students concerned with environmental problems in the Puget Sound basin; also for those who intend to become professionally involved in land-planning decisions. Focus is on the significance of soils in understanding environmental problems and in promoting intelligent land-use decisions. Basic concepts of soil systems are presented, stressing those aspects important in making land-planning decisions.

ESRM 315 Natural Resource Issues: Old-Growth and Forest Management (5) NW/I&S *B. Harvey* Biological and social elements of current conflicts, especially those associated with old-growth and its disposition. Ecology of Pacific Northwest forests and landscapes, history of forest practices, application of emerging science, proposed alternative practices and policies, including analysis of current proposal and its predecessors and successors. Open to majors and nonmajors. Offered: Sp.

ESRM 320 Marketing and Management from a Sustainability Perspective (5) I&S/NW *D. PAUN* Introduction to business concepts relating to marketing, human resource management, small businesses and entrepreneurship, and economics in

the context of environmental resource management. Offered: AS.

ESRM 321 Finance and Accounting from a Sustainability Perspective (5) I&S/NW D. PAUN
Introduction to business concepts relating to finance, accounting, and international business in the context of environmental resource management. Offered: WS.

ESRM 323 Silviculture (5) NW E. TURNBLOM
Silviculture techniques, including nursery practices, clear-cutting, seed trees, shelterwood, selection cutting, site preparation, regeneration methods, thinning, fertilization, chemicals, and regional silviculture in the Northeast, Southeast, Midwest, Rocky Mountains, California, Pacific Northwest, and Alaska. Multiple-use field trips. Offered: Sp.

ESRM 325 Environmental Applications of Plants: Bioenergy and Bioremediation (3) NW S. DOTY
Explores current topics in forest bioresources with an emphasis on bioenergy, remediation of pollutants, and carbon sequestration. Offered: A.

ESRM 328 Forestry-Fisheries Interactions (4) NW
Offered: jointly with FISH 328.

ESRM 331 Landscape Plant Recognition (3) NW Field recognition of important groups of woody landscape plants, emphasizing diversity at the genus and family levels. Cultivated plant nomenclature. Plant descriptive characters evident in the field with eye and hand lens. Hardiness and landscape applications. Offered: jointly with BIOL 331; Sp.

ESRM 350 Wildlife Biology and Conservation (5) NW A. WIRSING Wildlife ecology and population biology, and interrelationships between wild animals and humans, including encouragement of wildlife population growth and productivity, control of pest populations, and preservation of endangered species with emphasis on forest environments and forest faunas. Prerequisite: either BIOL 162, BIOL 180, BIOL 220, or ESRM 162, any of which may be taken concurrently. Offered: A.

ESRM 351 Wildlife Research Techniques (5) NW Scientific approaches to the field study of wildlife populations including study design, species identification, data collection, and report writing. Emphasis on direct experience with current field

techniques used in the study of vertebrate populations. Prerequisite: either BIOL 162, BIOL 180, ESRM 162, or ESRM 350. Offered: Sp.

ESRM 362 Introduction to Restoration Ecology (5) NW/I&S J. BAKKER An introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the success of any restoration project. Includes lectures, readings, case studies, and field trips. Offered: jointly with ENVIR 362; A.

ESRM 368 Natural Resource Measurements (4) NW E. TURNBLOM Introduction to principles of measurement, basic field measurement skills, measurement of vegetation, including stand examination, timber cruising, size, weight, volume and biomass of trees, and stream flow. Laboratories include field exercises on sampling techniques for trees and lesser vegetation and linear regression modeling to predict quantities from basic measurements. Prerequisite: either IND E 315, Q SCI 381, STAT 220, or STAT 311. Offered: W.

ESRM 371 Environmental Sociology (5) I&S/NW S. ASAH Social processes by which environmental conditions are transformed into environmental problems; scientific claims, popularization of science, issue-framing, problem-amplification, economic opportunism, and institutional sponsorship. Examination of social constructs such as ecosystem, community, and free-market economy. Use of human ecology to assess whether the current framing of environmental problems promotes ecological adaptability. Offered: jointly with ENVIR 379/SOC 379; A.

ESRM 381 Management of Wildland Recreation and Amenities (3) NW Introduction and overview of wildland recreation and amenities management. Agency history and objectives explored along with integration of recreation with other land uses. Water, forestry, wildlife, and wilderness resources for recreational uses discussed along with role of private enterprise in recreation and amenities. Topics of current and local interest. Offered: A.

ESRM 399 Field or Teaching Internship (1-5, max. 15) Internship experience in undergraduate teaching or in the environmental field, supervised and approved by a faculty member. Preparation of

professional report reflecting on the experience is required. Credit/no-credit only. Offered: AWSpS.

ESRM 400 Natural Resource Conflict Management (3) I&S/NW *C. RYAN* Introduction to the causes, dynamics, and consequences of natural resource conflicts as well as the range of procedural interventions used to manage conflict. Specific cases of environmental conflict and alternative dispute resolution procedures are examined. Emphasis on developing skills to effectively analyze, manage, and resolve natural resource conflicts. Offered: W.

ESRM 403 Forest and Economic Development in the Developing World (4) NW Examines the relationship between forests and economic development in tropical countries. Topics include the role of population growth, poverty, land tenure, and international trade on forest use as well as theories of economic development. Case examples of forest-based economic development in different countries and regions. Offered: A.

ESRM 404 Plant Microbiology Laboratory (5) NW *S. DOTY* Focuses on measuring impacts of beneficial microorganisms on plants. Assays include colonization of plants, N stress alleviation, photosynthesis, and growth enhancement. Microorganisms are characterized by phytohormone production, provision of nutrients, and growth. Microbial strains are identified using standard molecular analysis methods (PCR, cloning, sequencing). Includes short lectures. Prerequisite: Prerequisite: BIOL 180; either CHEM 120 or CHEM 142; recommended ESRM 201. Offered: WS.

ESRM 409 Soil Ecology (5) NW Soil organisms in forest and other ecosystems, decomposition, nutrient cycling. Nitrogen transformation, mycorrhizae, effects of forest management. Offered: A, even years.

ESRM 410 Forest Soils and Site Productivity (5) NW Considers unique properties and processes occurring in forest soils throughout the world with emphasis on soils of Pacific Northwest and aspects of forest soils that affect productivity. Two all-day Saturday field trips and one Saturday-Sunday field trip required. Offered: A, odd years.

ESRM 411 Plant Propagation: Principles and Practice (3) NW *S. KIM* Science and practice of plant

propagation including sexual (seed) and asexual (cutting, layering, grafting) propagation. Includes discussion of physiological effects, methodology and laboratory exercises. Wide variety of plants covered. Intended for majors in urban horticulture and urban forestry and others interested in reproducing landscape plants. Offered: Sp.

ESRM 412 Native Plant Production (3) NW *J. BAKKER* Advanced plant propagation techniques, emphasizing native plants, propagation for restoration projects, and unique problems associated with providing appropriate plant material for restoration or conservation purposes. Emphasizes greenhouse and fieldwork, and includes lectures, field trips, and a class project. Offered: Sp.

ESRM 413 Soil Genesis and Classification (5) NW Soil formation, morphology, classification, and relationship to the environment. Labs and weekend field trips illustrate properties and processes of forest and grassland soils in Washington. Offered: Sp, even years.

ESRM 414 Forest Soil Fertility and Chemistry (3) NW Tree growth depends, in part, on the interaction between chemical and biological activities within a given soil: the biological and chemical parameters that influence the growth; soil solution chemistry and surface reactions; reactions and processes that control essential plant nutrient levels and forms in soil solutions. Offered: Sp, odd years.

ESRM 415 Terrestrial Invasion Ecology (5) NW *P. Tobin* Covers major principles of invasion biology and ecology as they apply to terrestrial ecosystems, from invasion pathways and the arrival stage, factors that affect non-native species establishment and spread, impacts to ecosystem function and diversity, and stage-specific management strategies. Prerequisite: either BIOL 162, BIOL 220, BIOL 333, BIOL 471, BIOL 472, ESRM 201, ESRM 401, ESRM 472, or ESRM 473. Offered: A.

ESRM 420 Wildland Fire Management (5) NW *E. ALVARADO-CELESTIN* Principles of wildland fire behavior, ecology, and management. Weather, fuels, and topography effects on fire behavior. Forest structure influence on historical and current fire ecology. Principles of firesafe forests. Management issues of fire control and use in wilderness, multiple-

use forest, and the wildland-urban interface.

Offered: Sp.

ESRM 421 Role of Culture and Place in Natural Resource Stewardship: Yakama Nation Experience (3) I&S/NW, DIV E. Alvarado-Celestin, T. Hinckley

"Anyone who has not lived in "Indian country" cannot understand just how extensively the United States government and its laws affect Native Americans and their natural resource management." Learn how history, self-determination, and sovereignty have shaped natural resource stewardship on the reservation and on the ceded lands of the Yakama Nation. Offered: A.

ESRM 422 Plant Microbiology Seminar (2, max. 4)

Microbes, often essential for plant growth, provide nutrients, pathogen resistance, and increased tolerance to stress. Other microbes may cause plant diseases. Covers plant microbe interactions. Requires literature review of a plant microbiology topic. Prerequisite: BIOL 162 or BIOL 220; recommended: biology. Credit/no-credit only. Offered: W.

ESRM 423 International Trade, Marketing, and the Environment (3) I&S/NW Introduction to international trade, marketing, and environmental business. Concepts include plan writing, exporting and importing, carbon credits, green marketing, and how global exchange rates affect environmental assets such as forests.

ESRM 425 Ecosystem Management (5) NW J.

FRANKLIN Scientific and social basis for ecological forestry. Forest practices to achieve integrated environmental and economic goals based upon material models of disturbance and stand development including alternative harvesting methods; adaptive management and monitoring; certification and global issues. Offered: A.

ESRM 426 Wildland Hydrology (4) NW Introduction to the hydrologic cycle and basic hydrologic methods as applied to wildlands. Effects of forest management activities on hydrologic processes. Offered: Sp.

ESRM 428 Principles of Silviculture and Their Application (5) NW Focuses on the biology of major tree species in the PNW and their use in silviculture, stand development in plantation forest systems and

its relationship to forest yield, the advantages and limitations of plantation silviculture relating to specific biotic, abiotic, and economic conditions, and management for objectives other than time yield. Prerequisite: ESRM 323. Offered: A.

ESRM 429 Environmental Science and Resource Management Seminar (1, max. 6) NW Weekly presentations covering environmental topics by scientists on and off campus Credit/no-credit only. Offered: AWSp.

ESRM 430 Remote Sensing of the Environment (5) NW *Moskal* Focuses on hyperspatial remote sensing fundamentals, interpretation and manipulation of aerial photography, satellite imagery, and Light Detection and Ranging (LiDAR) . Uses traditional and 'state of the art' image processing techniques. Students learn to evaluate available hyperspatial remote sensing data sources and design simple projects related to environmental applications. Offered: W.

ESRM 431 Ecopsychology (5) I&S P. *KAHN* Explores psychology of the human relationship with nature. Critically examines how ecopsychology can impact urban sustainability, human health, environmental education, and the design of new technologies. Specific topics include evolutionary psychology; human-animal interaction; biophilia; children and nature; indigenous cultures; and ecotherapy. Offered: jointly with ENVIR 431/PSYCH 431; W.

ESRM 432 Advanced Remote Sensing and Earth Observation (4) NW, QSR *David E. Butman* Covers the theory and application of satellite remote sensing as a tool for environmental science. Topics include the fundamentals of electromagnetic radiation, reflection and absorption, black body radiation, use of the Planck Function, satellite and sensor technology, map projections, integration of GIS data, and digital image analysis. Practical training with advanced image processing software (ENVI and open source) . Recommended: GIS; statistics; and basic physics. Offered: jointly with CEE 432; W.

ESRM 433 Airborne Lidar for Remote Sensing of Vegetation and Geomorphology (5) L. *MOSKAL* Focuses on the applications of lidar data, its interpretation, and processing. Students apply information learned from lectures and laboratory projects to a final project that analyzes vegetation

structure, geomorphology, or hydrology.

Prerequisite: either ESRM 250, SEFS 520, ESRM 430, FISH 452, FISH 502, FISH 552, or GEOG 360 Offered: Sp.

ESRM 435 Insect Ecology (3) NW P. TOBIN Covers major principles of ecology as they apply to insects, and follows a level of organization from the individual to populations to communities. Applications of insect ecology are extended to insect ecosystem services, conservation, and pest management. Prerequisite: BIOL 161, BIOL 180, BIOL 200, BIOL 220, or ESRM 161; recommended: Offered: Sp.

ESRM 436 Laboratory in Insect Ecology (2) NW P. TOBIN Supplements the lecture course (ESRM 435) by providing hands-on lab and field experience on ecological principles as they pertain to insects. Prerequisite: ESRM 435, which may be taken concurrently.

ESRM 441 Landscape Ecology (5) NW J. LAWLER Basic landscape ecology concepts, including patches, corridors, networks, spatial dynamics; island biogeographic principles; landscape analysis methods; landscape models. Applications of landscape ecology in resources management (e.g., cumulative effects, cutting, patterns, anadromous fisheries, management of wildlife populations, and open-space planning) . Offered: A.

ESRM 447 Watershed Ecology and Management (3) NW G. HOLTGRIEVE Investigation of stream and river ecosystems from a watershed perspective. Emphasis on fundamental processes affecting the structure and function of flowing aquatic ecosystems and their catchments. Topics include river/stream hydrology, geomorphology, nutrient spiraling, food webs, and global change. Case studies explore human interactions with rivers and approaches to river management. Prerequisite: BIOL 180 or ESRM 201 or FISH 101. Offered: jointly with FISH 447; Sp.

ESRM 448 Watershed Ecology and Management Lab (2) Hands-on examination of river and stream ecosystems with emphasis on physical and biological processes, field methods, analysis of data, and writing scientific papers, includes field trips. Prerequisite: ESRM 447 or FISH 447 which may be taken concurrently. Offered: jointly with FISH 448; Sp.

ESRM 450 Wildlife Ecology and Conservation (5) NW A. WIRSING Covers principles of wildlife ecology such as habitat use and selection, population and metapopulation dynamics, and predator-prey interactions, and illustrates how they apply to wildlife conservation problems with terrestrial, aquatic, and marine wildlife. Prerequisite: minimum grade of 2.0 in ESRM 350. Offered: W.

ESRM 451 Analytical Methods in Wildlife Science (3) NW Beth Gardner This course provides a foundation of techniques commonly used by wildlife biologists in data collection and analysis. Predominantly focused on parameter estimation of demographic rates of animal populations. This course will explore, and discuss in detail, quantitative methods needed to address conservation and management problems in the real world. Prerequisite: ESRM 351 and Q SCI 482. Offered: jointly with Q SCI 451; W.

ESRM 452 Field Ornithology (3) NW J. Marzluff Students learn field identification skills and are introduced to field methodologies through required indoor labs, field trips, and field exercises. Exercises include study of survey techniques, feeding ecology, and behavior. Students are required to share field trip costs. Prerequisite: ESRM 350 or ESRM 456 which may be taken concurrently; either BIOL 162, BIOL 180, or BIOL 220, any of which may be taken concurrently. Offered: A.

ESRM 453 Biology and Ecology of Mammals (3) NW Laura R Prugh This course covers the diversity and life history of mammals, with a focus on their ecology, evolutionary relationships, identification, and distribution. Students will complete a term project. An optional field trip to learn snow tracking techniques will be offered. This is a writing intensive (W) course. Prerequisite: BIOL 162 or BIOL 180; recommended: ENGLISH Composition Offered: Sp, odd years.

ESRM 455 Wildlife Seminar (1, max. 8) NW Discussion of current research and application in wildlife biology and conservation. Credit/no-credit only. Offered: AWSp.

ESRM 456 Biology and Conservation of Birds (3) NW J. MARZLUFF Major principles of natural history, avian reproductive biology, population ecology, and national and international conservation strategies for both hunted and un hunted birds. Emphasis on

western United States. Prerequisite: either BIOL 162, BIOL 180, or BIOL 220, ESRM 162, any of which may be taken concurrently. Offered: A.

ESRM 457 Fish and Wildlife Toxicology (3/5) NW

Overview of fish/wildlife toxicology: history of the field; regulations; methods used to assess risks contaminants pose to fish/wildlife; classes of contaminants and their direct, sublethal and indirect effects; and contemporary threats of contaminants to fish/wildlife, their habitats and prey. Includes laboratory. Offered: jointly with FISH 455; W.

ESRM 458 Management of Endangered, Threatened, and Sensitive Species (5) NW J.

MARZLUFF Biological underpinnings and political realities of endangered species management, including: legal issues, recovery teams, citizen rights, extinction, rarity, proactive management, captive propagation, reintroduction, species endangered in the Pacific Northwest. Students revise endangered species recovery plans. Offered: W.

ESRM 459 Wildlife Conservation in Northwest Ecosystems (3) NW *Aaron J. Wirsing, John M. Marzluff*

Extended field course offers wildlife science students personal interactions with wildlife managers and wildlife populations in strategic public and private lands in the northwestern United States and southern Canada. Students share costs of trip. Offered when there is sufficient student demand. Prerequisite: ESRM 350; may not be repeated. Offered: Sp.

ESRM 460 Power, Privilege, and Preservation (5) NW/I&S, DIV

Critically examines strategies of resource managers to integrate local communities and cultures in protected areas management. Explores issues of power, privilege, and injustice and their impacts on individuals, society, and resource management decisions. Examines the potential for more socially just and ecologically sustainable approaches to protected areas management. Offered: jointly with ENVIR 460.

ESRM 461 Forest Management and Economics (5) I&S/NW

Presents important contemporary decision tools, especially how they are used by forest managers to interpret, critique, and develop their basic applications in forestry. Topics include optimization techniques, including linear and nonlinear programming, concepts in interest and

time evaluation of alternatives, marginal cost analysis, and computer spreadsheet assisted analysis. Prerequisite: Q SCI 381 or STAT 311; Q SCI 291 or MATH 124. Offered: Sp.

ESRM 462 Restoration Ecology Capstone:

Introduction (2-) NW First of a three-course capstone sequence in restoration ecology. Students review and assess project plans and installations. Class meets with members of previous capstone classes to review their projects. Offered: jointly with BES 462/T BIOL 462.

ESRM 463 Restoration Ecology Capstone: Proposal and Plan (-3-) NW

Student teams prepare proposals in response to requests for proposals (RFPs) from actual clients. Clients may be governments, non-profit organizations, and others. Upon acceptance of the proposal, teams prepare restoration plans. Prerequisite: ESRM 462. Offered: jointly with BES 463/T BIOL 463.

ESRM 464 Restoration Ecology Capstone: Field Site

Restoration (-5) NW Teams take a restoration plan developed in ESRM 463 and complete the installation. Team participation may include supervision of volunteers. Teams prepare management guidelines for the client and conduct a training class for their use. Prerequisite: ESRM 463. Offered: jointly with BES 464/T BIOL 464.

ESRM 465 Economics of Conservation (3) I&S/NW

Economic principles and their use in the analysis of contemporary conservation problems. Particular emphasis directed toward the conservation of forest resources in the Pacific Northwest and related policy issues. Offered: A.

ESRM 468 Forest Operations (5)

Examines forest land surveying, low volume road access planning, and timber harvesting concepts. Low volume road design principles and practical application of field road location. Overview of road drainage design, construction techniques and maintenance. Reviews basic harvest systems and setting design processes, including cost, production control, environmental and safety considerations. Prerequisite: ESRM 250; ESRM 368; ESRM 323 which may be taken concurrently. Offered: Sp.

ESRM 470 Natural Resource Policy and Planning (5) I&S/NW

Introduction to and analysis of

environmental policy-making processes, with a focus on forest and land policy and law. Use of policy models to examine the interaction of agencies, interest groups, Congress, and the courts in the legislative process. Policy implementation, evaluation, and change are also addressed. Offered: A.

ESRM 473 Restoration in North America (5) NW Investigates the vegetation and climate of North American ecosystems. Includes an ecosystem by ecosystem review of how restoration is done in each system, including some tropical ecosystems. Offered: W.

ESRM 474 Restoration Problem Solving: Ecological Engineering (5) J. FRIDLEY Exposes students to real-life problem solving that involves the design and manipulation of natural systems to perform ecological function. Focuses on the analysis, design, and implementation of discrete projects. Includes projects dealing with plants, hydrology, earthwork, waste and pollution management, as well as other resources and problems. Offered: A.

ESRM 478 Plant Ecophysiology (5) NW S. Kim Explores physiological mechanisms that underlie ecological observations, including how above- and below-ground microclimates develop and affect plant physiological processes. Discusses acclimation to environmental change along with species differences in physiological processes and plant's occupation of heterogeneous environments. Laboratories emphasize field measurement techniques. Prerequisite: either BIOL 180, B BIO 180, TESC 120, T BIOL 120, ESRM 201, ESRM 162, or FISH 162. Offered: jointly with BIOL 424; W.

ESRM 479 Restoration Design (5) I&S/NW K. EWING, J. FRIDLEY Covers the design process in ecosystem restoration by presenting a series of weekly design problems that students solve as teams. Categorizes problems by disturbance type, including restoration necessitated by agriculture, urbanization, salt-marsh filling or diking, construction of transport corridors, etc. Includes a team design portfolio. Offered: Sp.

ESRM 485 Environmental Planning and Permitting in Practice (5) I&S Todd A Wildermuth Advanced survey of environmental planning and permitting as encountered by environmental and natural resource

professionals in Washington State and beyond. Focuses on Washington State acts (SEPA, SMA, GMA) and Federal systems (NEPA, CWA ESA) that shape environmental land use planning and federal planning and permitting systems Offered: jointly with ENVIR 485; W.

ESRM 489 Foreign Study (1-5, max. 15) Individual foreign study of topics for which there is not sufficient demand to warrant the organization of regular classes. Offered: AWSpS.

ESRM 490 Special Topics (1-5, max. 15) Individual tutorial study of topics or courses under development to address the latest scientific developments in forest resources. Offered: AWSpS.

ESRM 491 Field Studies (1-5, max. 10) Independent field study or one time organized field courses with emphasis outside the traditional classroom. Offered: AWSpS.

ESRM 494 Senior Capstone Proposal (5-) Selection of a capstone topic and type, either thesis or project. Students select a faculty adviser to assist them in the proposal writing process. Regular or Honors credit. Prerequisite: ESRM 200; ESRM 201; ESRM 300; ESRM 304. Offered: AWSpS.

ESRM 495 Senior Project (-5) Individual study of an environmental science and resource management problem under direction of a faculty member. Requires a written project report. Generally taken in last year of residence. Prerequisite: ESRM 494, which may be taken concurrently. Offered: AWSpS.

ESRM 496 Senior Thesis (-5) Statistical analysis and presentation of research results and discussion of results in a thesis paper. Students work with faculty advisers to complete field or laboratory research and then prepare the senior thesis. Prerequisite: ESRM 494, which may be taken concurrently. Offered: AWSpS.

ESRM 499 Undergraduate Research (1-5, max. 15) Individual research supervised by a faculty member. For advanced students desiring to extend their educational experience. Offered: AWSpS.

SCHOOL OF ENVIRONMENT AND FOREST RESOURCES

SEFS 500 Graduate Orientation Seminar (1)

Introduction to graduate study at the School, student resources and services, and current research. Required for all new graduate students in SEFS. Offered: A.

SEFS 501 Forest Ecosystems - Community Ecology (5) B. Harvey

Community ecology of forest ecosystems. Quantitative methods of community description. Role of limiting factors, competition, and disturbance in determining community composition, structure, and stability. Introduction to forest ecosystem productivity. History and application of successional theory. Prerequisite: basic ecology course or permission of instructor. Offered: A.

SEFS 502 Analytical Techniques for Community Ecology (4) J. BAKKER

Analysis of ecological data, focusing on community-level data. Topics include distance measures, group comparison methods (Mantel test, permutational MANOVA), ordinations (PCA, DCA, NMS), methods of identifying groups (cluster analysis, classification trees), as well as Indicator Species Analysis, diversity measures, and related topics. Prerequisite: Q SCI 482, which may be taken concurrently. Offered: W.

SEFS 503 Current Issues in Restoration Ecology and Environmental Horticulture (1, max. 10)

Critical evaluation and discussion of published research in urban horticulture and restoration. Students and faculty present and discuss research methods and questions from current literature. Credit/no-credit only. Offered: AWSp.

SEFS 504 Research Processes in Forest Resources (4)

Comprehensive survey of research processes for entering graduate students. Diagnostic and prescriptive evaluation of student research capabilities. Problem and hypothesis formulation, study design, multi-method strategies for gathering and analyzing data, and interpretation and presentation of results.

SEFS 506 Terrestrial Invasion Ecology (5) P. Tobin

Covers major principles of invasion biology and ecology as they apply to terrestrial ecosystems, from

invasion pathways and the arrival stage, factors that affect non-native species establishment and spread, impacts to ecosystem function and diversity, and stage-specific management strategies. Offered: A.

SEFS 507 Soils and Land Use Problems (4)

Environmental concerns of soils; how soil properties control potential and reasonable possibilities of land use. Includes factors controlling soil stability, hydrology, fertility, and movement of pollutants. Field trip oriented with weekly activity summaries. Students also conduct field trips to soil-use problem sites.

SEFS 508 Plant Process and Systems Modeling (3) S. Kim

This course explores principles and techniques of quantitative modeling used in plant biology and ecology for graduate and advanced undergraduate students. An emphasis will be given to process-based models that integrate underlying physiological and ecological processes in plant systems. Instruction methods will include lectures, discussions, hands-on computer exercises, assignments, project, and reading primary research articles in modeling. Recommended: Plant biology, Ecology, Algebra, Calculus, Scientific computing Offered: A.

SEFS 509 Analysis of Research Problems (3) S. RABOTYAGOV

Natural resource issues emerge from interactions between humans and their biophysical world. Understanding resource problems and solutions requires integration of numerous areas of knowledge and methods of discovery. Objectives include exposure to, and development of, fundamental issues and skills essential for natural resource professionals, including development of a research plan. Offered: W.

SEFS 510 Graduate Studies in Forest Soils (1-5, max. 15)

Offered: AWSpS.

SEFS 512 Biogeochemical Cycling in Soils and Forest Ecosystems (3)

Elemental cycles in forests and soils. Fundamentals of processes involved in cycling are addressed along with alterations resulting from environment, vegetation, and soil types. Consideration of cycles of nutrients, metals, and other elements. Weekly discussion section reviews literature on biogeochemical cycling. Prerequisite: one soils course or permission of instructor. Offered: Sp, even years.

SEFS 513 Advanced Soil Genesis and Classification (5) Soil formation, morphology, classification, and relationship to the environment. Labs and field trips illustrate properties and processes of forest and grassland soils in Washington. Requires two weekend field trips and a graduate project. Prerequisite: CFR 510 or permission of instructor. Offered: Sp, even years.

SEFS 514 Advanced Forest Soil Fertility and Chemistry (4) Chemical properties of soil, nutrient, and toxic elements; supply, retention, and loss of nutrients in soils; utilization of geochemical and ecosystem models such as GEOCHEM, MAGIC, TRICLE-DOWN, and ILWAS in developing a quantitative understanding of the chemical function of forest ecosystems. Prerequisite: general chemistry and geology of soils. Offered: Sp, odd years.

SEFS 515 Advanced Soil and Plant Analysis (3) Plants and animals must acquire nutrient elements from their environment. Quantifying the composition of samples is the first step in understanding the processes in natural and manmade systems. Sampling, handling, preparation, storage, and analysis stressed. Prerequisite: one botany or plant science course, instrumental analysis, soils. Offered: Sp, even years.

SEFS 520 Geographic Information Systems in Forest Resources (5) *J. Lawler* Applications of GIS technology to forest science and management. Fundamentals of GIS systems: data sources, preprocessing, map analysis, output; remote sensing as a source of GIS data, image analysis, and classification. Emphasis on GIS as a source of management and technical information requests. Offered: AWSp.

SEFS 521 Current Topics in Forest Resources (2-5, max. 10) Critical evaluation and discussion of published research in the broad field of forest resources. Topics and requirements vary. Offered: AWSp.

SEFS 522 Plant Microbiology Seminar (2, max. 4) *Sharon L. Doty* Microbes, often essential for plant growth, provide nutrients, pathogen resistance, and increased tolerance to stress. Other microbes may cause plant diseases. Covers plant microbe interactions. Requires literature review of a plant microbiology topic. Recommended: undergraduate

background that includes biology. Credit/no-credit only. Offered: W.

SEFS 523 Environmental Applications of Plants: Bioenergy and Bioremediation (3) *S. DOTY* Covers phytoremediation (removing pollutants using plants), biofuel production, and carbon sequestration. Focuses on the biology rather than the chemistry. Emphasizes the latest research on how current practices in these areas are being improved. Offered: A.

SEFS 524 Current Topics in Phytoremediation (2) *S. DOTY* Discussion of current scientific research in the use of plants for remediation of pollution. One paper is student-presented per week and critiqued and discussed in class. Prerequisite: SEFS 523 Credit/no-credit only.

SEFS 525 Advanced Wildland Hydrology (4) Advanced treatment of hydrologic cycle and basic hydrologic methods as applied to wildlands. Effects of forest management activities on hydrologic processes. Graduate focus on a detailed field or modeling hydrologic analysis. Offered: W.

SEFS 526 Seminar in Advanced Silviculture (3) Seminar on current and emerging silvicultural issues and underlying biological principles. Topics include: stand management to enhance wildlife, biodiversity, and high productivity in sub-tropical and tropical regions; computer simulation of stand growth; adaptation to changes in management objectives; soil conditions and productivity during stand rotation; and minimizing effects of catastrophic disruption. Prerequisite: ESRM 428. Offered: W.

SEFS 527 Ecosystems Seminar (1) Discussion by invited speakers on current research related to ecosystems. Credit/no-credit only.

SEFS 529 School of Environmental and Forest Sciences Seminar (1, max. 6) Weekly seminars covering School of Environmental and Forest Sciences topics, with lectures from scientists on and off campus. Credit/no-credit only. Offered: AWSp.

SEFS 530 Introduction to Restoration Ecology (3/5) *J. BAKKER* Provides introduction to ecological restoration of damaged ecosystems. Examines the philosophical base of restoration as well as the social, biological, and political forces that impact the

success of any restoration project. Includes lectures, readings, case studies and field trips. Offered: A.

SEFS 532 Advanced Remote Sensing and Earth Observation (4) Covers the theory and application of satellite remote sensing as a tool for environmental science. Topics include the fundamentals of electromagnetic radiation, reflection and absorption, black body radiation, use of the Planck Function, satellite and sensor technology, map projections, integration of GIS data, and digital image analysis. Practical training with advanced image processing software (ENVI and open source). Recommended: GIS; statistics; and basic physics. Offered: jointly with CEWA 532; W.

SEFS 533 Airborne Lidar for Remote Sensing of Vegetation and Geomorphology (5) *L. MOSKAL* Focuses on the applications of lidar data, its interpretation, and processing. Students apply information learned from lectures and laboratory projects to a final project that analyzes vegetation structure, geomorphology, or hydrology. Prerequisite: either ESRM 250, SEFS 520, ESRM 430, FISH 452, FISH 502, FISH 552, or GEOG 360. Offered: Sp.

SEFS 535 Fire Ecology (4) *E. ALVARADO-CELESTIN* Fire regime concept as applied to fire ecology. Methodology for fire history research. History and function of forest fire in Western United States with emphasis on Pacific Northwest. One weekend field trip. Offered: A.

SEFS 540 Optimization Techniques for Natural Resources (5) *S. TOTH* Studies optimization techniques for natural resources managers including spatial optimization; linear, integer, and multi-objective programming; and stochastic and combinatorial optimization. Emphasizes model building rather than on algorithmic concepts. Prerequisite: MATH 308 or permission of instructor. Offered: Sp.

SEFS 541 Advanced Landscape Ecology (5) *B. Harvey, J. Lawler* Hands-on, applied, project-based research class. Students work in a team in conjunction with one or more outside partners to address real landscape-scale conservation problems. Covers scaling, landscape processes, pattern measurement, connectivity, landscape modeling,

and conservation planning. Prerequisite: SEFS 501. Offered: W, odd years.

SEFS 549 Urban Horticulture Seminar (1, max. 6) Discussion by invited speakers on current topics in urban horticulture. Credit/no-credit only. Offered: A.

SEFS 550 Graduate Seminar (2-5, max. 10) Graduate seminar to evaluate and discuss current research topics. Topics and requirements vary. Offered: AWSp.

SEFS 554 Wildlife Seminar (1-2, max. 10) Discussion of current research and application in wildlife biology and conservation. Credit/no-credit only. Offered: AWSp.

SEFS 561 Professional Presentations in Environmental Sciences (3) *Gregory Bratman* Students learn to make public presentations in scientific, professional, and popular contexts and to interpret technical information for professional and lay audiences by developing and practicing professional talks in a supportive environment. Students gain experience through tools and feedback on their approach to presentation materials. Discusses support materials, such as audiovisuals and graphics. Offered: Sp.

SEFS 564 Advanced Forest Biometry (3/5) *Eric Turnblom* Classical problems in analysis of forest populations and growth theory, and principles of parametric analysis and estimation processes in forest biometry. Offered: W, even years.

SEFS 567 Topics in Advanced Ecology (3, max. 6) Discusses literature on active research areas or controversies in different branches of ecology. Offered: jointly with BIOL 567/FISH 567; W.

SEFS 570 Seminar in Environmental Sociology (3) Offered: jointly with SOC 570.

SEFS 571 Resource Policy and Administration (4) Study based on understanding of the actors, arenas, issues, and policy communities that form the context for policy development and implementation. Exploration of approaches to policy inquiry. Consideration of implications for both policy and management. Students develop a study design for course project. Offered: jointly with PUBPOL 592.

SEFS 574 Restoration Problem Solving: Ecological Engineering (5) *J. FRIDLEY* Exposes students to real-life problem solving that involves the design and manipulation of natural systems to perform ecological function. Focuses on the analysis, design, and implementation of discrete projects. Includes projects dealing with plants, hydrology, earthwork, waste and pollution management, as well as other resources and problems. Offered: A.

SEFS 590 Graduate Studies (1-5, max. 10) Study of emerging scientific developments in forest resources that may develop into regular course offerings. Offered: AWSpS.

SEFS 595 Graduate Teaching Practicum (1-5, max. 5) Principles of teaching and learning applied to undergraduate instruction in the School of Environmental and Forest Sciences. Development, delivery, and evaluation of lectures and homework assignments. Graduate teaching experience for SEFS students only. Credit/no-credit only. Offered: AWSp.

SEFS 600 Independent Study or Research (*-)
Offered: AWSpS.

SEFS 601 Internship (3-9, max. 9) Graduate internship under the supervision of a faculty member. Credit/no-credit only. Offered: AWSpS.

SEFS 700 Master's Thesis (*-) Offered: AWSpS.

SEFS 800 Doctoral Dissertation (*-) Offered: AWSpS.

FRIDAY HARBOR LABS

FHL 101 Introduction to Marine Biology in the San Juan Islands (1) NW *M. Dethier* One-weekend, one-credit course designed to introduce students to the marine ecosystem of the San Juan Archipelago and the facilities of the Friday Harbor Laboratories, while doing basic exploration of marine biology. Students will spend two full-schedule days doing a variety of field and lab studies. Offered: Sp.

FHL 250 Marine Biology (5) NW Physical, biological, and social aspects of the marine environments. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Field and laboratory exercises expose students to common marine biological techniques

and the diverse marine ecosystems of the San Juan Islands, WA, and to service-learning with local schools. Recommended: at least one quarter of introductory biology (more preferable). Offered: Sp.

FHL 305 Biology of Fishes (5) NW Covers the morphological, physiological, behavioral, and ecological diversity of fishes worldwide; provides a basic foundation for advanced courses in all areas of aquatic sciences. Participants engage in field-based collecting, copious dissection/illustration laboratories, and delve into scientific literature on this fascinating group's biology. Recommended: 10 credits biological science. Offered: ASp.

FHL 333 Science Writing for Diverse Audiences (3/5) This course examines the effective communication of scientific ideas in writing for both scientific and public audiences. Students read, analyze, and write diverse materials, learning to identify and practice concise, effective communication about marine science for a variety of audiences. The close-knit, hands-on FHL community creates an environment where students work together both inside and outside of class to build their skills. Recommended: None. Offered: ASp.

FHL 350 Introduction to Research in Marine Biology (6) NW Learn skills important to research scientists while participating in a mentored, hands-on project. Includes gathering, manipulating, and presenting data, plus group discussions on research ethics and the role of research in career options and graduate programs. Focuses on research activities in collaboration with a mentor. Research fields and topics vary. Recommended: any 100- or 200-level laboratory-based science course, ideally basic biology or marine biology. Offered: ASp.

FHL 375 Marine Mammals of the Salish Sea (5) NW *Deborah Ann Giles* An overview of the marine mammals found in the Salish Sea: their biology, habitats and conservation. Field trips throughout the San Juan Archipelago allow observation of common species, involving identification and recording of behavior in nature. Prerequisite: BIOL 180, FISH 250, ENVIR 100, OCEAN 101, or OCEAN 200. Offered: Sp.

FHL 430 Marine Zoology (5) NW Survey of groups of invertebrate animals represented in the San Juan Archipelago; natural history, functional morphology,

ecology, distribution, habitat, adaptation, trophic interrelationships, and evolution. Prerequisite: BIOL 445, which must be taken concurrently; permission of Friday Harbor director. Offered: jointly with BIOL 430.

FHL 432 Marine Invertebrate Zoology (9) NW

Comparative morphology and biology of marine invertebrates with emphasis on field and laboratory studies. Representatives of all major and most minor phyla are collected, observed live, and studied in detail. Taken at Friday Harbor Laboratories. Not open for credit to students who have taken BIOL 434. Offered: jointly with BIOL 432; S.

FHL 435 Research Apprenticeship in Marine Science (15) NW

Immersive quarter in research in close collaboration with one-three faculty mentors on a specific topic that varies with the apprenticeship. Students engage in laboratory or field research in marine science, involving gathering, analyzing, and communicating results as part of a research team. Offered: jointly with BIOL 435/MARBIO 435; ASpS.

FHL 440 Marine Botany (5) NW Survey of plants represented in marine environments; natural history; ecology, distribution, habitat, adaptation, and trophic interrelationships. Taken at Friday Harbor laboratories. Prerequisite: either BIOL 220, B BIO 220, or TESC 140; BIOL 430, which must be taken concurrently. Offered: jointly with BIOL 445.

FHL 446 Marine Botany: Diversity and Ecology (9) NW

Thomas F Mumford Introduces marine plants - the diversity, life histories, physiology, and ecology of seaweeds, seagrasses, and marsh plants in the Salish Sea. Emphasizes field and laboratory work, including the application of molecular techniques to explore algal diversity and evolution. Offered: S.

FHL 450 Nearshore Ecology Research Experience (6) NW

M. Dethier A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research around a thematic focus of ecology of nearshore marine ecosystems, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 450; ASp.

FHL 460 Aquatic Animals Research Experience (6) NW

A hands-on introduction of "doing science" in close collaboration with a faculty member. Students

engage in research around a thematic focus of aquatic animals, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 460; ASp.

FHL 470 Research in Marine Biology (1-15, max. 15) NW

Billie J Swalla A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research in marine biology; credits vary with the scale of the project with may include lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with MARBIO 470; ASp.

FHL 471 Comparative Anatomy and Physiology of Marine Organisms (5) NW

Adam P. Summers Challenges and opportunities presented by the marine environment. Relationship between organismal form and physiological function in marine animals and plants. Field trips for collection of live local organisms. Physiology experiments and CT scanning. Offered at Friday Harbor Laboratories. Prerequisite: either BIOL 220, BIOL 240, or FISH 270/MARBIO 270/OCEAN 270; recommended: Q SCI 381 or equivalent. Offered: jointly with BIOL 471; A.

FHL 490 Marine Sciences Seminar (1, max. 3) NW

Students attend seminars by marine scientists each week and ask questions about their seminars. Offered: ASpS.

FHL 492 Ecology and Conservation of Marine Birds and Mammals (9/15) NW

An intensive, field-based course that offers motivated students the opportunity to learn about these ecologically and culturally important marine animals and the conservation problems they face. Emphasizes first-hand learning and individual research projects. Offered: jointly with FISH 492/MARBIO 492; S.

FHL 495 Special Topics in Natural Science (3-5, max. 10)

Special topics courses in the natural sciences that take advantage of unique opportunities at the Friday Harbor Laboratories. Offered: A.

FHL 528 Advanced Topics in Fish Biology (9, max. 27)

Focuses on various aspects of fish biology, such as functional morphology, sensory biology, or swimming mechanics. Taught at Friday Harbor Laboratories. Offered: S.

FHL 536 Comparative Invertebrate Embryology (9)

Studies diversity in developmental patterns in major marine taxa. Analyzes evolutionary changes in development, with emphasis on observation of live embryos and larvae. Offered: jointly with BIOL 536; S.

FHL 548 Advanced Topics in Evolution and Development (9, max. 27)

Focuses on various aspects of evolution and development of marine organisms, such as larval biology or evolution and development of metazoans. Students work on individual projects during the course. Taught at Friday Harbor Laboratories. Offered: S.

FHL 568 Advanced Topics in Ecology and Biomechanics (9, max. 27)

Focuses on various aspects of ecology and biomechanics of marine organisms, such as experimental ecology, ocean acidification, deep sea biodiversity, or biomechanics. Taught at Friday Harbor Laboratories. Offered: S.

FHL 578 Special Topics in Science Communication (9) NW

This FHL course focuses on different aspects of linkages between scientists and the public, including multiple ways to communicate science. Offered at Friday Harbor Laboratories; see FHL website for topic for next summer.

FHL 585 Advanced Topics in Neurobiology and Physiology (9, max. 27)

Focuses on various aspects of neurobiology or physiology of marine organisms, such as neurobiology, ethology, or marine chemosensory biology. Taught at Friday Harbor Laboratories. Offered: S.

SCHOOL OF MARINE AND ENVIRONMENTAL AFFAIRS

SMEA 103 Society and the Oceans (5) I&S/NW

Explores the social and policy dimensions of the ocean environment and ocean management policy. Pays attention to how human values, institutions, culture, and history shape environmental issues and policy responses. Examines case studies and influential frameworks, such as the ocean as "tragedy of the commons." Offered: jointly with ENVIR 103/JSIS B 103.

SMEA 201 Climate Governance: How Individuals, Communities, NGOs, Firms, and Governments Can**Solve the Climate Crisis (5) NW/I&S, DIV Nives**

Dolsak, Patrick John Christie Examines climate change, its causes and impacts (on ecosystems, water availability, extreme weather, communities, health, and food) globally, nationally, and locally. Surveys its solutions (mitigation, adaptation, migration, and just transition), actors that implement them (governments, firms, NGOs, activists, communities, individuals) and approaches they use (regulation, markets, planning, innovation, social movements, behavioral change). Offered: jointly with ENVIR 201; A.

SMEA 407 International Organizations and Ocean Management (3) I&S

Surveys the manner in which international regimes and organizations govern and manage ocean use. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain organizations in different issues or regions, such as climate change or the Arctic.

SMEA 430 Development and the Environment (3) I&S, DIV Dolsak

Critically examines policy approaches that balance economic development, natural resource use/environmental protection, and socioeconomic and political diversity. Examined policy approaches include market instruments, standards, information-based regulation, and corporate responsibility. Offered: A.

SMEA 433 Environmental Degradation in the Tropics (5) I&S/NW Christie

Considers theories and controversies of environmental degradation in the tropics, ecological and social case studies of Central American rain forests and Southeast Asian coral reefs, and implications of environmental management techniques. Offered: jointly with ENVIR 433/JSIS B 433.

SMEA 476 Introduction to Environmental Law and Process (3) I&S Bryant

Use and application of key statutes in marine living resources management. Overview of administrative law and process. Basic legal research, reading, and briefing selected judicial opinions. Participatory case study component. Designed for non-law graduate and advanced undergraduate students. Offered: jointly with ENVIR 476; A.

SMEA 480 Human Dimensions of Fishery Management (3) I&S/NW

Techniques and

philosophy for conservation, management, and development of harvested marine populations. Emphasis on integration of ecological, sociological, and economic dimensions of institutional decision making for policy formation in uncertain environments. Offered: jointly with FISH 480.

SMEA 485 Pacific Recreation and Tourism Issues (3) NW/I&S, DIV Miller Examines how marine tourism links people to one another and to the environment. Utilizes concepts from cultural anthropology, sociology, political science, geography, ecology, conservation biology, and planning. Topics include: ecotourism, ethnic tourism, marine parks and protected area, fisheries, sustainable development, tourism ethics, and marine environmental education.

SMEA 499 Undergraduate Research (1-15, max. 15) Research on assigned topics under the supervision of faculty members.

SMEA 500 Introduction to the Human Dimensions of Global Change (3) Terrie Klinger Introduces students to human dimensions of global change in the marine environment. Examines how changes are physical, social, and institutional; and how global climate change affects the ability of ecosystems to provide services that support humankind. Explores changes the use of coastal and ocean resources. Offered: A.

SMEA 501 Integrated Marine Affairs Practice (3) Survey of tools used in integrated assessment of contemporary problems in marine affairs explored through evaluation and comparison of theory and practical application. Prerequisite: SMEA 500 plus two of the following: SMEA 519, SMEA 536, SMEA 591, or permission of instructor. Instructors: Allison Offered: W.

SMEA 502 Decision Making and Action Taking in Marine Affairs (3) P. CHRISTIE Focuses on the dynamic interaction between human- and natural-world marine environmental systems and the policy- and decision-making, implementation, evaluation, and adjustment that must follow for effective response to problems that emerge within the human dimensions of global change in the marine environments framework. Prerequisite: SMEA 500; SMEA 501.

SMEA 506 International Law of the Sea (3)

SMEA 507 International Organizations and Ocean Management (3) Survey of the manner in which international regimes and organizations attempt to manage and regulate the uses of the ocean. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain these organizations. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with PUBPOL 538.

SMEA 508 National Marine Policy Processes (3) Dolsak Comparative institutional dimensions of marine policy processes. Marine policy context at the national level and the dynamics that drive policy formulation and policy implementation.

SMEA 509 Integrated Coastal Management (3) Managing multiple uses of coastal waters and the adjacent land; conflicts arising from competition for space and resources; organization, scientific, and economic problems associated with coastal management; planning and management experience in the United States and Southeast Asia. Prerequisite: SMEA 500 or permission of instructor. Instructors: Christie

SMEA 510 Topics in Marine Ecology (3) Klinger Study of ecological principles as they apply to marine species, populations, and ecosystems, using current examples from the primary literature, including contemporary issues such as species declines, species additions, pollution, and global change. Offered: W.

SMEA 511 Coastal Environment Management (3) Evaluation of human uses of the coastal and upland areas in the context of coupled social-ecological systems. Concepts and techniques for evaluation and practical application.

SMEA 512 Interviewing Methods and Environmental Topics (3) Miller Focuses on qualitative techniques employed by social scientists and other researchers (e.g., sociologists, cultural anthropologists, political scientists, journalists, reporters) in interview situations. Students conduct interviews and limited participant observation with people in public, private, and activist sectors. Relevant to students with interests in marine affairs, forestry, fisheries, and environmental studies.

SMEA 514 Marine Pollution Management Issues (3)

Leschine Management and policy aspects of marine environmental protection, emphasizing the two-way interaction between environmental managers and environmental and policy scientists which shapes policy.

SMEA 515 U.S. Coastal and Ocean Law (3-5) Kelly

Study of the legal framework in the United States controlling allocation and use of coastal and marine resources. Topics include coastal zone management, fisheries management, protection of marine mammals and endangered species, marine pollution, offshore oil and gas development, and marine transportation.

SMEA 517 Marine Uses: Transportation and Commerce (3)

Role of the oceans in the transportation of people and materials, character and trends in vessel design and terminal facilities, pattern and nature of industry organization, regulations, economics of the shipping industry, management of fleets and vessels, individuals at sea and ashore, national policies affecting the merchant marine and port facilities. Prerequisite: SMEA 500 or permission of instructor.

SMEA 519 Marine Policy Analysis (3) Dolsak

Goal is appreciation for and basic working knowledge of techniques used in policy analysis. Techniques are explored in both quasi-realistic settings and in application to real world problems of marine policy.

SMEA 521 Climate Change Governance (3)

Exploration of major scientific, policy, and legal issues pertaining to governance of global climate change mitigation and adaptation by a diverse set of governmental and non-governmental actors. Offered: A.

SMEA 523 International Science and Technology

Policy (3) Dolsak Analyzes the relationships between research and development policy, capabilities, and national technological strategies for advanced industrial and less-developed countries. Deals with international implications as countries make policies in regional and global organizations. Examples chosen from space telecommunication, weather and climate modification, airline transportation, nuclear energy, and seabed exploration.

SMEA 525 Marine Protected Area Management and Science (3) Fluharty

Examines management and scientific issues involved with the design, establishment, operation, and maintenance of MPAs. Offered: Sp.

SMEA 530 Development and the Environment (3)

Dolsak Examines two intertwined concepts that are frequently in conflict, economic development and the environment. Examines sustainable development, growth management, sustainable yield, and corporate social responsibility; the emergence, effectiveness, and their relationships with democracy and equity. Offered: A.

SMEA 536 Applied Microeconomics for Marine Affairs (3)

Acquaints students with microeconomic tools commonly employed in policy analysis. Emphasis is placed on mastery of basic concepts, definitions, and models useful to marine policy, including determinants of price and outputs in competitive markets, effects of other market structures, market failure, and applied welfare economics.

SMEA 537 Economic Aspects of Marine Policy (3)

Development of pertinent economic concepts and their application to selected topics in marine policy decision making, including maritime policy, OCS oil and gas development, and wetlands management. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with ECON 537; W.

SMEA 538 Economics of Living Marine Resources (3)

Develops pertinent economic concepts and applications for conservation, regulation, and restoration of fisheries and other living resources. Gives special attention to fishery management, including harvest regulation and enforcement, recreational fisheries evaluation, property rights regimes, contemporary issues, and marine protected area management. Offered: jointly with ECON 538; Sp.

SMEA 539 U.S. Fisheries Management and Policy (3)

Examination of basic laws and policies in the US that govern fisheries management and their implementation by managers at federal, tribal, state, and international levels. Includes lectures, guest speakers, and field trips. Offered: jointly with FISH 539.

SMEA 540 International Strategic Planning for Marine Resources (3) Marine economies are affected by declining resources, population pressure, and economic globalization. International examples and case studies are used to explore opportunities for strategic planning. Prerequisite: SMEA 500 or permission of instructor. Instructors: Kaczynski
Offered: A.

SMEA 550 Special Topics in Marine Studies (1-3, max. 18) Examination of various aspects of marine studies. Content varies, depending upon the interests of the faculty and students. Intended for the joint participation by the faculty and advanced students in the investigation of selected topics. One or more groups are organized each quarter.

SMEA 570 Thesis Presentation (1) *Fluharty*
Completion of the thesis requirement for SMEA. Prepare a professional presentation to a peer audience. Credit/no-credit only. Offered: AWSpS.

SMEA 571 Non-Thesis Seminar (1) *Leschine*
Capstone course for students enrolled in non-thesis track to synthesize and integrate their learning into concrete products. Credit/no-credit only. Offered: AWSpS.

SMEA 581 Case Study Research: Design and Methods (3) Provides in-depth training in case study theory, design, and methods. Designed for exploring prospectus ideas or beginning analysis of thesis research. Through readings, discussions, exercises, and lectures, students learn how to select units of analysis, control data quality, and collect, analysis, and report data. Offered: jointly with FISH 581.

SMEA 583 Research Design (3) *N. Dolsak* Examines types of evidence required to accurately describe a phenomenon, test a hypothesis, evaluate a program, and empower participants. Students learn and critically evaluate core research designs such as longitudinal, cross-sectional, experimental, case study, and activist research design. Students develop a research prospectus for an original study of their choice. Offered: W.

SMEA 584 Statistics for Marine and Environmental Policy (3) *S. JARDINE* Surveys statistical approaches to data analysis with applications to marine and environmental policy, including descriptive statistics, data visualization, and hypothesis testing. Students

learn how to make and use data-based claims, critically examine properties and limitation of various datasets relevant for marine and environmental policy, and use appropriate statistical software. Offered: A.

SMEA 585 Climate Impacts on the Pacific Northwest (4) *Mantua, Snover* Knowledge of past/future patterns of climate to improve Pacific Northwest resource management. Topics include the predictability of natural/human-caused climate changes; past societal reactions to climate impacts on water, fish, forest, and coastal resources; how climate and public policies interact to affect ecosystems and society. Offered: jointly with ATM S 585/ENVIR 585/ESS 585; Sp.

SMEA 591 Marine Science in the Coastal Zone (3) *Ryan Kelly* Presentation and analysis of the marine science of estuarine, coastal, and open ocean systems, including evaluation and interpretation of scientific information necessary for management. Lectures, discussions, and readings emphasize the relevance of natural processes to marine environmental management and decision-making. Offered: A.

SMEA 600 Independent Study or Research (*-)

SMEA 650 Marine and Environmental Affairs Capstone Project (4-5, max. 9) *N. DOLSAK* Student teams develop, manage, and complete an applied project relevant to marine or environmental affairs, in collaboration with an outside stakeholder and in consultation with faculty adviser.

SMEA 700 Master's Thesis (*-)

MARINE BIOLOGY

MARBIO 270 Aquatic Ecophysiology (5) NW Focuses on fundamental physiology, with an emphasis on processes relevant to living in a variety of aquatic environments. Includes a broad survey of taxa, from prokaryotes to mammals, and a variety of aquatic habitats. Prerequisite: BIOL 200. Offered: jointly with FISH 270/OCEAN 270.

MARBIO 300 Exploring Opportunities in Marine Science (1) Explores academic, research, and career opportunities in the field of marine science and

helps prepare students for graduation. Intended for junior and transfer students studying marine science. Credit/no-credit only. Offered: jointly with FISH 300/OCEAN 300; W.

MARBIO 305 Scientific Writing in Marine Biology (3)

Introduces the fundamentals of scientific writing about research in marine biology: content, organization, critical thinking, structure, and the mechanics of grammar, wording and formatting. Students critically evaluate scientific writing in this discipline, and practice developing, writing, and revising concise arguments supported by scientific evidence. Prerequisite: Either C LIT 240, ENGL 109 and ENGL 110, ENGL 111, ENGL 121, ENGL 131, ENGL 197, ENGL 198, ENGL 199, ENGL 281, ENGL 297, ENGL 298, or ENGL 299. Offered: A.

MARBIO 370 Marine Evolutionary Biology (5) NW

Emphasizes geobiological patterns of marine evolutionary biology environment; processes of evolution; marine prokaryote and eukaryote diversity; and applications of evolutionary principles to ocean change, and conservation and management of marine biodiversity. Prerequisite: either FISH 270/OCEAN 270/MARBIO 270 or BIOL 220. Offered: jointly with FISH 370/OCEAN 370; Sp.

MARBIO 433 Marine Ecology (5) NW Jennifer

Ruesink Study of marine ecological processes such as recruitment, disturbance, competition, and predation, and their effects on the structure and diversity of marine communities. Weekend field trips to local intertidal habitats required. Prerequisite: either BIOL 356, BIOL 472, or a minimum grade of 3.4 in either BIOL 180, BIOL 240, B BIO 180, or T BIOL 120. Offered: jointly with BIOL 433; Sp, odd years.

MARBIO 435 Research Apprenticeship in Marine Science (15) NW

Immersive quarter in research in close collaboration with one-three faculty mentors on a specific topic that varies with the apprenticeship. Students engage in laboratory or field research in marine science, involving gathering, analyzing, and communicating results as part of a research team. Offered: jointly with BIOL 435/FHL 435; ASpS.

MARBIO 450 Nearshore Ecology Research Experience (6) NW M. Dethier

A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research

around a thematic focus of ecology of nearshore marine ecosystems, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with FHL 450; ASp.

MARBIO 460 Aquatic Animals Research Experience (6) NW

A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research around a thematic focus of aquatic animals, with lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with FHL 460; ASp.

MARBIO 470 Research in Marine Biology (1-15, max. 15) NW Billie J Swalla

A hands-on introduction of "doing science" in close collaboration with a faculty member. Students engage in research in marine biology; credits vary with the scale of the project with may include lab experiments and field work. Students gather, analyze, write up, and present their own data. Offered: jointly with FHL 470; ASp.

MARBIO 479 Research in Marine Biology (1-15, max. 15)

Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with BIOL 479/FISH 479/OCEAN 479; AWSpS.

MARBIO 488 Marine Biology in the Field (4/6)

Uses extensive field work to enhance students' practical knowledge of marine organismal and habitat diversity, and oceanographic processes. Development of integrative skills in experimental design, data collection, field interpretation, and communication. Prerequisite: One 300-level class in FISH, OCEAN, FHL, or BIOL. Offered: A.

MARBIO 492 Ecology and Conservation of Marine Birds and Mammals (9/15) NW

An intensive, field-based course that offers motivated students the opportunity to learn about these ecologically and culturally important marine animals and the conservation problems they face. Emphasizes first-hand learning and individual research projects. Offered: jointly with FHL 492/FISH 492; S.

SCHOOL OF OCEANOGRAPHY

OCEAN 100 Explore Oceanography at UW (1)

Explores the research and experiences of the Oceanography school's faculty, graduate students, and undergraduate students. Intended for freshmen, new transfer students, and other considering oceanography as a major. Credit/no-credit only. Offered: A.

OCEAN 101 Oceanography of the Pacific Northwest (5) NW

Mikelle Nuwer Introduces the fundamental principles of oceanography by focusing on the waters that surround us - the Washington coast and Puget Sound. Investigates the geologic history of the Pacific Northwest, and the physics, chemistry, and biology of coastal waters using case studies. Intended for nonmajors. Offered: A.

OCEAN 102 The Changing Oceans (5)

I&S/NW *Mikelle Nuwer* Historical case studies of research on the ancient oceans, deep-sea exploration, climate change and the oceans, and human impacts on marine life. Students consider societal factors affecting progress in marine science, changing popular attitudes toward the oceans, and key current policy implications of marine science. Intended for nonmajors. Offered: W.

OCEAN 115 Astrobiology: Life in the Universe (5)

NW *David C. Catling, Roger Buick, Victoria S Meadows, Woodruff T Sullivan* Introduction to the new science of astrobiology, study of the origin and evolution of life on Earth, and the search for microbial and intelligent life elsewhere in the Universe. Designed for non-science, liberal arts majors. Offered: jointly with ASTBIO 115/ASTR 115/BIOL 114/ESS 115.

OCEAN 121 Deep Sea Exploration: Submarine Volcanoes and Novel Life Forms (2) NW *Debbie Kelley* Examines the dynamic marine processes that shape the planet and cutting-edge oceanographic technologies used to explore the deepest oceans. Includes imagery of rarely seen submarine volcanic eruptions, hot springs, and novel life forms highlighting the interconnected geological-biological processes creating the most extreme environments on Earth. Offered: W.

OCEAN 200 Introduction to Oceanography (3) NW

Focuses on importance of ocean processes for the functioning of our planet. Interdisciplinary case studies are used to examine relationships and interactions at macro-, meso-, and microscales in the ocean. Case studies build upon previous topics and examines human influence on these systems. Intended for science majors. Offered: Sp.

OCEAN 201 Introduction to Oceanography Lab (2)

NW Provides opportunities to experiment with oceanographic concepts through laboratory and field experiences. Students apply the scientific method of inquiry as it applies to the study of geology, physics, chemistry, and biology of the ocean. Emphasizes topics that explore current challenges faced by the ocean and its ecosystem. Co-requisite: OCEAN 200. Offered: Sp.

OCEAN 210 Integrative Oceans (4) NW

Presents fundamentals of ocean science through regional case studies that illustrate the relationship between interdependent physical, chemical, biological, and geological process. Students apply tools from these scientific disciplines to understand major changes predicted for future oceanic environments. Prerequisite: either OCEAN 200, or OCEAN 250/BIOL 250/FISH 250. Offered: A.

OCEAN 215 Methods of Oceanographic Data

Analysis (4) *Stephen C Riser* Statistics, graphical representations, and analysis methods for oceanographic datasets using the PYTHON programming language. Prerequisite: Prerequisite: MATH 125. Offered: A.

OCEAN 220 Introduction to Field Oceanography (3)

NW Design and conduct a field study in oceanography. Focuses on active learning, deployment of instruments, data collection, interpretation, and presentation. Required field trip during spring break. Prerequisite: OCEAN 200 and OCEAN 215 Offered: Sp.

OCEAN 230 Rivers and Beaches (3/5) NW

Introduction to Earth surface environments, the processes that shape them, how humans affect them and are affected by them. Field trips examine mountains, rivers, deltas/estuaries, beaches, and environments beyond. Focuses on linkages between these environments to illustrate coupling between

landscapes and seascapes. Offered: jointly with ESS 230.

OCEAN 235 Arctic Change (2/3) I&S/NW *Rebecca A. Woodgate* Investigates the Arctic system of ocean, ice, atmosphere, and sea-floor; how human interact with it, and what the future of the Arctic means to the world. Includes sea-ice loss, climate impacts, and Arctic resource exploitation. Offered: Sp.

OCEAN 240 Special Topics in Oceanography (1-5, max. 9) NW Selected topics of contemporary interest in oceanography such as hydrothermal vents, planetary volcanism, biogeochemical cycling, the ecology of Puget Sound, and the ocean's role in climate.

OCEAN 250 Marine Biology (3/5) I&S/NW Lecture-laboratory course in marine biology focusing on physical, biological, and social aspects of the marine environment. Topics include oceanography, ecology, physiology, behavior, conservation, fisheries, exploration, and activism. Weekend field trip. Honors section research project. Offered: jointly with BIOL 250/FISH 250; AS.

OCEAN 261 Introduction to Ocean Technology (2) NW Introduces ocean science and technology in observational ocean science. Covers the basics of underwater sensor design, power, and data communication, and introduces the design and build process and the operational scope of the ERIS cabled observatory. Offered: S.

OCEAN 270 Aquatic Ecophysiology (5) NW Focuses on fundamental physiology, with an emphasis on processes relevant to living in a variety of aquatic environments. Includes a broad survey of taxa, from prokaryotes to mammals, and a variety of aquatic habitats. Prerequisite: BIOL 200. Offered: jointly with FISH 270/MARBIO 270.

OCEAN 285 Physics Across Oceanography: Fluid Mechanics and Waves (3) NW *Susan L Hautala* In the context of oceanography applications, explores fluid mechanics, waves, light, acoustics, and heat transfer. Prerequisite: either MATH 125 or Q SCI 292, which may be taken concurrently; either PHYS 114 or PHYS 121; recommended: OCEAN 210 concurrently. Offered: A.

OCEAN 286 Physics Across Oceanography: Fluid Mechanics and Waves Laboratory (2) NW *Susan L Hautala* Laboratory and tutorial further exploring the oceanography applications of fluid mechanics, waves, light, acoustics, and heat transfer. Prerequisite: OCEAN 285, which must be taken concurrently; either MATH 125 or Q SCI 292, either of which may be taken concurrently; either PHYS 114 or PHYS 121. Offered: A.

OCEAN 295 Chemistry of Marine Organic Carbon (5) NW Explores the movement of organic carbon through the global carbon cycle, in the context of earth sciences and marine biogeochemical cycles. Prerequisite: either CHEM 152 or CHEM 120. Offered: W.

OCEAN 300 Exploring Opportunities in Marine Science (1) Explores academic, research, and career opportunities in the field of marine science and helps prepare students for graduation. Intended for junior and transfer students studying marine science. Credit/no-credit only. Offered: jointly with FISH 300/MARBIO 300; W.

OCEAN 310 Marine Geology and Geochemistry (5) NW This course focuses on marine geologic processes including the formation and evolution of the ocean crust; marine sedimentation and diagenesis; subduction zone dynamics; the role of marine geology in seawater composition and sustaining the deep biosphere; and the relationship between marine geological processes and climate. Prerequisite: OCEAN 200; and either ESS 210 or ESS 211; and OCEAN 285 which may be taken concurrently. Offered: A.

OCEAN 320 Coastal Oceanography (5) NW The formation of, and processes within, coastal ocean systems emphasizing the geological evolution of coastal and estuarine environments and the physical dynamics within them, including waves, currents, river plumes, and sedimentary processes. Influences of physical processes on marine chemical cycling and biological productivity in the coastal ocean. Prerequisite: OCEAN 285; ESS 210. Offered: W.

OCEAN 330 Marine Biogeochemical Cycles (5) NW Covers the distribution of life and chemical elements in the ocean; the relationship between them; and the physical processes affecting these patterns. Emphasizes how marine organisms and the structure

of marine ecosystems influence the fate of carbon and other elements in the ocean. Prerequisite: OCEAN 210; OCEAN 295; BIOL 200. Offered: Sp.

OCEAN 340 Interdisciplinary Topics in Oceanography (1-5) NW Special topics of an interdisciplinary nature setting ocean into a broader context.

OCEAN 351 Foundations of Ocean Sensors (3) NW, QSR Experiential learning giving students foundational knowledge of methods used to observe key quantities that characterize marine environments. Includes theory and application of sensor design and construction principles, in the context of inferences and hypothesis-testing about key physical, biological, chemical, and geological dynamics in the oceans. Prerequisite: OCEAN 215; OCEAN 285. Offered: W.

OCEAN 355 From Big Bang to the Blue Planet (3) NW Explores the origin and evolution of the Earth, ocean, atmosphere, and life, with an emphasis on climate as the integrator of changes in the biosphere, cryosphere, hydrosphere, atmosphere, and lithosphere. Prerequisite: either CHEM 120 or CHEM 142; either PHYS 114 or PHYS 121; either BIOL 161, or BIOL 180.

OCEAN 361 Ocean Technology I: Introduction to Underwater Observational Sensor Design and Build (2) NW Combines ocean science and technology in a design and build course utilizing the ERIS cabled observatory at the UW Oceanography dock. Students apply the basics of sensor design, power, and data communication to individual underwater observatory projects. Prerequisite: OCEAN 261, which may be taken concurrently. Offered: S.

OCEAN 370 Marine Evolutionary Biology (5) NW Emphasizes geobiological patterns of marine evolutionary biology environment; processes of evolution; marine prokaryote and eukaryote diversity; and applications of evolutionary principles to ocean change, and conservation and management of marine biodiversity. Prerequisite: either FISH 270/OCEAN 270/MARBIO 270 or BIOL 220. Offered: jointly with FISH 370/MARBIO 370; Sp.

OCEAN 401 Special Topics in Chemical Oceanography (3) NW *Randie Bundy*

OCEAN 409 Marine Pollution (3) I&S/NW *Randie Bundy* Explores anthropogenic impacts on the oceans and marine organisms. Examines how scientific understanding informs environmental management, thereby linking science and society. Students develop a detailed understanding of the major categories of anthropogenic pollutants on marine systems, how they impact the environment, their sources, and fates. Prerequisite: OCEAN 101, OCEAN 102, OCEAN 200, OCEAN 250, or permission of instructor Offered: A.

OCEAN 410 Marine Geology and Geophysics (4) NW *William Wilcock* Explores the geological and geophysical processes that form and shape the ocean basins and continental margins. Prerequisite: either OCEAN 310 or ESS 211 Offered: jointly with ESS 410; A.

OCEAN 411 Special Topics in Marine Geology and Geophysics (3) NW

OCEAN 412 Seismic Exploration (3) NW *E. Roland Saenger* Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to geologic investigations, tectonics and mineral exploration. Practice in the interpretation of subsurface structure. Prerequisite: ESS 311 or ESS 314, or OCEAN 285 and OCEAN 310. Offered: jointly with ESS 467; Sp.

OCEAN 421 Special Topics in Physical Oceanography (3) NW

OCEAN 423 Ocean Circulation and Climate (3) NW Quantitative treatment of ocean basin to global scale ocean circulation systems and their interaction with climate variability. Prerequisite: MATH 125; and PHYS 123 or OCEAN 285.

OCEAN 430 Biological Oceanography (4) NW Examines marine organisms, their quantitative distribution in time and space, and their interactions with the ocean. Emphasizes dominant pelagic forms of phytoplankton, bacterioplankton, and archaeoplankton; and their predators, viruses, and zooplankton. Case studies explore extreme environments, coral reefs, influence of climate change on oceanic ecosystems, and the coastal ocean. Prerequisite: BIOL 200; OCEAN 210. Offered: A.

OCEAN 431 Special Topics in Biological Oceanography (3) NW Reviews current research. Topics include global change effects on marine organisms, marine pathogens and emerging diseases, introduced species, marine viruses, astrobiology, hydrothermal vents, symbiosis, animal physiology, larval forms and dispersal, biogeography, and environmental ethics. Prerequisite: OCEAN 330

OCEAN 443 Undergraduate Thesis: Proposal (3) NW Work closely with faculty mentors to conceptualize and write a proposal for independent thesis research. Prerequisite: OCEAN 220, OCEAN 310, OCEAN 320, or OCEAN 330 Offered: W.

OCEAN 444 Undergraduate Thesis: Research (2) Work closely with faculty mentors to conduct thesis research as designed in OCEAN 443 in a field, laboratory, or other guided research setting. Prerequisite: OCEAN 443. Offered: Sp.

OCEAN 445 Undergraduate Thesis: Data Analysis and Writing (3) NW Analyze results from senior thesis experiments and present results in a series of drafts and a final paper. Results are presented at a two-day long public research symposium and on the students' individual websites. Prerequisite: OCEAN 444. Offered: Sp.

OCEAN 450 Climatic Extremes (4) NW Course examines Earth history for extreme climatic conditions to predict future climate changes. Numerical climate models use PC-based computer programs to identify processes and feedbacks that control climate. Offered: W.

OCEAN 452 Marine Geospatial Information Science (3) NW Introduces the use of Geographic Information Systems (GIS), seafloor mapping, hydrographic surveying, and spatial analysis in ocean science. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with FISH 452; A.

OCEAN 454 Hydrothermal Systems: An Interdisciplinary View (3) NW Provides a general, interdisciplinary overview of seafloor hydrothermal systems including important geological, chemical, and biological processes. Topics include tectonic and volcanic controls on hydrothermal systems,

water/rock reactions, phase separation, temporal variability, fluxes to the deep sea, micro- and macro biology. Offered: W.

OCEAN 461 Advanced Ocean Technology - Project Design and Management (2) NW Project management practicum in the design, build, operations, and management of observational ocean science technology. Students oversee and mentor ongoing design and build projects, with attention to design criteria and deployment timelines. Prerequisite: OCEAN 361. Offered: S.

OCEAN 475 Current Research in Climate Science Seminar (3, max. 6) Weekly lectures focusing on a particular aspect of climate from invited speakers, complemented by class discussion, readings, and final paper. Promotes interdisciplinary understanding of climate concepts. Prerequisite: either ESS 201, ATM S 211, or ATM S 321. Offered: jointly with ATM S 475/ESS 475; A.

OCEAN 477 Seminar in Marine Biology (3) NW Reviews current research in marine biology. Emphasizes critical readings and discussion of primary literature. Prerequisite: FISH 250, OCEAN 250, or BIOL 250; Q SCI 381, STAT 220, or STAT 311. Offered: jointly with BIOL 477/FISH 477; W.

OCEAN 479 Research in Marine Biology (1-15, max. 15) Individual research on topics in marine biology. Research projects supervised by an individual faculty member. Projects may include laboratory work, fieldwork, and literature surveys. Prerequisite: BIOL 250/FISH 250/OCEAN 250; Q SCI 381. Offered: jointly with BIOL 479/FISH 479/MARBIO 479; AWSpS.

OCEAN 480 Global Ocean - Human Culture (3) I&S/NW *J. Delaney* Theme and project-based exploration of the role of the ocean basins in human history, poetry, music and the arts related to the seas, the evolution of ships, development of trade routes, modern marine commerce and communications, living and non-living resources, hazards, projection of sea power, entertainment and recreation, ocean science-modulation of climate, exploration of exotic submarine hydrothermal systems, and oceans beyond earth. Prerequisite: permission of instructor; recommended: Capability to conduct upper-division academic inquiry into selected themes, including an ability to conceive of, and implement an engaging project that will be

presented and graded at the end of the class. Well established writing ability. Offered: W.

OCEAN 481 Puget Sound and Estuarine Oceanography (3) NW Explores fundamental physical-biological processes in estuarine systems, using Puget Sound as a primary example. Topics include effects of circulation and mixing on residence time, nutrients, phytoplankton, zooplankton, and fish. Also covers hypoxia, the estuarine turbidity maximum, the intertidal zone, harmful algal blooms, and effects of climate change. Offered: W.

OCEAN 482 The Changing Arctic Ocean (3) NW Investigates the interacting physical, chemical, and biological components of the Arctic ocean-ice-atmosphere system, including the most recent scientific advances. Considers the impacts of Arctic Change on Arctic and global climate, marine organisms and ecosystems, native communities, and future exploitation of an ice-free summer ocean. Prerequisite: OCEAN 200 or OCEAN 210 and BIOL 180, BIOL 200 or BIOL 220. Offered: Sp, even years.

OCEAN 492 Friday Harbor Apprenticeship (9/15) NW Intensive, full-time research training experience where teams of students work on focused research problems guided by a group of faculty, postdoctoral, and graduate student mentors. Research questions vary.

OCEAN 494 Field Experiences in Marine Science (1-15, max. 30) NW For participants in oceanography field work. Specific content varies and is individually evaluated. Credit does not apply to major requirements without approval.

OCEAN 496 Study Abroad: Oceanography (1-15, max. 30) NW For participants in UW study abroad program. Specific content varies and is individually evaluated. Credit does not apply to major requirements without approval.

OCEAN 497 Advanced Special Topics in Oceanography (1-15, max. 15)

OCEAN 499 Undergraduate Research (1-15, max. 24) Individual research supervised by a faculty member. May involve laboratory work, fieldwork, or literature surveys. Offered: AWSpS.

OCEAN 500 Proposal Writing and Professional Development Seminar for Entering Graduate Students (1/2, max. 3) *Gabrielle Rocap* Seminar for entering graduate students in the School of Oceanography. Topics include development of a research proposal suitable for submission to the National Science Foundation Graduate Research Fellowship Program competition, oral communication skills, peer review, time and stress management, communication with advisors and committee members, and post-graduate career planning. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

OCEAN 502 Marine Geospatial Information Science (3) Introduces the use of Geographic Information Systems (GIS), seafloor mapping, hydrographic surveying, and spatial analysis in ocean science. Emphasizes sampling and analysis of spatially-referenced data about the coastal and marine environments, integrating these technologies in an applied research setting. Offered: jointly with FISH 502; A.

OCEAN 504 Seismic Exploration (3) *E. Roland Saenger* Introduction to theory and practice of seismic exploration. Application of refraction and reflection techniques to geologic investigations, tectonics and mineral exploration. Practice in the interpretation of subsurface structure. Offered: Sp.

OCEAN 506 Interdisciplinary Seminar in Oceanography (1-3, max. 12) Lectures, discussions, and work on selected problems of an interdisciplinary nature. Prerequisite: permission of instructor.

OCEAN 507 Puget Sound and Estuarine Oceanography (3) *Keister, MacCready* Explores fundamental physical-biological processes in estuarine systems, using Puget Sound as a primary example. Topics include effects of circulation and mixing on residence time, nutrients, phytoplankton, zooplankton, and fish. Also covers hypoxia, the estuarine turbidity maximum, the intertidal zone, harmful algal blooms, and effects of climate change. Offered: W.

OCEAN 508 The Changing Arctic Ocean (3) *Deming, Woodgate* Investigates the interacting physical, chemical, and biological components of the Arctic ocean-ice-atmosphere system, including the most

recent advances and considering the impacts of Arctic Change on Arctic and global climate, marine organisms and ecosystems, native communities, and future exploitation of an ice-free summer ocean. Offered: Sp.

OCEAN 509 Seminar (1, max. 30) Introduction to current research topics for beginning graduate students. Credit/no-credit only. Offered: AWSp.

OCEAN 510 Physics of Ocean Circulation (3) Structure of ocean basins; physical properties of seawater and the equation of state; heat, salt, fresh water budgets; tidal potential; Coriolis effect and geostrophic balance; major current systems and water masses; mixing, stirring in the ocean; simple waves; modern experimental methods in physical oceanography. Prerequisite: permission of instructor. Offered: A.

OCEAN 511 Introduction to Fluid Dynamics (4) Eulerian equations for mass-motion; Navier-Stokes equation for viscous fluids, Cartesian tensors, stress-strain relations; Kelvin's theorem, vortex dynamics; potential flows, flows with high-low Reynolds numbers; boundary layers, introduction to singular perturbation techniques; water waves; linear instability theory. Prerequisite: either a course in partial differential equations or permission of instructor. Offered: jointly with AMATH 505/ATM S 505; A, odd years.

OCEAN 512 Geophysical Fluid Dynamics I (4) Dynamics of rotating stratified fluid flow in the atmosphere/ocean and laboratory analogues. Equations of state, compressibility, Boussinesq approximation. Geostrophic balance, Rossby number. Poincare, Kelvin, Rossby waves, geostrophic adjustment. Ekman layers. Continuously stratified dynamics: Inertia-gravity waves, potential vorticity, quasigeostrophy. Prerequisite: OCEAN 511 or ATM S 505/AMATH 505. Offered: jointly with ATM S 509; W.

OCEAN 513 Geophysical Fluid Dynamics II (3) Theories, models of large-scale dynamics of oceans, atmospheres. Potential vorticity, Q principles; Rossby waves, ray tracing, Green's function, setup of general circulation; atmospheric "channels" versus ocean "basins"; wave-mean flow interaction, mountain drag, internal momentum flux; "Lagrangian" motion of particles, tracers; cascades,

eddy flux of heat, moisture, Q. Prerequisite: OCEAN 512. Offered: Sp.

OCEAN 514 Waves (3) Application of marine hydrodynamics principles to wave motion in oceans. Offered: W.

OCEAN 515 Ocean Circulation: Observations (3) Modern large- and mesoscale ocean observations, interpreted in terms of contemporary circulation theories. Spectrum of temporal variability; eddies and eddy fluxes; ventilation; advection and diffusion in the abyss; transports of heat and salt; climatic scale of variability; modern methods for determining circulation. Prerequisite: OCEAN 510 or permission of instructor. Offered: Sp.

OCEAN 517 Methods and Measurements in Physical Oceanography (3) Principal instruments and experimental methods of physical oceanography. Devices and systems that measure pressure, temperature, electrical conductivity, sea state, and velocity. Prerequisite: permission of instructor.

OCEAN 518 Scientific Writing and Graphics (2) *Waddington, Warren* Covers principles of scientific writing; methods of ensuring clarity in writing for scientific journals and research proposals; principles of graph construction; and authorship, peer review, and citations. For graduate students in Earth-science related fields. Credit/no-credit only. Offered: jointly with ATM S 519/ESS 519; Sp, odd years.

OCEAN 520 Marine Chemistry (3) Processes controlling the chemical composition of seawater. Chemical distributions in the ocean, marine physical chemistry, chemical equilibrium, and concepts of mass balance. Mechanisms and models used to explain distributions of stable and radioactive isotopes, gases, trace metals, and biochemicals in the world's oceans. Offered: A.

OCEAN 521 Aquatic Chemistry (3) *Alexander C Gagnon* Application of physical chemistry and thermodynamics to processes that control chemical composition of natural waters. Equilibrium approach. Acid/base chemistry, the carbonate system, dissolution and precipitation, metal ions in solution, oxidation-reduction chemistry, silicate mineral reactions. Offered: W.

OCEAN 522 Marine Organic Geochemistry (3)

Sources, reactions, and fates of organic molecules in the marine environment along with the stable isotope geochemistry of marine organic substances. Prerequisite: CHEM 237 and CHEM 239 or permission of instructor.

OCEAN 523 Geochemical Cycles (4) Descriptive, quantitative aspects of earth as biogeochemical system. Study of equilibria, transport processes, chemical kinetics, biological processes; their application to carbon, sulfur, nitrogen, phosphorus, other elemental cycles. Stability of biogeochemical systems; nature of human perturbations of their dynamics. Prerequisite: permission of instructor. Offered: jointly with ATM S 508/CHEM 523.

OCEAN 529 Seminar on Chemical Oceanography (*, max. 30) Lectures, discussions, and readings on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWSp.

OCEAN 530 Marine Bacteria, Archaea, and Viruses (3) Explores the role of marine microorganisms in transformations of dissolved and particulate organic matter. Covers the functional and phylogenetic diversity of bacteria, archaea, and viruses in the marine environment; the fate of organic carbon in the microbial loop; and the interrelationship of the carbon cycle with other biogeochemical cycles. Prerequisite: permission of instructor. Offered: W, odd years.

OCEAN 531 Marine Phytoplankton and Biogeochemistry (3) Covers phytoplankton in the marine environment: evolution, ecology, primary productivity, and physiology, emphasizing their role in the global carbon cycle; spatial and temporal distributions of phytoplankton and how these patterns may change as ocean conditions change; and methods for determining distributions and rates in different ocean ecosystems. Prerequisite: permission of instructor. Offered: W, even years.

OCEAN 532 Marine Zooplankton Ecology (3) Examines the role of zooplankton in ecosystems and biogeochemical cycles. Covers the distribution and abundance of zooplankton in space and time; small-scale distributions; morphology and behavior; population dynamic, energetics, and secondary production; trophic structure and dynamics;

biogeography; impacts of climate change; and models of populations and food chains.

OCEAN 533 Marine Benthic Ecology (3) Analyzes marine communities associated with the porous boundaries of the ocean, from sedimented seafloor and hydrothermal vents to sea ice (inverted benthos); emphasizing nutrition to these communities, including sinking organic aggregates, themselves porous habitats, and the role of symbiosis. Prerequisite: permission of instructor. Offered: W, even years.

OCEAN 535 Biological Oceanography (3) Examines major patterns and processes in upper ocean pelagic ecosystems, emphasizing quantitative analysis of mechanisms controlling production and abundances of organisms, from plankton to fish. Introduces interdisciplinary study of effects of anthropogenically induced changes in climate and ocean chemistry on organisms, ecosystem processes, and biogeochemical cycles. Offered: A.

OCEAN 539 Seminar in Biological Oceanography (*, max. 30) Lectures, discussions, and work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWSp.

OCEAN 540 Marine Geology and Geophysics Processes (3) *Nittrouer, Solomon* Synthesis of processes that form ocean basins and fill them with sediment, including: plate tectonics and the creation, evolution, and subduction of ocean crust; accumulation of terrestrial, biogenic, and authigenic sediments; and the history of paleoceanographic events recorded in the seafloor. Offered: W.

OCEAN 541 Marine Sedimentary Processes (3) *Andrea S Ogston* Investigates fundamental process of marine sedimentation, including equations characterizing boundary-shear flows, initiation of grain motion, bedload and suspended-load transport, and sediment accumulation. Applies concepts to sediment dispersal in rivers, deltas, estuaries, beaches, continental shelves, slopes, and rises, with emphasis on the relationships between active processes and resulting deposits.

OCEAN 544 Subseafloor Hydrogeology and Geochemistry (3) *Soloman* Introduces the occurrence, composition, and movement of groundwater in the ocean crust and its role in a wide

range of geologic and biogeochemical processes. Includes basic theories of groundwater motion, heat transport, solute transport, and hydromechanics with applications to diverse seafloor environments ranging from mid-ocean ridges to subduction zones. Offered: Sp.

OCEAN 545 Oceanic Lithosphere (3) *William Wilcock* Basic principles of elasticity, fluid flow, and heat transport with specific applications to the formation and evolution of the oceanic lithosphere. Includes deformation of the earth, flow in porous media, heat transport, and marine seismological and potential field techniques. Prerequisite: OCEAN 540. Offered: jointly with ESS 568.

OCEAN 546 Continental-Margin Sedimentation (3) *Charles Nittrouer* Detailed evaluation of recent studies into processes forming strata on continental margins, including the diverse time scales ranging from sediment transport to sequence stratigraphy. Highlights the linkages with physical oceanographic processes, the fates of geochemical components, and the relationship to biological communities. Offered: jointly with ESS 546.

OCEAN 549 Seminar in Geological and Geophysical Oceanography (*, max. 30) Lectures, discussions, and field and laboratory work on selected problems of current interest. Prerequisite: permission of instructor. Offered: AWP.

OCEAN 550 Geochemistry and Geophysics of Melt Generation (3) Mantle flow beneath mid-ocean ridges and hotspots, major element systematics, constraints from trace elements and isotopes on melting and mantle reservoirs, melt extraction, and crustal thickness and axial topography. Prerequisite: OCEAN 544 or permission of instructor.

OCEAN 552 Seminar in Geophysics and Geological Data Analysis (1) Practical geophysical data analysis, map projections, gridding multibeam bathymetry processing, gravity and magnetic anomalies, downward continuation, magnetic inversion, seismic refraction and reflection, and microearthquake locations. Prerequisite: permission of instructor.

OCEAN 554 Paleoclimate Proxies (3) *Alexander, Sachs* Provides a critical evaluation of the most commonly applied paleoclimate proxies from the

ocean, land, and ice sheets. Offered: jointly with ATM S 554/ESS 554.

OCEAN 558 Climate Modeling (3) Principles of Earth system modeling. Emphasis on atmosphere, ocean sea ice, and land-surface components. Climate forcing. Appropriate use of models. Topics of current interest including carbon cycle, atmosphere chemistry, and biogeochemistry. Prerequisite: either ATM S 587/OCEAN 587/ESS 587, ATM S 504 or ATM S 505. Instructors: Bitz, Thompson Offered: jointly with ATM S 559/ESS 559.

OCEAN 559 Advanced Seminar on Mid-Ocean Ridge Processes (*, max. 9) Lectures, discussions, and practical work on selected topics of current interest in mid-ocean ridge research. Prerequisite: permission of instructor.

OCEAN 560 Atmosphere/Ocean Interactions (3) Observations and theory of phenomena of the coupled atmosphere-ocean system. El Nino/Southern Oscillation; decadal tropical variability; atmospheric teleconnections; midlatitude atmosphere-ocean variability. Overview of essential ocean and atmospheric dynamics, where appropriate. Prerequisite: OCEAN 512/ATM S 509 Offered: jointly with ATM S 560.

OCEAN 569 Topics in Physical Oceanography (1-4, max. 30) Lecture series on topics of major importance in physical oceanography. Offered: AWP.

OCEAN 570 Marine Microbial Interactions (1-3, max. 9)

OCEAN 572 Marine Protist Ecology (1-3, max. 9) Examines the phagotrophic (protozoa) and mixotrophic (both photosynthetic and phagotrophic) protists, including: interactions with predators and prey; and adaptations to changing environments, evolutionary, and ecological implications of mixotrophy. Prerequisite: OCEAN 532 or permission of instructor. Offered: Sp.

OCEAN 578 Advanced Topics in Biological Oceanography (*, max. 18) Specialized research areas. Topic varies each year. Offered at Friday Harbor Laboratories. Prerequisite: permission of director of Friday Harbor Laboratories. Offered: S.

OCEAN 580 Aquatic Kinetics (3) Reaction rates and mass transport in water. Theories of chemical kinetics; experimental results from: CO₂ hydrolysis, Fe, Mn, and H₂S oxidation, stable isotope fractionation, mineral dissolution; homogeneous, heterogeneous, microbial catalysis; reaction and transport at air-water, sediment-water, and O₂/H₂S interfaces. Prerequisite: permission of instructor.

OCEAN 583 Isotope Biogeochemistry (3) The use of stable isotopes to study biogeochemical cycles in the oceans and atmosphere; specifically carbon, nitrogen, and sulfur cycles. Isotopic effects during photosynthesis, respiration, organic matter degradation. CaCO₃ dissolution, methanogenesis, nitrification/denitrification, and sulfate reduction. Prerequisite: permission of instructor.

OCEAN 584 Ocean Tracers and Mixing (3) The applications of tracers to studies of ocean circulation and ventilation. Processes within the ocean for which tracers have provided important information include gas exchange, mixed layer dynamics, thermocline ventilation, deep water formation and spreading, and mixing. Knowledge of partial differential equations suggested.

OCEAN 586 Current Research in Climate Change (2, max. 20) Weekly lectures focusing on a particular aspect of climate (topic to change each year) from invited speakers (both UW and outside), plus one or two keynote speakers, followed by class discussion. Credit/no-credit only. Offered: jointly with ATM S 586/ESS 586.

OCEAN 587 Fundamentals of Climate Change (3) Examines Earth's climate system; distribution of temperature, precipitation, wind ice, salinity, and ocean currents; fundamental processes determining Earth's climate; energy and constituent transport mechanisms; climate sensitivity; natural climate variability on interannual to decadal time scales; global climate models; predicting future climate. Offered: jointly with ATM S 587/ESS 587.

OCEAN 588 The Global Carbon Cycle and Climate (3) *Emerson* Oceanic and terrestrial biogeochemical processes controlling atmospheric CO₂ and other greenhouse gases. Records of past changes in the earth's carbon cycle from geological, oceanographic, and terrestrial archives. Anthropogenic perturbations to cycles. Develop simple box models,

discuss results of complex models. Offered: jointly with ATM S 588/ESS 588; W.

OCEAN 589 Paleoclimatology: Data, Modeling, and Theory (3) Evidence for past changes in land and sea surface temperature, in precipitation and atmospheric dynamics, and in ocean circulation: both long and interannual timescales. Paleoclimate modeling and theory. Time series analysis and climate noise. Rapid climate change. Statistical reconstruction of interannual variability. Offered: jointly with ATM S 589/ESS 589.

OCEAN 590 Advanced Topics in Oceanography (9-18, max. 18) Advanced topics examining specialized and interdisciplinary areas of oceanographic research. Offered at Friday Harbor Laboratories. Prerequisite: permission of Director of Friday Harbor Laboratories. Offered: S.

OCEAN 593 Climate Science Seminar (1) *Mote* Focuses on how to communicate climate science to many different audiences through careful construction of figures and through written and oral communication. Credit/no-credit only. Offered: jointly with ATM S 593/ESS 593; W.

OCEAN 596 Climate Science Capstone Project ([1-5]-, max. 5) *Mote* Climate capstone directed by a mentor, may be a group effort, and may encompass curriculum development, internships, workshop organization, etc., capturing interdisciplinary aspects of climate science and effective communication of climate science. Offered: jointly with ATM S 596/ESS 596; AWSpS.

OCEAN 600 Independent Study or Research (*-) Offered: AWSpS.

OCEAN 700 Master's Thesis (*-) Offered: AWSpS.

OCEAN 800 Doctoral Dissertation (*-) Offered: AWSpS.

QUANTITATIVE SCIENCE

Q SCI 190 Quantitative Analysis for Environmental Science (5) *NW, QSR S. Scherba Jr* Covers applications of precalculus techniques and concepts to environmental, ecological, biological, and natural resource problems stressing the formulation,

solution, and interpretation of mathematical procedures. Prerequisite: minimum grade of 2.0 in MATH 098 or MATH 103, a score of 151-169 on the MPT-GS test, or a score of 145-163 on the MPT-AS test. Not available for credit to students who have completed MATH 124. Or higher. Offered: A.

Q SCI 291 Analysis for Biologists I (5) NW, QSR J.

Johnson Introduction to differential calculus, emphasizing development of basic skills. Examples promote understanding of mathematics and applications to modeling and solving biological problems. Topics include optimization and curve analysis. Prerequisite: either MATH 120, Q SCI 190, a minimum score of 2 on advanced placement test, or a score of 153-163 on MPT-AS placement test. Not available for credit to students who have completed MATH 124 with a 2.0 or higher. Offered: AWS.

Q SCI 292 Analysis for Biologists II (5) NW, QSR V.

Gallucci, J. Johnson Introduction to integral calculus, emphasizing development of basic skills. Examples promote understanding of mathematics and applications to modeling and solving biological problems. Topics include areas under curves, volumes, and differential equations. Prerequisite: minimum grade of .7 in either Q SCI 291 or MATH 124. Not available for credit to students who have completed MATH 125 with a 2.0 or higher Offered: WSpS.

Q SCI 381 Introduction to Probability and Statistics (5) NW, QSR V.

Gallucci, G. Holtgrieve, P. Tobin Applications to biological and natural resource problems stressing the formulation and interpretation of statistical tests. Random variables, expectations, variances, binomial, hypergeometric, Poisson, normal, chi-square, "t" and "F" distributions. Prerequisite: either MATH 120, MATH 124, MATH 125, MATH 126, Q SCI 190, or Q SCI 291, or a minimum score of 2 on advanced placement test, or a score of 153-163 on the MPT-AS placement test. Offered: AWSpS.

Q SCI 403 Introduction to Resampling Inference (4)

NW Introduction to computer-intensive data analysis for experimental and observational studies in empirical sciences. Students design, program, carry out, and report applications of bootstrap resampling, rerandomization, and subsampling of cases. Experience programming in R is beneficial. Credit allowed for STAT 403 or STAT 503 but not

both. Prerequisite: either STAT 311/ECON 311, STAT 341, STAT 390/MATH 390, STAT 481/ECON 481, or Q SCI 381 and Q SCI 482. Offered: jointly with STAT 403; Sp.

Q SCI 451 Analytical Methods in Wildlife Science (3)

NW *Beth Gardner* This course provides a foundation of techniques commonly used by wildlife biologists in data collection and analysis. Predominantly focused on parameter estimation of demographic rates of animal populations. This course will explore, and discuss in detail, quantitative methods needed to address conservation and management problems in the real world. Prerequisite: ESRM 351 and Q SCI 482. Offered: jointly with ESRM 451; W.

Q SCI 454 Ecological Modeling (5) NW

T. Essington Examines concepts in ecological modeling focusing on the rationale, interpretation, and motivation for modeling in ecological sciences. Explores individual, population, and ecosystem-based models. Excel-based computer exercises, model building and interpretation, readings. Offered: jointly with FISH 454; W.

Q SCI 458 Advanced Ecological Modeling: Applying Ecological Models to Manage and Conserve Natural Resources (5) NW

Trevor A. Branch Models of fish and wildlife population abundance, including age-structured models, the interaction between human exploitation and protected areas, calculating extinction risk, and examining the effect of alternative management strategies on natural populations. A core part of the course is fitting models to data using both maximum likelihood and Bayesian approaches, and increasing the programming abilities of students by implementing models in R. Recommended: FISH 454/Q SCI 454; and familiarity with the programming language R. Offered: jointly with FISH 458; Sp.

Q SCI 480 Sampling Theory for Biologists (3) NW

J. Skalski Theory and applications of sampling finite populations including: simple random sampling, stratified random sampling, ratio estimates, regression estimates, systematic sampling, cluster sampling, sample size determinations, applications in fisheries and forestry. Other topics include sampling plant and animal populations, sampling distributions, estimation of parameters and statistical treatment of data. Prerequisite: Q SCI 482. Offered: jointly with STAT 480; W, odd years.

Q SCI 482 Statistical Inference in Applied Research I: Hypothesis Testing and Estimation for Ecologists and Resource Managers (5) NW *I. Ganguly* Analysis of variance and covariance; chi square tests; nonparametric procedures multiple and curvilinear regression; experimental design and power of tests. Application to biological problems. Use of computer programs in standard statistical problems. Prerequisite: either STAT 311 or Q SCI 381. Offered: AW.

Q SCI 483 Statistical Inference in Applied Research II: Regression Analysis for Ecologists and Resource Managers (5) NW *J. Skalski, P. Tobin* Analysis of linear regression models and introduction to nonlinear models. Model selection using generalized F-tests; residual analysis. Application to categorical, count, binomial, transformed variables. Introduction to matrix formation of regression models and applications. Prerequisite: Q SCI 482. Offered: WSp.

Q SCI 486 Experimental Design (4) NW Emphasizes data modeling using structured means resulting from choice of experimental and treatment design. Examines experimental designs, including crossed, nested designs; block; split-plot designs; and covariance analysis. Also covers multiple comparisons, efficiency, power, sample size, and pseudo-replication. Prerequisite: Q SCI 482. Offered: jointly with STAT 486; W, even years.

Q SCI 497 Special Topics in Quantitative Science (1-15, max. 15) NW Topics not normally offered in regular curriculum. Format ranges from seminar/discussion, formal lectures, laboratory or modeling work. Offered: AWSpS.

Q SCI 498 Internship (1-15, max. 15) NW Internship experience with a public agency or private company, supervised and approved by a faculty member. Preparation of professional report reflecting on the experience is required. Offered: AWSpS.

Q SCI 499 Research Experience (1-15, max. 15) Special studies in quantitative ecology and resource management for which there is not sufficient demand to warrant the organization of regular courses. Credit/no-credit only.

QUANTITATIVE ECOLOGY AND RESOURCE MANAGEMENT

QERM 514 Analysis of Ecological and Environmental Data I (4) Overview of generalized linear models (GLMs), their use in forestry, fisheries, wildlife ecology, and environmental monitoring. Analysis of the statistical tests that fall under GLMS: chi-square tests on contingency tables, t-tests, analysis of variances, etc. Statistical software S+/R used throughout. Offered: Sp.

QERM 597 Seminar in Quantitative Ecology (2, max. 20) *T. Essington* Current topics in quantitative ecology and resource management. Fisheries, forestry, and marine resources. Offered: ASp.

QERM 600 Independent Study or Research (*-)

QERM 700 Master's Thesis (*-)

QERM 800 Doctoral Dissertation (*-)

QUATERNARY SCIENCES

QUAT 501 Seminar/Conference in Quaternary Environments (1, max. 6) Interdisciplinary seminar or conference in the changing natural environments of the Quaternary Period, with emphasis on climatic changes and their effects. Speakers from the University and elsewhere present lectures on their specialties, followed by discussion. Credit/no-credit only.

QUAT 502 Interdisciplinary Quaternary Investigations (2, max. 6) Research course for interdisciplinary investigation of Quaternary problems. Student attends sessions of QUAT 501 and pursues a problem-oriented case study concurrently under faculty direction. Required paper on case study. Prerequisite: graduate standing. Credit/no-credit only.

QUAT 504 Special Topics in Quaternary Sciences (1-3, max. 3) Environments and climate changes of past two million years (Quaternary Period) in context of modern surface processes, including historical changes, prehistorical environments of postglacial period, and Ice Age events. Provides scientific perspective on scale of modern and man-made

environmental changes, including those of climate, in context of recent earth history. Prerequisite:

background courses in earth sciences and ecology. Credit/no-credit only.

THE INFORMATION SCHOOL

INFORMATICS

INFO 101 Social Networking Technologies (5)

I&S/NW Explores today's most popular social networks, gaming applications, and messaging applications. Examines technologies, social implications, and information structure. Focuses on logic, databases, networked delivery, identity, access, privacy, ecommerce, organization, and retrieval.

INFO 102 Gender and Information Technology (5)

I&S, DIV Explores the social construction of gender in relation to the history and contemporary development of information technologies. Considers the importance of diversity and difference in the design and construction of innovative information technology solutions. Challenges prevailing viewpoints about who can and does work in the information technology field. Offered: A.

INFO 180 Introduction to Data Science (4) QSR

Survey course introducing the essential elements of data science: data collection, management, curation, and cleaning; summarizing and visualizing data; basic ideas of statistical inference, machine learning. Students will gain hands-on experience through computing labs.

INFO 198 Exploring Informatics (1-5, max. 15)

Introduces a variety of Informatics and Information Science topics to pre-Informatics and non-Informatics students.

INFO 200 Intellectual Foundations of Informatics (5)

I&S Information as an object of study, including theories, concepts, and principles of information, information seeking, cognitive processing, knowledge representation and restructuring, and their relationships to physical and intellectual access to information. Development of information systems for storage, organization, and retrieval. Experience in the application of theories, concepts, and principles.

INFO 201 Technical Foundations (5) QSR

Introduces fundamental tools and technologies necessary to transform data into knowledge. Covers the full information lifecycle, including the collection,

storage, analysis and visualization of data. Core competencies underlying this process, including functional programming, use of databases, data wrangling, version control, and command line proficiency, are acquired through real-world data-driven challenges.

INFO 270 Data Reasoning in a Digital World (4) I&S

Our world is rife with misinformation. This is a course about "calling b****s**** on" - spotting, dissecting, and publicly refuting - false claims and inferences based on quantitative, statistical, and computational analysis of data. Spotting misinformation; causal fallacies; statistical traps; data visualization; big data; interpreting scientific claims; fake news and social media; refutation techniques. Prior math/stat background unnecessary.

INFO 290 Orientation to Informatics (1)

Provides newly admitted Informatics students with background necessary for success in the major. Includes discussion of iSchool/Informatics mission, culture, values, expectations, resources, degree and career options. Addresses effective classroom performance including teamwork and leadership, and focuses on resume, LinkedIn profile, portfolio, interview and career fair preparation.

INFO 300 Research Methods (5)

Introduction to the research methods used in informatics for understanding technology, information, and human behavior. Methods incorporate those from design, engineering, and social science. Topics include science and invention, research contribution types, research through design, theory, ethics, and qualitative/quantitative empirical methods. Prerequisite: either STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 290, STAT 311, STAT 390, QMETH 201, or Q SCI 381.

INFO 310 Information Assurance and Cybersecurity (5) I&S, QSR

Provides a theoretical and practical introduction to information assurance and cybersecurity (IAC). Includes methods and practices for securing information and information systems. Covers how vulnerabilities arise, recognizing evolving threats, and mitigating them. Explores the role of

risk analysis, information privacy, accountability, and policy.

INFO 312 Enterprise Risk Management (4) Examines the risk inherent in use of technology, and how to manage risk to information, data, and technology in organizations. Topics include risk management frameworks, risk tolerance, key risk indicators, the legislative and regulatory environment, compliance, and new avenues of risk such as social media and mobile.

INFO 314 Computer Networks and Distributed Applications (5) NW Basic concepts of local and wide-area computer networking including an overview of services provided by networks, network topologies and hardware, packet switching, client/server architectures, network protocols, and network servers and applications. Also addresses management, security, authentication, and policy issues associated with distributed systems. Prerequisite: CSE 142 or CSE 143.

INFO 330 Databases and Data Modeling (5) QSR Introduction to relational database management systems, focused on relational theory and the application of conceptual, logical, and physical database modeling. Key topics include the relational model, SQL, entity-relationship modeling, three-tier architectures, implementation of database applications, and related topics in information systems.

INFO 331 Introduction to Information Architecture (5) Introduction to Information Architecture (IA) methodologies and tools used to design and build information spaces. Discusses IA core concepts of navigation, labeling, data modeling, taxonomy and information personas. Also discusses wireframes, sitemaps, information design and integrating IA work with a UX strategy.

INFO 340 Client-Side Development (5) QSR Introduction to client-side web development including markup, programming, protocols, libraries, frameworks, and techniques for creating effective, usable, dynamic, and responsive applications that meet user needs. Includes an introduction to web development roles within organizations, content management systems, and other tools to build and manage websites and applications. Prerequisite: CSE 142 or CSE 143; and INFO 201.

INFO 350 Information Ethics and Policy (5) I&S Provides a framework for analyzing the ethical, legal, economic, and socio-political issues surrounding information, information technologies, and the information industries. Explores policy and ethical issues of information access and control including; intellectual property, file sharing, free speech, privacy, and national security.

INFO 360 Design Methods (4) I&S Design methods for identifying user needs, devising new design concepts, prototyping these concepts, and evaluating utility and usability. Introduces theory and practice of user-centered design. Methods for identifying users' needs, understanding users' behaviors, envisioning and prototyping new systems, and evaluating the usability of systems. Emphasizes incorporating people in the entire design process.

INFO 362 Visual Information Design (5) VLPA Build fluency in expressing information visually as diagrams, charts, maps, and icons. Learn to solve design problems, give and receive critique, follow an iterative process of design refinement, and learn technical skills. Understand the nature of visual potential, visual design principles, and the impact of color and typography.

INFO 365 Mobile Application Design (5) Fundamentals of mobile UX & UI design through the lens of creating your own mobile OS and core mobile apps in a design studio setting. Includes creating a mobile design language and mobile patterns, app review by professional designers, and how design for mobile is unique from other mediums. Recommended: INFO 360

INFO 370 Core Methods in Data Science (5) QSR Surveys the major topics within data science, including data ingestion, cloud computing, statistical inference, machine learning, information visualization, and data ethics. Includes programming in R and Python. Prerequisite: INFO 201; and CSE 142 or CSE 143; and either STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 290, STAT 311, STAT 390, QMETH 201, or Q SCI 381.

INFO 371 Advanced Methods in Data Science (5) QSR Introduces modern methods in applied data science. Emphasizes practical applications and analysis of real-world data through a survey of common techniques in supervised and unsupervised

machine learning, and methods for experimental design and causal inference. Students learn functional, procedural, and statistical programming techniques for working with data. Prerequisite: INFO 370.

INFO 380 Information Systems Analysis and Design (5) Prepares students to participate in structured systems analysis and design efforts. Students learn how to analyze system context, behavior, and structure; identify stakeholders; gather requirements; and redesign systems to make them more beneficial to the organization.

INFO 386 Professionalism in Informatics (4) Examines professionalism, communication, teamwork, leadership, and interpersonal networking to strengthen students as they seek to excel professionally. Covers developing and presenting business cases and project plans, personal branding, conducting informational interviews, and effective written and oral communication.

INFO 402 Gender, Race, and Information Technology (4) I&S, DIV Explores Information Technology from a feminist standpoint. Considers the intersection of difference - gender, race, class, sexuality, and ability - in technology studies and work. There is a historical overview of women in technology, an introduction to technology education, and discussion about women in the IT workforce.

INFO 415 Emerging Topics in Information Assurance and Cybersecurity (1-5, max. 15) Explores emerging topics and unique subjects in information assurance and cybersecurity (IAC) not otherwise covered in the IAC curriculum.

INFO 430 Database Design and Management (5) Perspectives on DBMS theory, architecture, and implementation. Conceptual, logical, physical modeling. Index structures, query optimization and performance tuning, relational algebra, transaction processing, and concurrency control. Operational databases, decision support systems, and data warehousing. Projects in database implementation and integration. Social implications of large distributed database systems. Prerequisite: INFO 330.

INFO 431 Metadata Design (3) Explores principles of metadata schema and application profile design and implementation using XML technologies. Examines syntactic and semantic interoperability among diverse schemas and application profiles. Prerequisite: INFO 330; INFO 331.

INFO 433 Content Strategy in Information Architecture (4) I&S Introduces key concepts in understanding the content lifecycle in context of an organization's web, mobile, and other communication channels. Provides knowledge of key theories and principles in information architecture and practical application of skills including user research; information collection and analysis; and information organization and presentation.

INFO 441 Server-Side Development (5) Introduces server-side web development programming, services, tools, protocols, best practices and techniques for implementing data-driven and scalable web applications. Connects topics from human-centered design, information architecture, databases, data analytics and security to build a solution. Prerequisite: CSE 142 or CSE 143; and either INFO 340 or CSE 154; and INFO 330.

INFO 442 Cooperative Software Development (5) Introduces the theory and practice of cooperative user-centered software development, applying fundamental theories and techniques from social psychology, computer-supported collaborative work, and software engineering. Prerequisite: INFO 360; and INFO 340 or CSE 154.

INFO 443 Software Architecture for Interactive Systems (5) Introduction to architectural patterns and abstractions used in design of software systems. Principles and practices for structuring software. Analysis and application of object-oriented and module-level design patterns. Practices for documenting and reviewing code. Identification and evaluation of architecture in existing applications, libraries, and frameworks. Concepts applied through programming interactive applications. Prerequisite: CSE 143 and INFO 340.

INFO 448 Mobile Development: Android (5) Application development for Android devices. Covers implementation of mobile apps, including build tools, programming languages and libraries, user interfaces, application architecture, and

industry practices. Focuses on harnessing communication systems and sensors specific to mobile platforms, to create interactive, user-focused systems. programming in Java and XML. Prerequisite: CSE 143; and INFO 340 or CSE 154.

INFO 449 Mobile Development: IOS (5) Application development for iOS devices. Covers implementation of mobile apps, including build tools, programming languages and libraries, user interfaces, application architecture, and industry practices. Focuses on harnessing communication systems and sensors specific to mobile platforms, to create interactive, user-focused systems. Programming in Swift and XML. Prerequisite: CSE 143; and either INFO 340, INFO 343, or CSE 154.

INFO 463 Input and Interaction (5) Introduces input and interaction techniques for desktop, mobile, and other computing environments. Combines motor and perceptual psychology, interaction design, and input devices and software in the study of human-computer systems. Emphasizes using human performance models inform the design of new interaction techniques. Prerequisite: INFO 360.

INFO 464 Value Sensitive Design (5) VLPA Introduction to value sensitive design (VSD) , information system design that accounts for human values in a principled and comprehensive manner. Examination of existing systems from a VSD perspective. Explores VSD research methods including conceptual, technical, empirical investigations. Key values include accountability, autonomy, consent, privacy, property, trust, sustainability. Prerequisite: either INFO 360, DESIGN 383, CSE 440, or HCDE 419.

INFO 465 Technology, Time and Design (4) Explores relationship between information technology and time. From issues of shortened attention span, internet addiction, and longer-term perspectives on data curation and cultural heritage, considers time as a crucial element in how human beings experience life. Includes the critical role technology plays in that experience. Prerequisite: INFO 360.

INFO 466 Moral Reasoning and Interaction Design (4) What does it mean for a technology to be good or evil? Students learn about and critique existing design patterns, features, and products through a diverse set of ethical theories, and they design new

technologies grounded in systematic principles of moral reasoning. Mix of studio and seminar. Prerequisite: INFO 350; and either INFO 360 or HCDE 210.

INFO 468 Designing for Personal Health and Wellness (5) I&S Focuses on human-centered design of technologies for personal health and wellness. Students will learn how to understand people's health and wellness needs, consider ethical implications, assess existing tools, and design new health and wellness technologies. Students will learn theoretical and empirical approaches to evaluating these technologies. Prerequisite: either INFO 200, HCDE 210, HCDE 310, HCDE 318, or DESIGN 206.

INFO 474 Interactive Information Visualization (5) VLPA, QSR Techniques and theory for visualizing, analyzing, and supporting interaction with structured data like numbers, text, and relations. Provides practical experience designing and building interactive visualizations for the web. Exposes students to cognitive science, statistics, and perceptual psychology. An empirical approach will be used to design and evaluate visualizations. Prerequisite: INFO 340 or CSE 154; CSE 143; and either QMETH 201, Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 290, STAT 311, or STAT 390.

INFO 478 Population Health Informatics (5) I&S, QSR Introduces applications of Informatics skills to evaluating public health. Students will learn how to leverage their programming and data competencies towards measuring and describing the health of a population. Students will learn about and compute metrics of population health, and leverage visualization to communicate statistical insights to broad audiences. Prerequisite: INFO 201.

INFO 481 Project Management in Informatics (4) Introduces project management principles within the context of Informatics. Provides knowledge that managers need to implement information systems on time and within budget. Concentrates on methods and issues in organizing, planning, and controlling projects, and the use of computer-based project management tools.

INFO 490 Project Capstone I (4) Student-driven team project including definition of an information problem, a method of investigation, creation of a

project proposal, and completion of project deliverables. Prerequisite: INFO 300 or INFO 470; and INFO 360.

INFO 491 Project Capstone II (4) Includes design and implementation of a system or development of a research question intended to solve an information problem. Incorporates stakeholder and peer feedback, creation of project deliverables, presentation of the project in a public forum, and final assessment. Prerequisite: INFO 490.

INFO 495 Internship in Informatics (1-5, max. 12) Internship in the private or public sector, as approved by faculty member. Work jointly supervised by faculty member (or approved academic sponsor) and an on-site work supervisor.

INFO 496 Service Learning in Informatics (1-5, max. 12) Utilization of skills in service of the community, as approved by faculty member. Work to be jointly supervised by faculty member (or approved academic sponsor) and on-site service supervisor. Credit/no-credit only.

INFO 497 Informatics Study Abroad (1-8, max. 18) International seminar, led by Information School faculty or researchers. Addresses a specialized area of informatics. Topics vary. May require language proficiency.

INFO 498 Special Topics in Informatics (1-5, max. 15) Various topics in informatics.

INFO 499 Independent Study (1-5, max. 15) Readings, design projects, or research under faculty supervision.

INFORMATION MANAGEMENT AND TECHNOLOGY

IMT 500 Foundations of Information Management (3) Examines the role and function of information and information management in individual, organizational, community, and social contexts. Topics include information and information management concepts; methods of managing information and information flows within organizations; and internal and external communication in professional settings.

IMT 510 Human Aspects of Information Systems (4) Social, organizational, cognitive, behavioral, and contextual aspects of information, including basic concepts in human information behavior, conceptual and practical frameworks used to study human-information interaction, and social responses to information technology. User-based and work-based evaluation and design of information systems. Exposure to experimental and interview methodologies.

IMT 511 Introduction to Programming for Information and Data Science (4) Introduces fundamentals of computer programming as used for data science. Covers foundational skills necessary for writing stand-alone computer scripts, including programming syntax, data structuring, and procedural definition (functions). Includes programming environments (command-line) and version control. Emphasizes skills in algorithmic thinking, abstraction, debugging, and code reuse. Assumes no previous programming background. Offered: jointly with LIS 511.

IMT 519 Information Science Study Abroad (1-8, max. 18) International seminar, led by Information School faculty or researchers. Addresses a specialized area of information studies. Topics vary. May require language proficiency. Offered: jointly with LIS 519.

IMT 525 Information Management and Technology in Sports (3) Explores the information perspective, including the role and the use of information, information management, and information technologies applied to the sports context. Examines modern and emerging information management and technology systems and their design and use in administering intercollegiate athletic functions.

IMT 530 Organization of Information Resources (4) Introduction to issues in organization of information and information objects including analysis of intellectual and physical characteristics of information objects; use of metadata and metadata standards for information systems; theory of classification, including semantic relationships and facet analysis; creation of controlled vocabularies; and display and arrangement.

IMT 535 Introduction to Information Architecture (5) Introduces concepts and methods of front- and

back-end information architecture. Covers back-end topics including data and content modeling, taxonomy, controlled vocabulary, SEO, search, and analytics. Covers front-end topics including design thinking, design process, design patterns, navigation, workflow, labeling, orientation, and information scent. Unifies front- and back-end IA.

IMT 536 Metadata for Interactive Media (3) Explore new ideas and approaches for organizing and providing access to interactive media, particularly from a user-centered perspective. Design and conduct formative and evaluative user studies employing various qualitative and quantitative methods to determine information needs and seeking behaviors of various stakeholders in one or more interactive media domains. Offered: jointly with LIS 536.

IMT 539 Metadata Design (3) Design principles of metadata schemas and application profiles - implementation of interoperable application profiles using XML technology. Focuses on achieving syntactic and semantic interoperability among diverse metadata schemas and application profiles. Offered: jointly with LIS 539.

IMT 540 Design Methods for Interactive Systems (4) Introduction to the theory and practice of user-centered design. Examines design methods for identifying and describing user needs, specifying and prototyping new systems, and evaluating the usability of systems. Examines design methodologies such as contextual design and value-sensitive design, giving specific emphasis to human-information interaction. Prerequisite: permission of instructor.

IMT 541 Enterprise Information Systems Analysis and Design (4) Theoretical and practical examination of information systems analysis and design processes as they apply in the workplace. Explores techniques for assessing system and technology needs, defining information and work specifications, process and data modeling, and stakeholder analysis process; and input and output design, database design, test plans and implantation strategies in the design process.

IMT 542 Information Structures Using XML (4) Introduces the concepts and methods used to analyze, store, manage, and present information and navigation. Equal weight given to understanding

structures and implementing them. Topics include information analysis and organizational methods as well as XML and metadata concepts and application. Offered: jointly with LIS 542.

IMT 543 Relational Database Management Systems (4) Introduces relational database design, implementation, and management, with a focus on using relational database management systems (DBMS) to manage data in an organization. Topics include: data modeling tools and techniques, conceptual and logical database design, physical implementation, SQL, data management, and database administration. Recommended: INFX 502. Offered: jointly with LIS 543.

IMT 546 Data Communications and Networking (4) Covers local and wide-area computer networking including topologies and hardware, packet switching, client/server architectures, network protocols, and network servers and applications. Also addresses server operating systems, management, security, authentication, and policy issues associated with distributed networks.

IMT 547 Social Media Data Mining and Analysis (4) Explores techniques for collecting and analyzing social media. Students gain direct experience with methods for collecting a social media corpus, defining features of activity that are relevant for analysis, and analyzing those features.

IMT 549 Beginning Web Development (4) Teaches students how to build custom websites/applications from scratch, manage files in a version control system, and deploy them to publicly-accessible web servers. Focus is on client-side technologies, including HTML, CSS, and JavaScript. Existing basic programming knowledge is beneficial but not required. Offered: jointly with LIS 549.

IMT 550 Policy and Ethics in Information Management (4) Explores a range of information issues in the social and organizational context of information professionals, including professional ethics, privacy, freedom of expression, and intellectual property. Gives students tools for analysis of the kinds of social and ethical issues that will arise in their future lives as information professionals.

IMT 551 Foundations of Organizational Information Assurance (3) Concepts, elements, strategies, skills related to life cycle of information assurance-- involving policies, practices, mechanisms, dissemination, and validation--that ensure the confidentiality, integrity, and availability of information and information systems. Analyzes the information assurance planning process, including determination and analysis of information assurance organization goals, threat spectrum, risk, and legal and ethical issues.

IMT 552 Information Assurance Risk Assessment and Management (3) Examines the concepts, processes, and skills related to risk management in information assurance involving risk assessment, risk analysis, and mitigation planning. Analysis of the risk management process through several structured approaches that facilitate information assurance decision-making. Prerequisite: IMT 551.

IMT 553 Establishing and Managing Information Assurance Strategies (3) Applies and combines information assurance concepts, processes, and skills to solve case studies from practitioner experiences and explore the role of policy in creating a successful information assurance program. Prerequisite: IMT 551, IMT 552.

IMT 555 Foundations of Cybersecurity (4) Examines information security challenges and solutions, which information management professionals contend with when providing technology services and applications based on premises and cloud platforms. Students will solidify the terminology and security architecture via hands on labs using open source and cloud based tools. Covers security topics based relevant attack vectors.

IMT 556 Information and Operational Risk (3) Examines the information dimensions of the most common types of operational risk including: internal and external fraud, regulatory noncompliance, processing errors, information security breaches, and technology failures; practical application of operational risk frameworks where the intersection of people, information, processes, systems, and external events can lead to financial loss.

IMT 557 Operational Risk Management in the Public and Private Sectors (3) Learn to identify, monitor, and mitigate operational risk exposures in

corporations and government agencies, analyze risk appetites, and drive risk awareness at each level of corporate or government hierarchies. Examines technology failure and information sharing in crisis management, intellectual property, and data risk in various infrastructure sectors. Prerequisite: IMT 556.

IMT 558 Leading and Managing Enterprise Information Security (4) Examines the elements of managing and leading enterprise information security programs from a leadership perspective. Students review real world scenarios and explore challenges facing information security leaders. Develop an information security plan and program that meets the culture and goals of a company to address the challenging threat environment.

IMT 559 Cybersecurity Functions and Trends (4) Presents and analyzes cybersecurity technologies from a technical leadership stance to prepare information management professionals who will lead cybersecurity technical projects and information security teams. Introduces contemporary cybersecurity topics such as data analytics, digital forensic methodologies and cybersecurity applied in IoT (Internet of Things) and SDN (Software Defined Networks) .

IMT 561 Visualization Design (4) Students develop a human-centered visualization design practice using real-world data. This process includes applying graphic principles of visual encoding to data; conducting design explorations using sketches and prototyping; and gathering user feedback to assess output. Design workshops provide opportunities for hands-on engagement with concepts and technical skills.

IMT 562 Interactive Information Visualization (4) Introduces techniques for visualizing, analyzing, and supporting interaction with structured data (numbers, text, graphs) . Provides experience creating interactive visualizations for the web. Exposes students to cognitive science, statistics, and perceptual psychology principles. Students design and evaluate visualizations using perceptual and statistical accuracy.

IMT 563 Advanced Relational Database Management Systems (4) Conducts deeper investigation into construction of high-volume, robust database systems from conception through

deployment. Topics include Enhanced ERDs, explicit transaction-management (control-of-flow, error-handling) , coded business rules, troubleshooting and optimization. Investigation of disaster recovery, security, high-availability and scalability solutions as well as NoSQL and data warehousing topics.

Prerequisite: IMT 543, LIS 543.

IMT 565 Designing Information Experiences (4)

Explores experience design including user experience, customer experience, and service design. Covers the philosophical foundations of experience, how to design and evaluate experiences, and the business aspects of customer experience. The focus is on experiences of and with information.

IMT 569 Capstone I: Project Preparation (1)

Preparation for implementing a capstone project. Topics include choosing a project, team formation, professional communication with a project sponsor, identifying the scope of the project, assessing feasibility, developing a project charter and sponsor agreement. Prerequisite: completion of all MSIM core courses. Credit/no-credit only.

IMT 570 Research and Analysis for Information Management Professionals (4) Provides students with skills and methods to solve complex problems related to information management and business. Using a project model, students are introduced to a variety of data gathering and analysis techniques, culminating in the development of effective, data driven, recommendations specific to information management, systems and product development.

IMT 571 Social Network Analysis (4) Provide students with an understanding of the fundamental concepts, common methods, and analytical tools of social network analysis. Student will gain experience applying both exploratory and inferential methods to real-world problems with in the social network domain.

IMT 572 Introduction to Data Science (4) Introduces a broad, non-technical overview of key concepts, skills, and technologies used in "data science". Provides a high-level introduction to common data science pipelines, such as experimental design, data collection and storage, basic analytics, machine learning, and data visualization, focusing on analyzing in real-world datasets using industry

standard statistical packages. Offered: jointly with LIS 572.

IMT 573 Data Science I: Theoretical Foundations (4)

Introduces technically focused theoretical foundations of "Data Science." Provides an overview of key concepts, focusing on foundational concepts such as exploratory data analysis and statistical inference. Assignments are data-intensive, and require significant programming and statistical analysis. Students are expected to have college-level statistics and programming experience (R and python preferred) . Prerequisite: either Q METH 201, IMT 570, or equivalent college coursework; either CSE 142, or equivalent college coursework.

IMT 574 Data Science II: Machine Learning and Econometrics (4) Provides theoretical and practical introduction to modern techniques for the analysis of large-scale, heterogeneous data. Covers key concepts in inferential statistics, supervised and unsupervised machine learning, and network analysis. Students will learn functional, procedural, and statistical programming techniques for working with real-world data. Prerequisite: IMT 573.

IMT 575 Data Science III: Scaling, Applications, and Ethics (4) Focuses on utilizing advanced skills for analyzing and deriving insights from large-scale, heterogeneous data. Provides methods, tools, and frameworks for analyzing large-scale data, with topics including scaling and distributed computing, and network analysis. Special attention will be paid to ethical considerations in modern Data Science. Prerequisite: IMT 574.

IMT 576 Foundations of Strategic and Managerial Business Intelligence (4) Provides a broad overview of business intelligence (BI) including foundational BI concepts, strategies, techniques, and technologies. Primary emphasis is on the strategic and managerial perspective, focusing on how one designs, implements, and leverages business intelligence systems and strategies in management and leadership roles.

IMT 577 Business Intelligence Systems (4)

Introduces fundamentals of how to architect and develop business intelligence systems for decision making. Topics include dimensional data modeling; extracting, transforming, and loading data (ETL) ; online analytical processing (OLAP) ; data warehouse

architecture; developing data visualizations to answer key business questions. Recommended: Students are expected to have basic relational database and SQL knowledge. INFX 543 is recommended for students without this knowledge.

IMT 578 Research Seminar (1-4, max. 10) Students work in teams under the supervision of individual faculty members to engage in research or design activities and learn through hands-on participation and study. Learning activities include data collection, data analysis, building prototypes, testing or evaluation, or dissemination activities. Offered: jointly with LIS 578.

IMT 580 Management and Strategic Leadership (4) Introduction to internal and external management issues and practices in information organizations. Examines key topics drawn from the fields of organizational theory and behavior, including planning and decision-making, organizational structure, leadership, and motivation. Reviews strategic and operational issues including human and organizational issues related to technology introduction, use, and management.

IMT 582 Strategic Information Initiatives (4) Tools, techniques, approaches for identifying and planning entrepreneurial initiatives within organizations, including business information assessments, organizational readiness assessments, alignment with organizational priorities, information audits, processes for obtaining organizational investment in and commitment to new initiatives. Focuses on building business and economic justifications and leading strategic initiatives in organizations.

IMT 585 Consulting Practices (4) Provides an overview of Information consulting practices including consulting concepts, methodologies, approaches to consultative analysis and problem solving. Emphasizes a systems-thinking approach to practicing effective technical and interpersonal consulting behaviors as well as processes for internal and external consulting. Interpersonal/communication skills, client relationship management and change management are strongly emphasized. Prerequisite: IMT 580.

IMT 586 Information Dynamics I (4) Introduction to the concepts and methods of information feedback, systems thinking, soft systems methodology (SSM) ,

and "soft operations research," as well as the quantitative modeling of complex dynamic systems by means of differential and integral equations (system dynamics) . Offered: jointly with INSC 586.

IMT 587 Principles of Information Project Management (4) Introduces project management principles within information-related business contexts. Provides knowledge that managers need to implement information systems on time and within budget. Concentrates on methods and issues in organizing, planning, and controlling projects, and their use of computer-based project management tools.

IMT 588 Enterprise Project Management in Information Organizations (4) Explores roles, responsibilities, and methods of managing enterprise projects. Analyzes critical issues such as the relationship between project management and organizational culture, structure, and processes; cross-functional and globally distributed teams; project governance, metric, and risk and performance management; communication, decision-making, and conflict resolution; and organizational learning, change, and knowledge management. Prerequisite: introductory coursework in project management or permission of instructor. Offered: jointly with INSC 588.

IMT 589 Special Topics in Information Management (1-4, max. 12) Special study and research in topics of current concern to faculty and students.

IMT 590 Internship in Information Management (1-5, max. 10) Internship in the private or public sector, jointly supervised by faculty member and an on-site work sponsor. Prerequisite: enrollment in the MSIM program. Credit/no-credit only.

IMT 596 Capstone II - Project Planning (2) Analysis and preliminary design of an approved individual or group research or implementation project demonstrating professional-level knowledge and skills. Cannot be taken for credit if credit received for LIS 596. Prerequisite: IMT 569. Credit/no-credit only.

IMT 597 Capstone III - Project Implementation (2) Implementation of a project demonstrating professional-level knowledge and skills based on a project charter and plan developed in IMT 596.

Cannot be taken for credit if credit received for LIS 597. Prerequisite: IMT 596. Credit/no-credit only.

IMT 598 Emerging Trends in Information Management and Technology (3) Focus on emerging trends in information management and information technology. Attention given to their impact on the functions of the chief information officer and others managing the acquisition, retention, use, and disposition of information and the enabling technologies. Exploration of methods and resources for trend discovery and tracking. Prerequisite: permission of instructor.

IMT 599 Practicum in Information Management (6) Internship,,organization- or faculty-sponsored research project related to information management. Required for MSIM one-year students. Usually offered summer quarter. Prerequisite: IMT 500; IMT 550; IMT 570; and IMT 580 Credit/no-credit only.

IMT 600 Independent Study or Research in Information Management ([1-4]-) Supervised independent study or research. May be taken in as many as six consecutive quarters. Prerequisite: enrollment in the MSIM program. Credit/no-credit only.

INFORMATION SCIENCE

INSC 500 Faculty Seminar (2) Presentations by faculty concerning research projects in which they are involved. Credit/no-credit only.

INSC 501 Theoretical Foundations for Information Science (3) In-depth exploration of the philosophical, theoretical, methodological, and historical foundation of information science and the study of information.

INSC 508 Reading Seminar (2) Discusses theoretical works and contemporary research in areas related to information science, information management, or information technology and design. Introduces students to the intellectual traditions that underlie the field. Credit/no-credit only.

INSC 512 Community Analysis (4) Explores key concepts of community in its broadest sense, methodological approaches for analyzing

information needs and available resources, how to design information services in response to identified needs, and service evaluation. Facilitating the information behavior of all groups within a community and identifying how their needs interconnect. Offered: jointly with LIS 512.

INSC 518 Seminar in Human Information Interaction (4) Investigates conceptual frameworks, assumptions, analytical tools, concepts, models, and theories in human information interaction (HII) . Topics may include theories of information behavior, information behavior in everyday life, social informatics, HII in organizations, or personal information management. Previous readings in HII preferred. Prerequisite: permission of instructor.

INSC 535 Classification Theory (3) Survey of classificatory principles from bibliographic, philosophical, socio-cognitive, and linguistic perspectives. Overview of history of bibliographic classification and exploration of some existing bibliographic classification systems. Ramification of theoretical approach for classification practice. Prerequisite: LIS 530. Offered: jointly with LIS 535.

INSC 538 Seminar in Information Organization (4) Seminar on information organization, focusing on any area of information organization, including classification theory, metadata, document theory, information organization in information systems; social and political aspects of classification, controlled vocabularies, and cataloging history.

INSC 541 HCI Design Foundations for Interactive Systems (4) Develops knowledge and skills for design-based inquiry of interactive systems. Students practice user-centered design methods and study theories of human-computer interaction, including but not limited to: goal-based design and task analysis, scenario-based design, soft systems methodology, value sensitive design, universal design, and participatory design.

INSC 542 HCI Design Studio for Interactive Systems (4) Develops knowledge and skills for design-based inquiry of interactive systems. Includes a quarter-long project using appropriate methods and iteratively engages research, design, prototyping, and evaluation activities. Opportunity to reflect upon practice and receive critical review of work throughout the quarter.

INSC 543 Value Sensitive Design (4) Develops knowledge and skills to account for human values in design, development, and deployment of information systems. In-depth examination of value sensitive design theory, methods, and practice, including stakeholder project. Prerequisite: permission of instructor.

INSC 546 Assistive Technology and Inclusive Design (4) Examines interactive technologies for users with alternative skills or in alternative contexts. Covers universal design, inclusive design, and assistive technologies. Addresses needs of users with physical limitations, children/elders, users in developing nations, and mobile users.

INSC 547 Collaborative and Social Computing (4) Seminar on the design of collaborative and social computing systems. Introduces theories for analyzing collaborative on-line and face-to-face. Student apply a theoretical perspective through the design of a social or collaborative application. Application domains include blogging, tagging, on-line communities, social recommending, ubiquitous computing, and collaboration in domestic settings.

INSC 555 Information and Values (4, max. 12) Explores value systems within a range of different social and technological environments.

INSC 557 Cultural and Ethnic Dimensions in Information Science (4) Examines ethnic and cultural dimensions of information storage and transfer, knowledge creation and exchange, and information-related values in an increasingly global world. Readings from anthropology, cultural learning, cross-cultural communications, and ethnic traditions provide the basis for discussions about conducting research across culturally distinct communities. Prerequisite: permission of instructor.

INSC 561 PhD Colloquium on Professional Issue (1, max. 12) Covers topics relating to the professional concerns of doctoral students and their future lives as academics and researchers. Credit/no-credit only.

INSC 565 Teaching Practicum I (3) Doctoral student participation in teaching in a faculty-taught course. Credit/no-credit only.

INSC 566 Teaching Practicum II (3) Doctoral student takes primary teaching responsibility for a course

under supervision of a faculty liaison. Prerequisite: INSC 565. Credit/no-credit only.

INSC 570 Research Design (4) Introduction to empirical research, basics of theory construction and research design, types of research, ethical issues, instruments and techniques for descriptive research, measures of association. Employs an integrated (qualitative and quantitative) and focused approach.

INSC 571 Quantitative Methods in Information Science (5) Describes uses, characteristics, and theoretical bases of research methods and data analysis techniques used in quantitative research, emphasizing uses in information and library science. Topics include experimental design, descriptive and inferential statistics, the normal distribution, elementary probability, nonparametric statistics, and exploratory data analysis techniques. Prerequisite: INSC 570.

INSC 572 Qualitative Methods in Information Science (5) Principles and approaches to conducting qualitative research in information science, including how to design a qualitative study, role of context, methods of data collection and analysis, increasing the trustworthiness of data, minimizing observer effect, how to incorporate and build theory. Exposure to field research and data analysis. Prerequisite: INSC 570.

INSC 573 Design Inquiry and Methods in Information Science (5) Acquire theory, methods, and skills for design-based inquiry, focusing on making artifacts - technical, informational, managerial, or organizational - and devising courses of action that enable people to mobilize. Students develop knowledge for design in Information Science through practical application of design methods and scholarly investigation of selected literatures.

INSC 575 Research Practicum I (3) Students work with a researcher from the Information School as an active member of a research team. Credit/no-credit only.

INSC 576 Research Practicum II (3) Students work with an approved researcher as an active member of a research team. Prerequisite: INSC 575 or permission of instructor. Credit/no-credit only.

INSC 578 Research Seminar (1-2, max. 15) Research presentations on a wide variety of topics in information science. Credit/no-credit only.

INSC 579 Research Colloquium in Information Science (2, max. 30) Research colloquium on various research topics in information science. Faculty, visitors, and students present current research. Prerequisite: permission of instructor. Credit/no-credit only.

INSC 581 Organizational Theories of Information Systems (4) Surveys major strands of management of information systems research. Covers the behavioral, economic, strategic, and technical research perspectives of MIS research.

INSC 586 Information Dynamics I (4) Introduction to the concepts and methods of information feedback, systems thinking, soft systems methodology (SSM), and "soft operations research," as well as the quantitative modeling of complex dynamic systems by means of differential and integral equations (system dynamics). Offered: jointly with IMT 586.

INSC 588 Enterprise Project Management in Information Organizations (4) Explores roles, responsibilities, and methods of managing enterprise projects. Analyzes critical issues such as the relationship between project management and organizational culture, structure, and processes; cross-functional and globally distributed teams; project governance, metric, and risk and performance management; communication, decision-making, and conflict resolution; and organizational learning, change, and knowledge management. Prerequisite: introductory coursework in project management or permission of instructor. Offered: jointly with IMT 588.

INSC 590 Internship in Information Science (1-5, max. 12) Internship in the private or public sector. Jointly supervised by faculty member and an on-site work sponsor. May be taken in as many as four consecutive quarters. Prerequisite: Enrollment in Information School PhD program. Credit/no-credit only.

INSC 598 Special Topics in Information Science (1-5, max. 12)

INSC 599 Independent Study in Information Science (1-5, max. 30) Readings, design projects, or research under faculty supervision. Prerequisite: permission of instructor and Ph.D. program chair.

INSC 600 Independent Study or Research (*) Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of Supervisory Committee or graduate program adviser. Credit/no-credit only.

INSC 800 Doctoral Dissertation (*-) Credit/no-credit only.

INFORMATION TECHNOLOGY APPLICATIONS

ITA 340 Introduction to Web Publishing (3) Introduction to markup languages and publishing web content. Students gain understanding of HTML coding and extensions, image manipulation, information architecture, and web site publishing. Other topics include: the Web Accessibility Initiative, survey of Graphical User Interface (GUI) HTML editors, online privacy and security, and eXtensible Markup Language (XML).

ITA 341 Client-side Scripting and Design (3) Introduction to web browser design environment, scripting languages, JavaScript, Document Object Model (DOM), and creation of dynamic HTML web pages (DHTML) in combination with Cascading Style Sheets (CSS). Other topics include: client-server architecture and web design principles in the contexts of technical feasibility, usability, and accessibility. Prerequisite: ITA 340.

ITA 342 Introduction to SQL and Data Storage Technologies (3) Fundamentals of database design in a client-server architecture useful for web applications. Subsequent topics build upon foundation by introducing the Structured Query Language (SQL), open source tools MySQL and PHP for database processing, security issues in database applications, and XML as an alternate database storage technology. Prerequisite: ITA 341

ITA 343 Server-Side Programming and Web-data Integration (3) Provides framework to integrate server-side programming concepts and techniques, database technologies, and client-side scripting to

design and implement dynamic web applications. Examines techniques using PHP, design and implementation of database (MySQL) connections, web application security, and XML data publication. Prerequisite: ITA 342.

LIBRARY AND INFORMATION SCIENCE

LIS 462 Skills Approach to Information, Communications, and Technology (ICT) Literacy (3) Introduction to the Big6™ Skills approach to information, communications, and technology (ICT) literacy for personal, school, district, or higher education settings. Includes technology within the Big6 framework, connection to standards, instructional design, assessment, curriculum mapping, peer collaboration, the parent connection, program planning, and implementation.

LIS 498 Special Topics (1-5, max. 15) Library service and information science subject matter in seminars, workshops, or other appropriate formats. Topics vary and may be repeated for credit.

LIS 500 The Question of Information (2) Provides an overview of the major questions, concepts, and challenges engaging library and information science through seminar discussion. Exploration of the social context in which these questions and challenges occur, and their implications for both research and practice. Credit/no-credit only.

LIS 501 History and Foundations of Libraries and Librarianship (3) Introduces the history of libraries, major issues in contemporary library and information work, and types of libraries. Examines the role of libraries in society, the development of professional librarianship, and the role of librarians.

LIS 502 Database Concepts for Information Professionals (3) Introduces the terminology and concepts of managing data with relational database management systems. Students will gain introductory exposure to data modeling, relational database design, creation, and use. Credit/no-credit only. Credit/no-credit only.

LIS 505 Archival and Manuscript Services (3) Selection, organization, and uses of archival and manuscript collections. Emphasis on the principles and techniques; some attention to the

administration of state archival and historical institutions' collections. Lecture, demonstration, and laboratory.

LIS 506 Introduction to Digital Preservation (4) Focuses on fundamental concepts and techniques for archiving born digital content. Practical activities include design and implementation of a digital preservation plan, auditing existing preservation services, and learning preservation standards such as file formats, metadata schemas, and certifications for trustworthy digital repositories.

LIS 507 Preservation and Conservation of Library Materials (3) Consideration of the many factors contributing to the physical vulnerability of library materials of all kinds and an overview of resources and strategies for those who determine preservation policy or manage the application of such policy. No technical background necessary.

LIS 508 History of Recorded Information (4) Exploration of the history and ongoing transformation of recorded information within three broad spheres of human life: public communication, administrative and commercial operation, and personal communication.

LIS 509 Information and Contemplation (4) Explores how contemplative practices and perspectives can offer insights into today's information-intensive culture and how they can provide guidelines and design principles for the development of new information practices and technologies. Students explore a variety of contemplative/attentional practices and use these to investigate information trends, practices, and concerns.

LIS 510 Information Behavior (3) Introduction to the user-centered approach to information behavior. Theoretical foundations of need, creation, seeking, sharing, assessment, management, and use. Synthesis of information behavior studies, performance of information behavior field research, and application of the results of information behavior studies to design information systems, services, and policy.

LIS 511 Introduction to Programming for Information and Data Science (4) Introduces fundamentals of computer programming as used for data science. Covers foundational skills necessary for

writing stand-alone computer scripts, including programming syntax, data structuring, and procedural definition (functions) . Includes programming environments (command-line) and version control. Emphasizes skills in algorithmic thinking, abstraction, debugging, and code reuse. Assumes no previous programming background. Offered: jointly with IMT 511.

LIS 512 Community Analysis (4) Explores key concepts of community in its broadest sense, methodological approaches for analyzing information needs and available resources, how to design information services in response to identified needs, and service evaluation. Facilitating the information behavior of all groups within a community and identifying how their needs interconnect. Offered: jointly with INSC 512.

LIS 513 Information and Migration (3) Graduate reading seminar about the intersection between human migration and information practices and behaviors. What are the particular needs, behaviors and practices of immigrants, in the US or abroad? How is immigration changing social movements? How do refugees, undocumented migrants and DREAMers in the US change the discourse about immigration?

LIS 516 Youth Development and Information Behavior in a Digital Age (3) Introduction to major theories of human development from birth through age eighteen and application of these theories to examine youth's information behavior and digital media use at various developmental stages. Explores new research on the impact of digital media tools and practices on youth development. Prerequisite: either LIS 510 or permission of instructor.

LIS 519 Information Science Study Abroad (1-8, max. 18) International seminar, led by Information School faculty or researchers. Addresses a specialized area of information studies. Topics vary. May require language proficiency. Offered: jointly with IMT 519.

LIS 520 Information Resources, Services, and Collections (4) Concepts, processes, and skills related to information, including production, distribution, selection, collection, and services to facilitate access. Specific discussion topics include characteristics of recorded knowledge; organizations

and services devoted to managing access to recorded knowledge; and principles associated with development of recorded knowledge and collections.

LIS 521 Principles of Information Services (4) Analysis of the information mediation process, including determination and analysis of information needs; searching for, evaluation, and presentation of appropriate results; modalities for delivery of services; and current and future techniques.

LIS 522 Collection Development (3) Methods of developing and managing diverse and equitable library collections in academic, public, and school libraries. Acquisition methods, budgeting, collection development policies, selection tools and criteria, selector responsibilities, collection evaluation, challenges to materials, trends, and ongoing inclusion issues in publishing, licensing, and accessing library materials in all formats.

LIS 524 Adult Reader Services in the Public Library (3) Focuses on developing and performing readers' advisory services for contemporary adult fiction and non-fiction. Includes interpersonal and marketing skills necessary to promote reading including reading advocacy, readers' advisory interviewing, writing advisory annotations, presenting book talks, and conducting book discussion groups.

LIS 525 Genres for Adult Readers (3) Reviews characteristics of the most popular genres of fiction, including speculative fiction, mystery/thriller/suspense, romance, westerns, and graphic fiction/memoir. Helps to develop practice in book talking, preparing annotated booklists, and making reading suggestions to library users.

LIS 526 Government Publications (3) Introduction to government publications of the United States and their acquisition, organization, and use. Other topics covered include the public's right to know, the Federal Depository Library Program, government influences in our daily lives, and future directions in government information. Credit/no-credit only.

LIS 527 Business Information Resources (3) Survey of the extent and nature of business information and its sources, and of business information producers and consumers. Study and use of both print and on-line sources.

LIS 528 Health Sciences Information Needs, Resources, and Environment (3) S.

FULLER Characteristics of users of health sciences information; health professionals, researchers, consumers and patients; environments (academic health sciences centers, hospitals, clinics, and public libraries) ; evaluation of information resources in health care; types and uses of health information management systems; policy issues, professional standards, education, and certification. Offered: jointly with BIME 570; Sp.

LIS 529 Digital Humanities Librarianship (3)

Investigates the intersections between content and technology in humanities librarianship with a focus on information problems and resources in the fields of philosophy, religion, the arts, language, and literature.

LIS 530 Organization of Information and Resources (4)

Introduction to issues in organization of information and documents including: analysis of intellectual and physical characteristics of documents; principles and practice in surrogate creation, including standards and selection of metadata elements; theory of classification, including semantic relationships and facet analysis; creation of controlled vocabularies; and display and arrangement.

LIS 531 Catalogs, Cataloging, and Classification (4)

Develops an understanding of library catalogs as information retrieval systems. Introduces library cataloging and classification. Focus on principles and standards in the creation of catalogs and cataloging records. Includes practice in descriptive and subject cataloging and classification. User perspective emphasized throughout. Prerequisite: LIS 530.

LIS 534 Indigenous Systems of Knowledge (3)

Conceptual foundations and comparative analysis of indigenous knowledge organization systems. Feasibility and use of contemporary knowledge organization mechanisms including thesauri and ontologies in expressing the cultures and artifacts of indigenous peoples.

LIS 535 Classification Theory (3) Survey of classificatory principles from bibliographic, philosophical, socio-cognitive, and linguistic perspectives. Overview of history of bibliographic classification and exploration of some existing

bibliographic classification systems. Ramification of theoretical approach for classification practice. Prerequisite: LIS 530. Offered: jointly with INSC 535.

LIS 536 Metadata for Interactive Media (3) Explore new ideas and approaches for organizing and providing access to interactive media, particularly from a user-centered perspective. Design and conduct formative and evaluative user studies employing various qualitative and quantitative methods to determine information needs and seeking behaviors of various stakeholders in one or more interactive media domains. Offered: jointly with IMT 536.

LIS 537 Construction of Indexing Languages (4)

Exploration of the design, construction, evaluation, and maintenance of controlled indexing languages, including studies of how users are integrated into the design process. Through completion of thesaurus construction project, prepares students to design index languages, plan and implement a design project, and evaluate indexing languages. Prerequisite: either LIS 530 or IMT 530. Credit/no-credit only.

LIS 539 Metadata Design (3) Design principles of metadata schemas and application profiles - implementation of interoperable application profiles using XML technology. Focuses on achieving syntactic and semantic interoperability among diverse metadata schemas and application profiles. Offered: jointly with IMT 539.

LIS 542 Information Structures Using XML (4)

Introduces the concepts and methods used to analyze, store, manage, and present information and navigation. Equal weight given to understanding structures and implementing them. Topics include information analysis and organizational methods as well as XML and metadata concepts and application. Offered: jointly with IMT 542.

LIS 543 Relational Database Management Systems (4)

Introduces relational database design, implementation, and management, with a focus on using relational database management systems (DBMS) to manage data in an organization. Topics include: data modeling tools and techniques, conceptual and logical database design, physical implementation, SQL, data management, and

database administration. Recommended: INFX 502.
Offered: jointly with IMT 543.

LIS 544 Information Retrieval Systems (3)

Introduction to theory and models in information retrieval and the systems for storage and retrieval of unstructured information. Examines information retrieval architectures, processes, retrieval models, query languages, and methods of system evaluation, methods and tools for document analysis, interfaces, and usability.

LIS 545 Fundamentals of Data Curation (4) Examines principles, practices, and trends in the curation of digital research data. Provides a foundation in data management and data services for professional in institutions involved with data intensive research, scholarship, and innovation. Emphasizes data sharing, preservation, open access, metadata, and policy for development of reusable and accessible data resources.

LIS 546 Data Curation II: Advanced Topics (4)

Examines a broad range of issues in the field of data curation. Focus on recent advances and challenging problems in the curation of research data across disciplines and new trends in open data resources and services for the general public. Draws on practical research findings, case studies, and current public and private sector data initiatives to examine key challenges in the field, as well as practical solutions applied by data professionals. Prerequisite: either LIS 545 or permission of instructor.

LIS 547 Design Methods for Librarianship (4)

Focused on the human fabric of libraries - stakeholders, values, information technology, and policy - students develop theoretical knowledge and practical skills for design. Methods include futures workshops, scenarios, paper-prototyping, usability methods, among others. To conceptualize and steer design processes, the course includes an introduction to design methodologies and theory.

LIS 549 Beginning Web Development (4) Teaches students how to build custom websites/applications from scratch, manage files in a version control system, and deploy them to publicly-accessible web servers. Focus is on client-side technologies, including HTML, CSS, and JavaScript. Existing basic programming knowledge is beneficial but not required. Offered: jointly with IMT 549.

LIS 550 Information and Society (3) Covers concepts, processes, and issues related to the larger social context within which the life cycle of information and knowledge in society are investigated. Discussion topics include codes of ethics, professionalization, privacy, freedom of expression, intellectual property, social inequalities, and quality of life.

LIS 551 Intellectual Freedom in Libraries (3) Analysis of issues related to intellectual freedom, particularly to implications for libraries and librarians. Consideration of current legal climate, conformity versus freedom in modern world, librarian as censor, social responsibility and individual freedom, intellectual freedom of children, prospects for future. Credit/no-credit only.

LIS 552 Critical and Existential Perspectives on the Information Society (3) Explores different conceptions of what it means to live in an "Information Society." Drawing upon readings in information science, history, philosophy, psychology, and anthropology, students will learn to unpack, problematize, and critique current conceptions of the role of information in society.

LIS 553 Information and Social Justice (3)

Information technologies have the potential to help improve the quality of life of marginalized, underserved and impoverished communities around the world, and to promote social justice and inclusion. This course critically explores the intersection between information technologies, social change, and social justice.

LIS 556 Information Ownership and Control: Intellectual Property, Privacy, and Freedom of Speech (3) Concepts, processes, and issues related to the larger social context within which information and knowledge is owned, controlled, and accessed. Discussion topics include the ethics of copyright, patent, and trade secrets; intellectual freedom and access to information; privacy and the control of personal information; misinformation and "fake news."

LIS 560 Instructional and Training Strategies for Information Professionals (3) Develops knowledge and skills in instruction while applying theories of information literacy, teaching, and learning to instruction in an information environment. Teaches

students how to design, develop, and evaluate instructional programs for specific users.

LIS 561 Storytelling in a Digital Age (3) Instruction in the art and technique of oral and digital storytelling for all ages. Addresses both traditional and contemporary modes of storytelling, including transmedia. Sources include personal and family stories, folktales, and literary stories. Also explores non-library storytelling: therapeutic storytelling, organizational storytelling, and storytelling for qualitative research.

LIS 563 Cultural History of Children's and Young Adult Literature (3) Historical overview of illustrations and social values of children's and young adult literature written in English. Examines the influence of movements such as Romanticism, Rationalism, and postmodernism, as well as changing trends over time; also considers texts from a variety of cultural perspectives.

LIS 564 Multicultural Resources for Youth (3) Facilitates development of cross-cultural competence through authentic resources for children, tweens, and teens produced by or about ethnic minorities in the United States. "Issues" focus, providing knowledge in critical examination of various genres of multicultural resources as well as in strategies to use them.

LIS 565 Resources for Digital Age Children (3) Introduces selection and evaluation of traditional, digital, and transmedia resources used by public and school libraries for children, birth to age twelve. Applies theories from human development, information behavior, and digital media research to the identification of developmentally appropriate selections and provision of readers'/users'/ advisory for children.

LIS 566 Resources for Digital Age Teens (3) Introduces selection and evaluation of traditional, digital, and transmedia resources used by public and school libraries for teens. Applies theories from human development, information behavior, and digital media research to the identification of developmentally appropriate selections and provision of readers'/users'/ advisory for teens.

LIS 567 Libraries as Learning Labs in a Digital Age (3) Application of theories and research on youth

development to inform practice about programming and resources for youth. Create programs based on current research, including programming such as story times, book talks, and maker spaces. Prerequisite: LIS 516.

LIS 568 Information Literacy in a Digital Age (3) Explores theories, process, and practical applications of information literacy. Examines the development of information literacy programs for libraries, community agencies, business, education, and other information settings. Explores the integral relationship between technology and information literacy, and assessment and evaluation of programs.

LIS 569 Capstone I: Project Preparation (1) Preparation for implementing a capstone project. Topics include choosing a project, team formation, professional communication with a project sponsor, identifying the scope of the project, assessing feasibility, developing a project charter and sponsor agreement. Prerequisite: completion of 30 credit hours. Credit/no-credit only.

LIS 570 Research, Assessment, and Design (4) Students recognize research and design opportunities, translate them into researchable frameworks, and conduct research in libraries and other information agencies. Covers problem definition, data collection and analysis, design and validation of alternative solutions, and reporting of results.

LIS 572 Introduction to Data Science (4) Introduces a broad, non-technical overview of key concepts, skills, and technologies used in "data science". Provides a high-level introduction to common data science pipelines, such as experimental design, data collection and storage, basic analytics, machine learning, and data visualization, focusing on analyzing in real-world datasets using industry standard statistical packages. Offered: jointly with IMT 572.

LIS 577 Participatory Design in Libraries (4) Explores participatory design, a method focusing on engaging users in a democratic and collaborative process between users and designers to create new technologies and learning activities. Explores how to interact with stakeholders, the role of design techniques, and the different phases in co-design.

Well suited for librarians, educators, and HCI researchers interested in understanding in design processes.

LIS 578 Research Seminar (1-4, max. 10) Students work in teams under the supervision of individual faculty members to engage in research or design activities and learn through hands-on participation and study. Learning activities include data collection, data analysis, building prototypes, testing or evaluation, or dissemination activities. Offered: jointly with IMT 578.

LIS 579 Instructional Strategies for Legal Information (2) Develops knowledge and skills in instruction suited for working in a law library environment. Includes how to create and design a legal research course syllabus, how to use appropriate classroom technology, and how to give an effective presentation.

LIS 580 Management of Information Organizations (4) Introduction to internal and external management issues and practices in information organizations. Internal issues include organizational behavior, organizational theory, personnel, budgeting, planning. External issues include organizational environments, politics, marketing, strategic planning, funding sources.

LIS 581 Marketing and Planning for Libraries (3) Approaches to planning and marketing library products/services. Examines partnerships that can be forged between elements of marketing and appropriate futures strategies for libraries. Discusses marketing and planning as integrated processes with attention to short- and long-term goals and objectives. No particular library institutional setting is assumed.

LIS 582 Community Engagement Strategies in Information Science (3) Introduces students to strategies for building and sustaining relationships with community partners and other organizations to provide innovative services possible inside and outside of libraries. Students examine case studies, consider partner resources and needs, evaluate outcomes, and develop partner-based services in order to achieve community impact.

LIS 583 Cross Cultural Approaches to Leadership (3) Explores alternative leadership models as reflected

in the literatures of multiple cultures. Examines ethical dimensions of leadership in the context of complex relationships among the peoples and agencies that comprise the global environment. Uses imagination in the application of cross cultural forms of leadership.

LIS 584 Knowledge Management (3) Introduction to contemporary topics in management of knowledge creation and use in organizations. Discussion topics include knowledge generation, knowledge taxonomy, knowledge transfer, organizational knowledge management practice, and knowledge management systems.

LIS 586 Public Libraries and Advocacy (3) Examines the purpose and role of public libraries in an information society. Includes governance, services, and planning with special emphasis on advocacy for the library and community.

LIS 587 Library Technology Systems (4) Developing criteria for selection and design of information technology systems for libraries and information centers. Applying criteria in evaluation of hardware and software. Examining related management challenges, such as vendor relations, financing options, personnel requirements, and design of auxiliary activities.

LIS 588 Special Librarianship (3) Seminar in the practice of special librarianship in business and commercial firms, government agencies, other non-profits, and the independent consultant sector. Emphasis on management of non-traditional information organizations and the targeted information role.

LIS 589 Academic Librarianship (3) Academic librarianship is a complex combination of tradition and innovation. Academic libraries are redefining themselves, with changes in physical space, job titles, and the format of collections. This course examines the forces at work in academic libraries, from politics to technology, using the lens of social justice and equity.

LIS 590 Directed Fieldwork (1-5, max. 10) Minimum of 50 hours, maximum 250 hours of professional, supervised fieldwork in a library or professional information setting. Fieldwork is a one quarter experience, however, may be repeated in a different

setting with a different set of learning objectives for a subsequent quarter. Prerequisite: LIS 510 or LIS 547, LIS 520, LIS 530, and LIS 570 Credit/no-credit only.

LIS 591 Legal Research I (3) Introduction to legal bibliography and law librarianship. Basic primary and secondary legal bibliographic tools. Integration of manual and computer resources for effective legal research. Emphasis on state materials. Offered: jointly with LAW A 598.

LIS 592 Legal Research Methods (3/4) Legal tools that answer more complex legal research problems, such as federal legislative histories, sources of administrative law, specialized subject research. Federal emphasis. Builds on skills and techniques taught in LIS 591/LAW A 598. Extensive work with online resources. Offered: jointly with LAW A 599.

LIS 593 Collection Management in Law Libraries (3) Study of tools for collection development and collection development plans in law libraries. All law library technical processes, including acquisitions, budgeting, cataloging, and serials.

LIS 594 Management Skills in Law Libraries (3) Management topics in in law libraries, including organizational structure, personnel, communication skills, project management, supervision and training. Credit/no-credit only.

LIS 595 Research and Writing in Law Librarianship ([1-5]-, max. 5) Students select a topic in law

librarianship in collaboration with the faculty member, research it fully, write a major paper, and present their paper. Topics may include historical trends, citation reform, digital media, user studies, etc. Prerequisite: law librarianship majors or permission of instructor. Credit/no-credit only.

LIS 596 Capstone II - Project Planning (2) Analysis and preliminary design of an approved individual or group research or implementation project demonstrating professional-level knowledge and skills. Cannot be taken for credit if credit received for IMT 596. Prerequisite: LIS 569. Credit/no-credit only.

LIS 597 Capstone III - Project Implementation (2) Implementation of a project demonstrating professional-level knowledge and skills based on a project plan developed in LIS 596. Completion of project deliverables and presentation of project results. Cannot be taken for credit if credit received for IMT 597. Prerequisite: LIS 596. Credit/no-credit only.

LIS 598 Special Topics in Information and Library Science (1-6, max. 18) Seminar dealing with various topics in information and library science. Offered by visitors or resident faculty. Topics are changed from quarter to quarter. May not be offered every quarter. Prerequisite: determined by specific course.

LIS 600 Independent Study or Research (*-) Credit/no-credit only.

INTERDISCIPLINARY GRADUATE PROGRAMS

BIOLOGICAL PHYSICS, STRUCTURE AND DESIGN

BPSD 520 Research Seminar (1, max. 30) Group conferences on graduate student research. Prerequisite: BPSD graduate student or permission of instructor.

BPSD 540 Literature Review (2) *C. Asbury, T. Davis* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: jointly with BIOC 540; A.

BPSD 541 Literature Review in Biomolecular Structure and Design (2) Emphasizes critical evaluation of original articles in literature from all fields relevant to biological physics, structure, and design. Emphasizes scientific writing and oral presentations. Prerequisite: first year BPSD student or permission of instructor. Offered: W.

BPSD 542 Literature Review in Biomolecular Structure and Design (2) Emphasizes critical evaluation of original articles in literature from all fields relevant to biological physics, structure, and design. Emphasizes scientific writing and oral presentations. Prerequisite: first year BPSD student or permission of instructor. Offered: W.

BPSD 599 Introduction to Research in Biomolecular Structure and Design (3-6, max. 24) Students work with one of the research groups within the Biological Physics, Structure and Design program. Minimum two rotations must be in a different laboratory. Prerequisite: BPSD student or permission of instructor. Offered: AWSpS.

INTERDISCIPLINARY DATA SCIENCE GROUP

DATA 501 Data Science Visualization Lab (1) The Data Science Visualization Lab class will provide students additional opportunities to practice and discuss data visualization concepts, with additional

emphasis on user-centered design approaches and software development. Students will work in small groups on structured data visualization exercises and UCD methods, and implement simple visualizations.

DATA 511 Data Visualization for Data Scientists (4) Introduction to the visual tools and techniques used in modern data science to develop and deploy data driven insights. Provides a foundation for visualization to support exploratory analysis, statistical modeling, machine learning, and presentation of results on structured and unstructured data. Students develop and present deep analyses for wider audiences. Recommended: basic familiarity with computer programming concepts as well as some prior experience working with data using programming languages like R or Python.

DATA 512 Human-Centered Data Science (5) Fundamental principles of data science and its human implications. Data ethics, data privacy, differential privacy, algorithmic bias, legal frameworks and intellectual property, provenance and reproducibility, data curation and preservation, user experience design and usability testing for big data, ethics of crowdwork, data communication and societal impacts of data science.

DATA 514 Data Management for Data Science (5) Introduces database management systems and techniques that use such systems; data models, query languages, database tuning and optimization, data warehousing, and parallel processing. Intended for professional students and non-CSE-majors. Offered: jointly with CSE D 514.

DATA 515 Software Design for Data Science (5) Introduces software design and engineering practices and concepts, including version control, testing, and automatic build management. Intended for professional students and non-CSE-majors. Offered: jointly with CSE D 515.

DATA 516 Scalable Data Systems and Algorithms (5) Principles and algorithms for data management and analysis at scale. Designs of traditional and modern big data systems and how to use those systems.

Basics of cloud computing. Prerequisite: CSE D/DATA 514 and CSE D/DATA 515 or permission of instructor. Offered: jointly with CSE D 516; A.

DATA 556 Introduction to Statistics and Probability

(5) Overview of probability; conditional probability and independence; Bayes Theorem; discrete and continuous random variables including jointly distributed; key distributions including the normal and its spin offs; properties of expectation and variance; conditional expectation; covariance and correlation; Central Limit Theorem; law of large numbers; Parameter Estimation. Offered: jointly with BIOST 556/STAT 556; A.

DATA 557 Applied Statistics and Experimental

Design (5) Inferential statistical methods for discrete and continuous random variables including tests for difference in means and proportions; linear and logistic regression; causation versus correlation; confounding; resampling methods; study design. Prerequisite: STAT/BIOST/DATA 556 or instructor's permission. Offered: jointly with BIOST 557/STAT 557; W.

DATA 558 Statistical Machine Learning for Data

Scientists (5) Bias-variance trade-off; training versus test error; overfitting; cross-validation; subset selection methods; regularized approaches for linear/logistic regression: ridge and lasso; non-parametric regression: trees, bagging, random forests; local regression and splines; generalized additive models; support vector machines; k-means and hierarchical clustering; principal components analysis. Prerequisite: STAT/BIOST/DATA 557, or permission of instructor. Offered: jointly with BIOST 558/STAT 558; Sp.

DATA 590 Data Science Capstone I- Project

Preparation (2) Part one of a two-course capstone sequence where students organize project teams, select project topics, write a project proposal and begin preparing project data sets. Prerequisite: either permission of instructor, or DATA 511; CSE D 514/DATA 514; CSE D 515/DATA 515; STAT 556/BIOST 556/DATA 556; BIOST 557/STAT 557/DATA 557; and STAT 558/BIOST 558/DATA 558.

DATA 591 Data Science Capstone II- Project

Implementation (3) Part two of a two-course capstone sequence designed to build upon the student driven project from DATA 590. Students will

synthesize and apply knowledge and techniques acquired throughout the MSDS program in working with large data sets, deriving insights from data and sharing insights with other people. Prerequisite: either permission of instructor, or DATA 511; DATA 512; CSE D 514/DATA 514; CSE D 515/DATA 515; CSE D 516/DATA 516; STAT 556/BIOST 556/DATA 556; BIOST 557/STAT 557/DATA 557; STAT 558/BIOST 558/DATA 558; and DATA 590.

DATA 598 Special Topics in Data Science (1-5, max.

15) Introduction to innovative and specialized topics relating to the study of data science in any context.

GRADUATE SCHOOL

GRDSCH 200 Preparing for Graduate Education (2)

Explores graduate education and its structure and organization. Students use interactive assignments, individual reflective work, and professional portfolio development to explore their preparation for graduate education, and develop strategies for pursuing graduate school. Credit/no-credit only.

GRDSCH 501 TA Preparation (1) C. CHANCELLORA

hybrid course (in-person at the TA Conference in September and online during Autumn Quarter) to support graduate students in their work as TAs. Students will gain post-conference support, opportunities to connect with other students, and strategies and resources for their teaching and research roles. Credit/no-credit only. Credit/no-credit only. Offered: A.

GRDSCH 515 Teaching and Learning in Higher

Education: Frameworks and Practices (2) Designed for graduate students seeking to build knowledge and skills in effective teaching practices as a teaching assistant or independent instructor. Students will be introduced to fundamental pedagogical frameworks and practices applicable across the disciplines in: Course design, assessment, active learning strategies, teaching inclusively, and using technology effectively in teaching. Credit/no-credit only.

GRDSCH 525 Acting Up: Teaching Theater for Change (3, max. 6) Tikka O. Sears

Builds skills in social change interactive theater to challenge institutional oppression, advance community dialogue, and promote inclusive educational environments. Emphasizes political education;

storytelling; collaborative playwriting; rehearsal of plays and interventions; discussion; and self-reflection. Culminates in student-organized, public interactive theater performance and dialogue workshops. No previous acting experience required. Credit/no-credit only. Offered: Sp.

GRDSCH 540 Hybrid Pedagogies: Using Technology in Teaching (2) *C. CHANCELLOR, K. MALCOLM*

Students explore pedagogies and practices using technologies for promoting student learning through active engagement; designing and assessing online assignments; and teaching inclusively. Through a blend of face-to-face and online class meetings, students will experience and reflect on models of hybrid teaching. Credit/no-credit only.

GRDSCH 550 Teaching in Global Classrooms: Strategies for Teaching International and Multilingual Students (1)

Explores teaching and learning opportunities created by the increasing enrollment of international and multilingual students in U.S. universities. Focuses on evidence-based teaching practices that leverage the diverse linguistic and cultural assets of global classrooms to enrich learning for all students. Credit/no-credit only.

GRDSCH 595 Teaching and Learning in Higher Education: From Campus to Career (2)

Focuses on the development of teaching materials for academic job searches. Centers on developing engaging and comprehensive written materials that dovetail with research materials. Includes online group work, peer review, and mock interviews. Recommended for advanced graduate students, year 3 or beyond. Credit/no-credit only.

GRDSCH 610 Teaching Mentorship (3, max. 6)

Individualized project, under the direction of a faculty member, focused on issues of teaching and learning at the college/university level and designed to enhance the student's ability to make innovative contributions in teaching. Prerequisite: permission of faculty member, graduate program coordinator, and the Associate Dean of the Graduate School. Credit/no-credit only.

GRDSCH 615 Teaching Assistant and Research Assistant Preparation (1-6, max. 6) Instruction and teaching, learning, research, and resources for

teaching and research assistants. Credit/no-credit only.

GRDSCH 620 Teaching Mentorship Seminar (2)

Credit/no-credit only.

GRDSCH 630 Special Topics in College/University Teaching (2, max. 6)

Interdisciplinary discussion of topics related to college/university teaching, with an emphasis on innovative teaching and preparing for faculty careers. Designed to address topics across disciplines, as a complement to discipline-specific courses offered in departments. Credit/no-credit only.

GRDSCH 640 Seminar on Topics of Diversity and Justice (1)

Interdisciplinary course which engages students as co-creators of a learning environment. Through guest presentations, facilitated discussions, small group work, and other dynamic learning, students gain critical understanding of privilege based on intersecting identities and its use. Also, students will gain skills to work across differences to address oppression. Credit/no-credit only.

HUMAN-COMPUTER INTERACTION AND DESIGN

HCID 501 Immersion Studio (2) Orients students to core ideas and terminology in human-computer interaction and design. Provides key skills instrumental to success in a studio learning environment. Students learn to apply the human-centered design process and experience working in an interdisciplinary studio environment. Offered: A.

HCID 510 Designing Interactive Systems (3) Covers issues relating to the design and interactive technologies, favoring design thinking in lieu of implementation concerns. Skills include design processes, design rationale, abductive reasoning, structured brainstorming, design techniques, and design critiques.

HCID 511 Ideation Studio (5) Introduces student to ideation: the systematic process of generating design ideas, developing idea variations, and identifying ideas that open promising design directions; with hands-on exercises that give students the skills to participate in and lead ideation processes on their own.

HCID 512 Interfaces Lab (3) Develop skills necessary to create interfaces that align with visual interface design standards and functional requirements of screen-based interactions. Provides an interdisciplinary approach to interface design and development. Emphasizes applying knowledge and best practices in interface design, improving visual fidelity, and connecting interface design outputs to other parts of the software engineering process. Offered: AWSpS.

HCID 513 Advanced Interfaces (3) Explores alternatives to graphical user interfaces, such as voice and conversational interfaces, gestural interfaces and spatial interactions, and emergent interactive technologies, such as artificial intelligence, machine learning and more. Students incorporate new concepts and practices in a series of short projects exploring interdisciplinary approaches to designing and developing advanced interfaces. Offered: AWSpS.

HCID 520 User Interface Software and Technology (3) Covers fundamental skills in user interface prototyping and implementation, including tools for low and high fidelity prototyping, software architectures for implementing graphical user interfaces on desktop and mobile platforms, and the toolkits that use these software architectures.

HCID 521 Prototyping Studio (5) Examines user-interface prototyping as a foundational skill in user-centered design. Introduces the tools and uses hands-on exercises to enable students to create and refine user-interface prototypes as part of a design process.

HCID 530 Usability and User Research (3) Teaches concepts on engaging with users in the context of a technology design project. Covers both empirical and analytic evaluation techniques. Methods include user interviewing, in-lab usability testing, field deployments, heuristic evaluation, and cognitive walkthrough.

HCID 531 Evaluation Studio (5) Teaches concepts related to conducting user research and usability evaluations. Introduces students to the methods and hands-on exercises that will enable them to determine user needs and usability and acceptability of interactive system designs.

HCID 540 Capstone Planning (1) Students conduct initial research on topic themes, learn to form effective project teams, and identify appropriate industry sponsors, delivering formal project proposals. HCID students only. Offered: W.

HCID 541 Capstone Studio (8) Team-based capstone design an interactive product relevant to industry challenges. Students apply iterative design, prototyping and research techniques in a studio format, with peer, faculty, and industry sponsor reviews of deliverables, culminating in a portfolio presentation documenting process and final solutions. Studio content supplemented by demonstrations and guest lecturers.

HCID 561 Portfolio and Professional Practices (1) Helps students represent themselves as an interdisciplinary connector. Students prepare a professional portfolio and learn the related components of the job search in order to find and start a career path related to human-computer interaction and design. Offered: Sp.

HCID 590 Design, Use, Build Seminar (1, max. 10) Covers the latest research in human-computer interaction and design, through talks by both UW and outside researchers. Credit/no-credit only. Offered: AWSpS.

HCID 598 Special Topics (1-5, max. 12) Studies of emerging areas and specialized topics in human-computer interaction and design. Offered: AWSpS.

HCID 599 Special Projects (1-5, max. 6) Individual graduate projects in human-computer interaction and design.

HCID 600 Independent Study or Research (1-10, max. 10) Independent coursework or research with a faculty member. Offered: AWSpS.

INDIVIDUAL PHD PROGRAM

IPHD 600 Independent Study (*-)

IPHD 800 Doctoral Dissertation (*-)

MOLECULAR AND CELLULAR BIOLOGY

MCB 508 Teaching College Science: Theory, Methods and Practice (2) *B. Wiggins* Covers the theory and methods of high-level student-centered instruction for diverse college students. Covers active learning and mentored teaching, evaluation design and implementation, fostering of instructor-student relationships, course design and foundational principles of the learning sciences. Students will later apply this material as an Instructor of Record of their own course in an undergraduate department at UW. Credit/no-credit only. Offered: A.

MCB 509 Teaching College Science: Classroom Experience (2) *Ben Wiggins* Practical opportunity for students interested in high-level teaching methods for diverse populations of students. Students will apply teaching skills as Instructor of Record of their own course in an undergraduate department at UW. Prerequisite: MCB 508. Credit/no-credit only. Offered: Sp.

MCB 511 Cell Cycle Control (3) *Breeden, Roberts, Edgar* Studies recent advances in understanding cell-cycle control, arising from genetics and biochemical studies of fission and budding yeast, marine invertebrates, *Drosophila*, amphibians, and cultured cells. Addresses the biochemical processes and molecular interactions and the rate-limiting events in the cell cycle, and the coupling of those events to physiological signals. Offered: A.

MCB 512 Scientific Speaking Seminar (1.5) *Biggins, Peichel* Teaches how to effectively give a scientific seminar about research. Offered: jointly with CONJ 512; W.

MCB 513 Development Journal Seminar (1, max. 12) *Moens, Soriano, Swalla* Examines current literature about specific topics in developmental biology. The seminar chooses current monthly topics and the group meets weekly to discuss published research papers. Topics may include: germ cell specification; cell migration and morphogenesis; axis formation; somitogenesis and stem cells. Offered: AWSp.

MCB 514 Molecular and Cellular Biology Literature Review (2) *Raible* Emphasizes critical evaluation of the original literature orally and in writing. Open

only to first-year students in the Molecular and Cellular Biology program.

MCB 515 Molecular and Cellular Biology Literature Review (2) *Emerman* Emphasizes critical evaluation of the original literature orally and in writing. Open only to first-year students in the Molecular and Cellular Biology Program. Offered: W.

MCB 516 Molecular and Cellular Biology Literature Review (2) *Emerman* Emphasizes critical evaluation of the original literature orally and in writing. Open only to first-year students in the Molecular and Cellular Biology Program. Offered: S.

MCB 517 Topics in Molecular and Cellular Biology (1-5, max. 40) Advanced in-depth coverage of specific areas of molecular and cellular biology of current interest. Lectures by University of Washington faculty and invited speakers involved in research in this area. A basic knowledge of principles of molecular and cellular biology assumed.

MCB 519 Topics in Cancer (1, max. 6) Examination of ways to integrate basic, clinical, and public health sciences to increase understanding of human biology and disease. Seminars in introduction to cancer research as viewed by basic, clinical, and public health sciences, origins of cancer, cancer prevention, cancer progression, and therapies for cancer. Credit/no-credit only.

MCB 520 Tutorial in Molecular and Cellular Biology (1-2, max. 40) *M. EMERMAN* Special topics reading and discussion. Offered: A.

MCB 522 Development I: The Developmental Basis of Human Disease (3) *Moens* Uses recent discoveries in human genetics to guide student learning about animal development. Explores the normal developmental function of genes that have been identified as causal in human developmental disorders such as skeletal dysmorphologies, ciliopathies, autism, and cancer. Offered: A, odd years.

MCB 529 Cell Migration (1.5) *Cooper, Moens* Explores mechanisms of cell migration in vivo and in cell culture. Discusses the cell biology of different forms of cell migration, the extracellular cues that direct migration, and how these cues are integrated

by the migrating cell. Offered: jointly with CONJ 529; W.

MCB 532 Human Pathogenic Viruses (3) *Emerman*
Replication, regulation, and pathogenesis of several groups of human viruses, including human immunodeficiency virus and papillomaviruses. Emphasis on the unique aspects of the viral-like cycles as they relate to effects on infected cells and organisms. Guest lecturers focus on viral immunology, measles, herpes simplex virus, and HHV-8. Offered: A.

MCB 533 Evolutionary Genetics and Genomics (3) *Malik, Peichel* Introduces classic concepts and approaches in evolutionary genetics. Familiarizes students with genomic approaches, tools and resources, and demonstrates how evolutionary approaches and modern genomic tools are brought to bear on important biological questions. Offered: A.

MCB 536 Tools for Computational Biology (3) *Arvind Subramaniam* Introduces computational research methods to graduate students in biomedical science and related disciplines. Provides a survey of the most common tools in the field. Students should have foundational knowledge in reproducible computational science, and can continue learning relevant tools to suit specific research interests. Offered: A.

MCB 539 Biological Basis of Neoplasia (3) *Kemp, Zarbl* Introduces the major themes in research in the biology of neoplastic change. Covers principle molecular mechanisms responsible for tumor initiation and progression, with a specific emphasis on intracellular signaling, DNA repair, cell cycle checkpoints, and loss of normal tissue homeostasis. Offered: Sp.

MCB 540 Nucleic Acid Enzymes (1.5) *Stoddard*
Surveys a wide variety of enzymatic process that control the structure and modification of DNA and RNA, with particular focus on structure, function and mechanism. Unifying features of major reaction types (such as phosphoryl transfers and base modifications) constitute core material. Offered: W.

MCB 543 Logic Constructs and Methodologies of Biological Research (3) Explores the logic and methods of general scientific practice, from

historical, logical, and practical points of view. Covers philosophical and methodological matters upon which there is consensus, and cutting issues of ongoing controversy. Includes both theoretical and practical application of scientific method.

MCB 560 Biotechnology Externship (2-12, max. 12)
Supervised research in a biotechnology company. Prerequisite: permission of instructor and doctoral candidacy. Instructors: Moon Offered: AWSpS.

MCB 580 Teaching Practicum in Molecular and Cellular Biology (2, max. 4) Supervised training in the teaching of molecular and cellular biology. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MCB 599 Research in Molecular and Cellular Biology (*, max. 40) The student rotates through one research laboratory involved in the Molecular and Cellular Biology Program per quarter. Open only to first-year students in the Molecular and Cellular Biology Program. Credit/no-credit only. Offered: AWSpS.

MCB 600 Independent Study or Research (*-)

MCB 700 Master's Thesis (*-) Offered: AWSpS.

MCB 800 Doctoral Dissertation (*-)

MOLECULAR ENGINEERING AND SCIENCES

MOLENG 510 Molecular Engineering Principles (3)
Covers molecular aspects of condensed organic materials, particularly molecular and collective interactions and resulting interfacial forces, entropic phenomena and condensation to systems of higher complexity. Includes the exploration of molecular system constraints and the molecular origin of resulting macroscale properties. Provides introduction into computer modeling.

MOLENG 515 Advanced Molecular Bioengineering (4) *P. STAYTON* Covers fundamentals of molecular recognition and design: thermodynamics, dynamics, and kinetics. Includes molecular design of macromolecules, recognition processes for current molecular engineering applications in biomedicine,

and therapeutics based on cells. Offered: jointly with BIOEN 557; A.

MOLENG 520 Seminar in Molecular Engineering (1, max. 30) Weekly seminars on current topics in molecular Engineering. Credit/no-credit only. Offered: jointly with CHEM 597; AWSp.

MOLENG 525 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with BIOEN 523/CSE 586/E E 523.

MOLENG 530 Organic Electronic and Photonic Materials/Polymers (3) Physical and material concepts determining properties of organic electronic and photonic materials. Discusses electronic structure, physico-chemical characterization, and device application. Includes introduction of electronic band structure of polymers, electrically conducting polymers; organic nonlinear optical electroluminescent materials; polymer optical fibers; two-photon absorption materials for 3-D microfabrication. Offered: jointly with CHEM 564/MSE 560; W.

MOLENG 567 Micro- and Nanostructured Biosensors (3) Focuses on biosensors based on micromachining and nanotechnology. The working principles on molecular detection and analysis are introduced with the fabrication process, system integration and evaluation. Helps students to classify biosensors detecting molecules, design the fabrication process and identify the evaluation methods. Offered: jointly with M E 567; W.

MOLENG 599 Current Topics in Molecular Engineering (1-5, max. 30) *M. SARIKAYA* Readings, lectures, and discussions on topics of current interest in the field of molecular engineering. Offered: AWSpS.

MOLENG 600 Independent Study/Research (*) Study and research under the supervision of an affiliated faculty member.

MOLENG 601 Internship (1-10, max. 99) Molecular Engineering graduate internship and Co-Op program. Requires written report. Prerequisite: Permission of supervisory committee chair. Credit/no-credit only. Offered: AWSpS.

MOLENG 800 Doctoral Dissertation (*) Study and research under the supervision of an affiliated faculty member.

MUSEOLOGY

MUSEUM 500 Introduction to Museology (4) *Wilson O'Donnell* Museum history, philosophy, and basic operations, including organization, income, collection management, conservation, exhibition, security, education, research, and ethics. Offered: A.

MUSEUM 520 Learning in Museums (3) *J. Luke* Explore a range of learning theories and frameworks and their implications for museum practice. The course is organized around three key questions: What is learning? What do we know about learning in museums, specifically? How do we design for learning in museums?

MUSEUM 521 Community Engagement (3) Students learn about the importance of community engagement, the strategies and tactics of implementation and their impact. Explores underlying theories that support community engagement, analyze frameworks and toolkits developed to help museum staff engage with their communities. Offered: W.

MUSEUM 522 Making Meaning: New Models of Museum Interpretation (3) Explores modes of interpretation from labels to tours to collection management to technology. Through case studies, site visits, class discussion, and writing exercises, introduces students to the theory and practice of museum interpretation. Students think critically and creatively about inclusive, relevant, and engaging interpretive strategies for all museums. Offered: W.

MUSEUM 524 Exhibit Development I (3) Fundamental principles of the museum exhibition

process. Considers the full arc of exhibit development and provides a methodology for creating an exhibition from concept to installation. Applies those principles in collaboration with a community-based client. Offered: W.

MUSEUM 525 Exhibit Development II (3) Continues the work of MUSEUM 524 in developing a complete, ready to install temporary exhibition. Prerequisite: MUSEUM 524. Offered: Sp.

MUSEUM 528 Advocacy and Social Change (3) *K. MORRISSEY* Explore the ways museums have engaged in representing and advocating for social change and the implications of that engagement. Readings, discussion, and assignments consider the fragile and interesting boundaries between museums and society and the changing expectation of museums to contribute to the common good of society. Offered: A.

MUSEUM 540 Preservation and Management of Collections (3) Focus on fundamental issues related to collections management, ranging from artifact handling and artifact storage solutions, to cataloging and photographing, as well as registration methods such as accessioning, deaccessioning, loans, and legal aspects of managing a museum collection.

MUSEUM 541 Collections Management Lab (2) Practical training in the fundamental areas of collections management including: artifact handling, cataloging, condition reporting, photo-documentation and various storage methods. Prerequisite: MUSEUM 540, or concurrent enrollment.

MUSEUM 542 Preservation of Collections II (3) *Nicholas J Dorman, Geneva Griswold* Lecture and demonstrations in the recognition and treatment of museum conservation problems for specimens of all types. Application of basic principles to specific preventive and active conservation and restoration problems encountered by curatorial personnel. Offered: W.

MUSEUM 544 Philosophy and Ethics of Museum Collections (3) Explores ethics and issues related to collections housed in contemporary museums, addressing collections of many types including tangible and intangible aspects. Explores the meaning of "preserving cultural/natural

significance": what museums, zoos, aquaria, and botanical gardens preserve, what they do not preserve, for whom, and how.

MUSEUM 560 Museum Administration and Leadership (3) *W. O'Donnell* Principles and practices of museum administration and leadership. Organizational structures and policies; management and leadership theory; board issues; organizational conflicts; planning issues; collection concerns; financial constructs; professional standards; and museum/community relations from an organizational and management perspective. Offered: W.

MUSEUM 562 Museum Law (3) *Adam Eisenberg* Explores the legal issues faced by art and science museums. Topics include copyright/trademark law, how the First Amendment protects controversial exhibits, repatriating Native American remains and cultural artifacts, donor rights, art appraising, wartime looting, and the ongoing debate over stewardship and ownership of the world's natural and cultural resources. Offered: jointly with LAW E 562; A.

MUSEUM 563 Who Owns Humanity? (3) *A. Eisenberg* Explores the legal and ethical questions surrounding the ownership of art, digital collections, ancient skeletons, biological data and DNA. How do changing views of history, education and science shape how ownership is defined in the 21st Century, and what ethical issues are raised for museums and libraries? Offered: W.

MUSEUM 565 Museums and Technology (3) *Angie Ong* Introduction to technology's impacts on visitor experiences, learning, engaging virtual audiences, and developing technology infrastructures. Integrates case studies, class discussions, problem-centered workshops, and guest speakers. Offered: A.

MUSEUM 566 Grant Writing in Museums (3) Students learn how to identify relevant grant funding opportunities for museums and determine the fit for a particular institution or project; gain familiarity with the components of a grant proposal; understand how proposals are reviewed, what funders typically look for, and the characteristics of a high quality grant proposal.

MUSEUM 570 Thesis Design (4) *Jessica Luke*

Prepares students to design their second year thesis; either a research study or a project. Credit/no-credit only. Offered: Sp.

MUSEUM 574 Introduction to Museum Evaluation

(3) *A. Ong* Provides an introduction to the field of evaluation as it relates to museum practice. Introduces basic types, ethics, and practices of evaluation and practices them through readings, reflective fieldwork, mentorships, and discussions.

MUSEUM 575 Museum Evaluation Project I (3)

Angie Ong Applies museological training in Museum Evaluation. Students participate in a quarter-long evaluation project, designed by instructors to further student skills in data collection, and provide an introduction to data management, analysis and presentation within a variety of museum settings. Credit/no-credit only. Offered: Sp.

MUSEUM 576 Evaluation Specialization: Project Design (3)

Angie Ong First course in a yearlong, student-led evaluation project. Builds on previously acquired skills and further develops competencies in project management, outcome development, evaluation planning, and instrumentation design. Students work with museum partners to develop the framework for an evaluation study and present a final evaluation plan implemented in the following quarter. Prerequisite: MUSEUM 574 and MUSEUM 575. Offered: A.

MUSEUM 577 Evaluation Specialization: Data Collection (3)

Angie Ong Second course in a yearlong, student-led evaluation project. Students implement evaluation plan presented in the previous quarter. Students focus efforts on refining their project's instruments, developing research protocols, and collecting and managing project data. Prerequisite: MUSEUM 576. Offered: W.

MUSEUM 578 Evaluation Specialization: Analysis & Dissemination (3)

Angie Ong Culmination of yearlong, student-led evaluation project. Students conduct quantitative and qualitative data analysis, interpret findings, and prepare final project deliverables for museum partners. Dissemination of final project includes a formal presentation and evaluation report. Additionally, students submit a concluding peer-evaluation and reflection of project experience. Prerequisite: MUSEUM 577. Offered: Sp.

MUSEUM 583 Directed Fieldwork in Museum Operations (1-5, max. 15)

Application of general museological training in one or more areas of supervised operation areas, including registration, education, exhibition, development, marketing or public relations. Credit/no-credit only.

MUSEUM 584 Directed Fieldwork in Archaeological Collections (1-5, max. 15)

Application of museological training in curation of archeological collections at the Burke Museum. Supervised work ranges from fundamental collection documentation and research to preventive conservation, storage, and other special curation projects. Prerequisite: MUSEUM 581.

MUSEUM 585 Directed Fieldwork in General Collections (1-5, max. 15)

Application of museological training in the curation of art, historic, botanical, geological, zoological, or other collections. Supervised work ranges from fundamental collection documentation and research to preventive conservation or storage, and other special curation projects. Credit/no-credit only.

MUSEUM 588 Special Topics in Museology (1-5, max. 15) In-depth examination of selected current issues within the field of museology.

MUSEUM 594 Public Programs (3) *Seth M Margolis*

Explore and learn about best practices in museum programming. Students will gain the skills necessary to develop museum education programs from the initial concept to the final product, with an emphasis on the end user. Offered: Sp.

MUSEUM 597 Directed Fieldwork in Audience Research (1-5, max. 15)

Applies museological training in visitor studies gained from audience research coursework. Includes implementation of audience research and evaluation projects within a variety of local museums, zoos, and aquaria. Students develop and practice skills in data collection, analysis, and reporting of results. Prerequisite: MUSEUM 596. Instructors: Morrissey, Satwicz, Visscher Credit/no-credit only. Offered: AWSp.

MUSEUM 599 Careers and Social Capital (3-5)

O'Donnell Prepares students to transition from the academic community of a world-class university to a place of responsibility within a professional

community that is committed to stewardship of the vast natural and created resources of our global communities and environments, including our stories, values, knowledge, mistakes, questions, and aspirations. Offered: Sp.

MUSEUM 600 Independent Study or Research ([1-10]-)

MUSEUM 601 Internship (1-15, max. 15) Faculty supervised off-campus internships in museums and allied institutions. Each internship is individually established and provides students with practical experience and the opportunity to apply and learn new professional skills. Prerequisite: permission of instructor.

MUSEUM 700 Master's Thesis ([1-10]-)

MUSEUM 710 Master's Project ([1-10]-, max. 10) Credit/no-credit only.

MUSEUM 720 Master's Research (1-12, max. 12) Students design and execute a research study that makes a significant contribution to the museum field/literature. The research process includes identifying a research problem, framing research questions, developing instrumentation, collecting data, and analyzing and interpreting the data to answer research questions. Students work individually or in groups to write a journal article describing their research study and findings. Credit/no-credit only. Offered: AWSpS.

NEAR AND MIDDLE EASTERN STUDIES

N&MES 800 Doctoral Dissertation (*-)

NEUROSCIENCE

NEURO 501 Introduction to Neurobiology (3) *Carlson* Survey of molecular, cellular, and developmental neuroscience, including gene regulation, the cytoskeleton, protein sorting in the secretory pathway, growth factors, and neurotransmitter receptors. Includes lecture discussion of original literature.

NEURO 502 Introduction to Neurobiology (5) *Sherk* Systems level survey of vertebrate system, focusing

on sensory system, on motor system, and on neuroanatomy. Lectures cover topics in sensory and motor systems. Laboratory includes brain dissection and study of intact, prosected, and sectioned brain and spinal cord. Emphasis is on human nervous system.

NEURO 503 Cognitive and Integrative Neurobiology (4) *Phillips* Survey of all aspects of neuroscience, including a discussion of higher neural processes like motivation, decision making, attention, learning, and memory. Lecture and discussion of original literature.

NEURO 504 Biophysics of Nerve, Muscle, and Synapse (3) *Sullivan* Introduces biophysical properties of nerve and muscle cells. Topics include intrinsic electrical properties of neurons, ion channels, receptor signaling, calcium signaling, contraction of muscles, and synaptic function. Offered: jointly with P BIO 504.

NEURO 510 Seminar in Neurobiology and Behavior (0.5, max. 30) Biweekly seminar on current topics. Required for students in the graduate program in neurobiology and behavior and for students supported on Graduate Neuroscience Program Training Grant. Credit/no-credit only.

NEURO 511 Seminar in Advanced Neurobiology (1-3, max. 30) Weekly faculty lectures, student presentations, and discussions of past and current scientific literature in neurobiology and behavior.

NEURO 512 Readings in Advanced Neurobiology and Behavior (1-3, max. 30) Guided study of the primary literature of neurobiology and behavior. Emphasizes critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Credit/no-credit only.

NEURO 515 Teaching Practicum in Neurobiology and Behavior (3-6, max. 30) Supervised training in the teaching of neuroscience and related scientific topics. Prerequisite: graduate standing in the neurobiology and behavior graduate program and permission of the instructor. Credit/no-credit only.

NEURO 526 Introduction to Laboratory Research in Neurobiology (4, max. 30) Students become familiar with, and assist in, the performance of research on

ongoing projects in designated laboratories. Emphasis on employed methodology and techniques. Prerequisite: first-year graduate students in neurobiology. Credit/no-credit only.

NEURO 527 Current Topics in Neurobiology and Behavior (1, max. 30) Presentation and discussion of current research provides exposure to diverse areas of neurobiology and behavior research. Prerequisite: graduate student in neurobiology and behavior program or permission of instructor. Instructors: Rieke Credit/no-credit only.

NEURO 528 Computational Neuroscience (3) Introduction to computational methods for understanding nervous systems and the principles governing their operation. Topics include representation of information by spiking neurons, information processing in neural circuits, and algorithms for adaptation and learning. Prerequisite: elementary calculus, linear algebra, and statistics, or permission of instructor. Offered: jointly with CSE 528.

NEURO 535 Research Opportunities in Neurobiology and Behavior (1)

NEURO 541 Neuroendocrinology (3) Emphasizes the cellular and molecular aspects of several topics in neuroendocrinology, including neuropeptide genes, reproduction, steroid hormone regulation of gene expression, mechanisms of hormone action, endocrine rhythms, and neural oscillations. Prerequisite: BIOL 220; BIOC 442 or permission of instructor. Instructors: Steiner Offered: jointly with P BIO 509; W, even years.

NEURO 545 Quantitative Methods in Neuroscience (3) Discusses quantitative methods applicable to the study of the nervous system. Revolves around computer exercises/discussion of journal papers. May include linear systems theory, Fourier analysis, ordinary differential equations, stochastic processes, signal detection, and information theory. Prerequisite: NEUBEH 501, NEUBEH 502, NEUBEH 503, or permission of instructor. Instructors: Rieke Offered: jointly with P BIO 545.

NEURO 548 Molecular Mechanisms of Synaptic Plasticity (2) *Barria* Discusses recent primary literature on the molecular mechanisms underlying structural and functional changes of dendritic spines

and synapses in the mammalian brain as result of synaptic activity and experience. Offered: jointly with P BIO 548; Sp, even years.

NEURO 550 Biophysics of Calcium Signaling (1) Introduction to cellular calcium signaling including theoretical and technical issues of calcium signal detection and biological conclusions. Prerequisite: CONJ 531. Instructors: Hille, Santana Offered: jointly with P BIO 550; Sp, odd years.

NEURO 554 Motor Learning: Cellular and Network Mechanisms (1) *Fetz, Perlmutter* Five-week mini-course reviews the current state of research on cellular and network mechanisms of motor learning. After an introductory overview of behavioral and physiological examples of motor learning in various species and systems, students choose specific topics for discussion, using the primary literature as a source. Offered: jointly with P BIO 554.

NEURO 555 Sensory Receptors (1) *Detwiler, Rieke* Five-lecture mini-course examines how different kinds of sensory receptors detect and respond to different modalities of sensory stimuli. Discussion focuses on the cellular and molecular mechanisms of the underlying transduction processes and the experimental evidence that they are based on. Offered: jointly with P BIO 555.

NEURO 556 Axon Pathfinding Mechanisms (1) *Bothwell* Examines mechanisms governing axon growth cone behavior during embryonic development and during regeneration in the injured adult. Discusses approaches employing both invertebrate and vertebrate model systems. Offered: jointly with P BIO 556.

NEURO 557 Ion Channel Gating (1) *Zagotta* Compares and contrasts mechanisms of gating in ligand-gated and voltage-gated ion channels. Covers basics of ligand gating and voltage gating, kinetic schemes, inactivation and desensitization, gating currents and partial agonists, and ion channel structure. Offered: jointly with P BIO 557.

NEURO 559 Neurobiology of Disease (3) Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases,

autism, psychosis, anxiety disorders, and mood disorders. Offered: jointly with NEURL 559/P BIO 559.

NEURO 561 From Biophysics to Neural Computation (2) Introduces the mathematics and methods of neuronal modeling. Develops, compares, and relates dynamical systems approaches and empirical characterizations of neuronal function. Includes lectures, student-led journal paper discussions, biweekly computational workshops on neuronal modeling packages, and a computations project. Offered: jointly with P BIO 561; Sp.

NEURO 600 Independent Study or Research (*-) Credit/no-credit only.

NEURO 700 Master's Thesis (*-)

NEURO 800 Doctoral Dissertation (*-)

NUTRITIONAL SCIENCE

NUTR 141 Introduction to Foods (5) NW Examines how foods are used by different people and cultures to deliver nutrients and energy. Explores the evolution of the global food supply, food preparation techniques, food patterns, and eating habits as they relate to diets, nutrition, and personal and public health.

NUTR 200 Nutrition for Today (4) NW Examines the role of nutrition in health, wellness, and prevention of chronic disease. Topics include nutrients and nutritional needs across the lifespan, food safety, food security, wellness, body weight regulation, eating disorders, sports nutrition, and prevention of chronic disease. May not be taken for credit if credit earned in NUTR 300. Offered: AWSp.

NUTR 241 Culinary Nutrition Science (3) NW Explores scientific principles behind modern culinary techniques that transform raw foodstuffs into prepared foods that have sensory appeal. Hands-on kitchen demonstrations show how physical and chemical forces acting on solids, liquids, and gases transform raw ingredients into foods with desirable taste, texture, and aroma. Requires access to a full kitchen to complete assignments. Cannot be taken for credit if credit earned in NUTR 441.

NUTR 290 Topics in Food Systems and Nutritional Sciences (1-5, max. 10) Explores issues in food systems and nutrition.

NUTR 302 Food Systems: Harvest to Health (5) NW/I&S Examines the many facets of the modern food supply from production and processing to distribution, marketing, and retail. Systems approach to foods studies considers geopolitical, agricultural, environmental, social, and economic factors along the pathway from harvest to health. Prerequisite: NUTR 200. Offered: ASp.

NUTR 303 Food Systems: Individual to Population Health (5) I&S/NW Examines the food environment in the local community from the public health perspective. Explores where people get their food, what influences this decision, and various aspects of the local food movement, including access to healthy food, urban agriculture, farmers markets, and other public health nutrition initiatives. Includes a weekly discussion section. Prerequisite: NUTR 200. Offered: W.

NUTR 310 Nutrition and the Life Course (4) NW Explores nutrient needs from infancy through adolescence and adulthood, including the physiological basis of nutrient requirements and the genetic, social, and environmental influences on food choices and nutrition status. Uses an evidence-based approach to assess the impact of nutrition across life stages and ways to improve population health by improving nutrition. Prerequisite: NUTR 200.

NUTR 390 Food Seminar (1, max. 3) Examines current food, culinary, and food system issues from production, processing, and marketing to consumption, nutrition, and health. Includes diverse perspectives from producers, processors, public health professionals, and relevant research. Credit/no-credit only.

NUTR 400 Food Systems, Nutrition, and Health Seminar (1, max. 4) I&S Examines emerging issues in food systems, nutrition, and health as they relate to personal and public health. Reviews evidence in the context of food systems and health policy. Credit/no-credit only. Offered: AW.

NUTR 402 Food Systems Modeling and Analysis (5) Provides a foundation in methods of modeling and

analysis used to study food systems. Production, consumption, carrying capacity, food shed analyses, life cycle assessment, system dynamics, and integrated modeling will be addressed. Learn what types of questions are best addressed through modeling approaches, the methods used to conduct food systems models, and the data required to complete the analyses. Prerequisite: NUTR 200; NUTR 302; and NUTR 303 Offered: A.

NUTR 405 Physical Activity in Health and Disease (3) NW Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Prerequisite: either BIOL 118 or BIOL 220.

NUTR 406 Sports Nutrition (3) NW Covers the essentials of human nutrition that improve and sustain optimal performance for sport and exercise. Discusses the effect of eating disorders (in both male and female athletes), weight management, and sport nutrition resources. Prerequisite: NUTR 200.

NUTR 411 Diet in Health and Disease (3) QSR Impact of diet on health and the prevention of obesity, diabetes, cardiovascular disease, and other non-communicable diseases. Examines diet-health relationships; social, environmental, and economic factors in eating behavior; and evidence base behind dietary guidelines. Draws on seminal and recent research in nutrition science and uses examples from recent media coverage. Prerequisite: either NUTR 200 or NUTR 300.

NUTR 412 United States Food Systems Policy (3) I&S Offers a broad introduction to food and nutrition policies in the United States and their impacts on population health. Real-world controversies and debates used to illustrate policy principles, research tools, and policy analysis. Includes topics on public health nutrition, food policy related to population health, and food security. Prerequisite: NUTR 302 Offered: W.

NUTR 420 Global Nutrition: Challenges and Opportunities (3) I&S Examines global dimensions of malnutrition, its assessment and classification, and global policies and programs to improve nutritional

status in developing countries. Emphasizes global consequences of poor nutrition on health, cognition, and development with a focus on the first 1,000 days from conception to age two. Prerequisite: NUTR 200. Offered: A.

NUTR 441 Food and Culinary Science (3) Studies the scientific principles behind culinary techniques, with emphasis on sensory evaluation. Prerequisite: NUTR 200; either CHEM 120 or CHEM 142; and either CHEM 220 or CHEM 237.

NUTR 446 Food Safety and Health (3) Presentation of emerging issues in food safety and toxicology, microbiology, sustainable agriculture, and biotechnology. Examines both domestic and global pressures on the food supply. Examines international and national policies that promote regional solutions for a safe food supply and access to nutritious foods. Offered: W.

NUTR 465 Nutritional Anthropology (3) I&S/NW Examines the interrelationships between biomedical, sociocultural, and ecological factors and their influence on the ability of humans to respond to variability in nutritional resources. Topics covered include diet and human evolution, and nutrition-related biobehavioral influences on human growth, development, and disease resistance. Prerequisite: BIO A 201. Offered: jointly with BIO A 465.

NUTR 490 Special Topics in Nutritional Sciences (1-5, max. 10) Examines emerging issues in nutrition. Reviews the evidence and potential policy implications.

NUTR 493 Food Systems Capstone (8) The Food Systems Capstone is a culminating academic endeavor for students majoring in Food Systems, Nutrition & Health. The capstone provides students with an opportunity to apply knowledge and skills acquired in their courses to a specific food systems problem or issue. Emphasizing systems thinking, the capstone experience will explore solutions to real world issues through focused study and under the direction of a faculty member. Prerequisite: NUTR 302; NUTR 303; and NUTR 402 Offered: Sp.

NUTR 495 Undergraduate Internship (1-5, max. 15) This is a Credit/No Credit course, taken for variable credits, in which you have the opportunity to earn credit for academic work associated with an

internship experience. It is intended to be both practical and educational. Through active participation and completion of assignments, you will reflect on your internship experience and identify how it relates to your coursework, college experience, identity, career readiness, and future. Credit/no-credit only. Offered: AWSpS.

NUTR 499 Undergraduate Research (1-5, max. 10) Independent study and research supervised by a faculty member with appropriate academic interest. Credit/no-credit only. Offered: AWSpS.

NUTR 500 Food Systems, Nutrition, and Health Seminar (1, max. 4) Examines emerging issues in food systems, nutrition, and health as they relate to personal and public health. Reviews evidence in the context of food systems and health policy. Credit/no-credit only. Offered: AW.

NUTR 505 Physical Activity in Health and Disease (3) Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Recommended: human physiology. Offered: jointly with EPI 502.

NUTR 511 Survey of Advanced Nutrition (2-3) Advanced introduction to nutritional sciences. Topics include macronutrient and micronutrient metabolism, energy balance and obesity, nutrient utilization in physical activity, nutritional needs and recommendations throughout the lifecycle, and the relationships between nutrition and atherosclerosis, diabetes, and cancer risk. Offered: A.

NUTR 512 United States Food Systems Policy (3) Offers a broad introduction to food and nutrition policies in the United States and their impacts on population health. Real-world controversies and debates used to illustrate policy principles, research tools, and policy analysis. Includes topics on public health nutrition, food policy related to population health, and food security. Offered: W.

NUTR 513 Food and Society: Exploring Eating Behaviors in a Social, Environmental, and Policy Context (2) Socio-cultural, environmental, and policy factors interact with biological and psychological

characteristics to influence the foods we eat, and when, where, and how we eat them. Uses contemporary readings, films, and critical discussion to explore these macro-scale influences on food, nutrition, and eating behavior. Offered: A.

NUTR 514 Sustainable Food Systems for Population Health (3) Addresses the food system - including land use, production, distribution, marketing, consumption, and food and resource recovery - and how it affects environmental, social, economic, nutritional, and population health. Topics include agriculture, ecosystem integrity, economics, food security, access, equity, resilience, food justice, climate change, and sustainability. Offered: Sp.

NUTR 520 Nutrition and Metabolism I (4) Provides an in-depth overview of the digestion, absorption, and metabolism of macro- and micro-nutrients. Focuses on dietary patterns and nutrient imbalances and how they relate to physiological systems and health outcomes. Recommended: undergraduate course work in biochemistry; anatomy; and physiology. Offered: A.

NUTR 521 Nutrition and Metabolism II (4) Provides in-depth overview of the digestion, absorption, and metabolism of macro- and micro-nutrients. Focus on micronutrients (vitamins and minerals) . Dietary patterns and nutrient imbalances and how they relate to physiological systems and health outcomes. Second of a two-course series. Recommended: undergraduate course work in biochemistry; anatomy; and physiology. Offered: W.

NUTR 526 Maternal and Pediatric Nutrition (4) Examines the influence of maternal, infant, and children's nourishment on growth, development, and health, including children with special healthcare needs, in both individual and population-based environments. Includes nutrition and assessment, critical evaluation of normative data, and evidence-based clinical and community nutritional care and family-centered care. Prerequisite: human nutrition and human physiology.

NUTR 529 Nutrition Research Design ([1-3]-, max. 3) Critical review of selected nutrition literature. Evaluation of experimental design, research protocols, data analyses, and data presentations. Credit/no-credit only.

NUTR 531 Public Health Nutrition (3/6) Offers an introduction to the process of applying the science of nutrition, public health and epidemiology to improve the health of populations and assure access to a safe and nutritious food supply. Through active engagement with a real world public health client, students perform functions of public health: assessment, program planning, policy development, implementation, and evaluation. Recommended: upper-level or graduate coursework in nutritional science, public health, and epidemiology. Offered: A.

NUTR 532 Fieldwork in Public Health Nutrition (1-12, max. 12) Experience and service learning in organizations that plan, deliver, and promote population-based nutrition education and nutrition services. Prerequisite: nutritional sciences graduate student and permission of instructor. Credit/no-credit only. Offered: AWSpS.

NUTR 536 Nutrition Education Principles and Practice (2) Examines theory-based design and delivery of nutrition education, including conducting needs assessments and developing lesson plans, activities, visual aids, and evaluation material. Explores design features of written, oral, and technology-based nutrition education materials and initiatives. Addresses differing learning styles, cultural groups, and literacy levels.

NUTR 537 Laboratory Rotation (1-4, max. 6) Exposure to research being conducted in the laboratories of the graduate nutrition faculty. Provides hands-on experience in laboratory research. Introduces the student to ongoing research for preparation of dissertation topics. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

NUTR 538 Nutritional Epidemiology (3) Application of epidemiological methods to studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enables students to design studies and read the literature in nutritional epidemiology. Prerequisite: EPI 511 or EPI 512 or instructor permission. Offered: jointly with EPI 538.

NUTR 545 Food Safety and Health (3) Presentation of emerging issues in food safety, sustainable agriculture, and biotechnology. Examines both domestic and global pressures on the food supply. Examines international policies that promote

regional solutions for a safe food supply and access to nutritious foods.

NUTR 555 Nutrition in Developing Countries (3) Introduces issues of nutrition in developing countries, with an emphasis on the control and prevention of undernutrition and micronutrient deficiencies. Offered: jointly with G H 555; Sp, odd years.

NUTR 559 Orientation to Clinical Dietetics Practice (3) Provides an orientation to dietetics in clinical settings, including the nutrition care process and integration of evidence-based practice. Offered: A.

NUTR 560 Nutritional Counseling for Chronic Disease (1-3) Examines nutritional intervention strategies and counseling skills that pertain to chronic disease prevention and management. Builds knowledge and skills needed to create appropriate care plans and counseling strategies designed to meet individual client assessment/counseling situations. Offered: Sp.

NUTR 561 Graduate Coordinated Program in Dietetics (1-10, max. 35) Focuses on the competencies for entry-level practice in dietetics. Includes supervised practice experience in wellness, public health, food services, ambulatory care, and clinical care. Prerequisite: GCPD students only. Credit/no-credit only. Offered: AWSpS.

NUTR 562 Nutrition and Chronic Disease (4) Epidemiology/pathophysiology of chronic disease related to nutrition (e.g., obesity, cardiovascular disease, osteoporosis, hypertension, diabetes). Examines nutritional risk/protective factors in relation to public health, individual nutrition, and clinical intervention. Prerequisite: physiology, biochemistry. Offered: Sp.

NUTR 563 Nutrition in Acute Care (4) Assessment of the nutritional demands and hypermetabolic response of trauma, surgery, organ failure, burns, AIDS, and neoplastic disease. Examines specialized nutritional support and substrate requirements in the acute care setting. Prerequisite: either NUTR 562 or permission of instructor. Offered: A.

NUTR 590 Special Topics in Nutritional Science (1-4, max. 4) Examines emerging issues in nutrition. Reviews the evidence and potential policy

implications. Prerequisite: permission of instructor. Credit/no-credit only.

NUTR 595 Nutritional Sciences Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how nutritional sciences are applied to public health settings and in the formulation and application of public health policy. Prerequisite: HSERV 511; NUTR 531; EPI 511; NUTR 520; NUTR 521; NUTR 522. Credit/no-credit only. Offered: AWSpS.

NUTR 596 Nutrition Practice Capstone (1-10, max. 25) Applies and extends students' nutritional sciences, dietetics, or public health knowledge and skills to a practice-focused problem or question with the completion of a mentored capstone project and report. Credit/no-credit only. Offered: AWSpS.

NUTR 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

NUTR 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

NUTR 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

SCIENCE, TECHNOLOGY, AND SOCIETY STUDIES

STSS 591 Science, Technology, and Society Studies in Action (2) *L. CECCARELLI, P. THURTLIE, M. WYLIE* Provides an advanced introduction to science, technology, and society studies. Includes topics of active research interest in history and philosophy of science; social studies of science; science and technology policy; and ethics and equity issues. Credit/no-credit only. Offered: A.

STSS 602 Science, Technology, and Society Studies Capstone Portfolio (2) Students develop, document, and present their STSS portfolio projects under supervision of their STSS advisor. Credit/no-credit only.

INTERDISCIPLINARY GLOBAL INNOVATION EXCHANGE GROUP

TECHNOLOGY INNOVATION

TECHIN 510 Programming for Digital and Physical User Interfaces (4) Students will enhance their fundamental programming skills, with a focus on sensor-based signals and data to demonstrate core concepts, while providing useful tools for prototyping digital and physical user interfaces. This course will introduce students to the practices of engineering interactive systems on mobile and desktop computers and low-cost micro-controllers. Offered: A.

TECHIN 511 Fabrication and Physical Prototyping (3) Students gain fundamental fabrication and rapid prototyping skills for interactive systems, with a focus on industrial and product design, employing tools and processes with physical hardware, products, form factors, enclosures and packages. Offered: Sp.

TECHIN 512 Introduction to Sensors and Circuits (3) Students will gain the background and techniques needed to connect digital systems to the physical world by learning the fundamentals of integrating sensors and microcontrollers. Students will also gain experience in the general process of sensor selection and designing hardware systems. Offered: W.

TECHIN 513 Managing Data and Signal Processing (3) Students will gain the understanding needed to process low level sensor data, analyze and interpret that data using basic machine learning and signal processing, and then store the data in the cloud for later retrieval. Offered: W.

TECHIN 514 Hardware Software Lab 1 (4) Students will be given a real-world experience in developing hardware/software systems to gather an understanding of the entire lifecycle of building such a system from concept through requirements and through implementation, and finally testing. Offered: W.

TECHIN 515 Hardware Software Lab 2 (4) Builds on the foundation of TECHIN 514 and incorporate physical fabrication into course objectives. Students continue prototyping hardware/software systems,

with the added complexity of signal processing, networking, cloud interfaces and web-based user interfaces. Prerequisite: TECHIN 514 Offered: Sp.

TECHIN 516 Robotics Lab 1: Robotic Sensing and Mobility (4) Applied work with autonomous mobile robots able to navigate through semi-structured environments using sensors such as cameras and a robust software stack. Laboratory consists of scale model autonomous cars, equipped with realistic 3D and image sensors, embedded in a scale model of a realistic environment. Prerequisite: TECHIN 510. Offered: W.

TECHIN 517 Robotics Lab 2: Robotic Manipulation and Grasping (4) Applied work with robot arms and graspers, often in combination with sensors such as cameras, to perform manipulation and grasping tasks. Laboratory consists of advanced robot manipulators, configured for a series of tasks of increasing difficulty. A matching simulation environment allows student-written software to be initially partially debugged before engaging the actual robots. Prerequisite: TECHIN 516. Offered: Sp.

TECHIN 520 Design Thinking for Technology Innovation (2) Introduces students to the history, theory, methods and core concepts of design thinking as applied to the design of innovations in hardware and software technology. This course will establish exposure to methods that will be applied to projects in the corresponding studio course, Design Thinking Studio, TECHIN 521.

TECHIN 521 Design Thinking Studio (3) Involves practical application of the approach and methods learned in the corresponding lecture course, Design Thinking for Technology Innovation (TECHIN 520). Students apply their understanding to a specific problem and context that they will develop during the class. Offered: A.

TECHIN 522 The History and Future of Technology (2) Gives students an understanding of past trends in hardware and software technology to understand how technology has changed over time. This will be in combination with techniques for enabling students to think about future technology trends and develop prototypes for futuristic ideas. An exploration of technology adoption and maturation models will ground students in the analysis skills to

recognize the user and business contexts. Offered: W.

TECHIN 523 User Research and Evaluation Studio (3) This project-based course focuses on the user research and evaluation components of the design process. Students learn methods to engage stakeholders and elicit their needs to provide insight for defining requirements for ethically-grounded designs and aspects of evaluation of technology designs with potential users, including usability and user experience evaluation techniques. Offered: Sp.

TECHIN 524 Visual, Industrial and Interaction Design Studio (3) Immerses students in the theory and practice of basic design concepts for the design of interactive products that are functionally, emotionally and aesthetically appealing. Offered: S.

TECHIN 530 Essentials of Entrepreneurship (3) Introduces business strategy fundamentals and an exploration of key issues and strategies involved in the process of starting up a new enterprise as well as practice in organizational strategy analysis and development.

TECHIN 531 Planning and Managing Hardware/Software Development (2) Students gain experience in creating a software/hardware product road map and an engineering/development plan. Offered: S.

TECHIN 532 Introduction to Finance and Accounting for Entrepreneurs (2) This course provides the financial tools and mindset needed to become a successful entrepreneur. This course teaches common financial vocabulary, how to read and interpret the main financial statements (Balance Sheet, Income Statement and Statement of Cash Flows), capital budgeting fundamentals and valuation fundamentals. Offered: Sp.

TECHIN 533 Corporate and IP Law for Technology Innovators (2) Introduces key areas of business law, including common organizational structures such as corporations, LLCs, and nonprofit/low-profit entities. Covers the roles of founders, directors and shareholders in each structure, as well as the basics of intellectual property and copyright law. Offered: S.

TECHIN 534 Building Effective Teams (3) This course will equip students with tools to establish strong, shared commitment to a compelling team purpose, bring about collective buy-in to concrete performance objectives, promote team member adherence to a set of suitable work rules and roles, and foster the interpersonal trust and respect crucial to mutual team member support and, ultimately, extraordinary team performance. Credit/no-credit only. Offered: S.

TECHIN 540 Integrated Launch Studio 1 (4) The first quarter of a two-quarter course sequence, students work in teams with guidance from industry sponsors and mentors to plan and execute front-end phases of a comprehensive Launch Project. Teams conduct initial research, prototyping for a technology solution proposal, and early functional prototype toward development of a solution demonstration that can be considered for commercialization via external funding or acquisition. Prerequisite: TECHIN 510; TECHIN 512; TECHIN 513; TECHIN 514; TECHIN 515; and TECHIN 523. Offered: S.

TECHIN 541 Launch Seminar (2) Focuses on design and software/hardware industry trends and career outlook. Students develop a personal career vision and plan based on their experience, interests, and skills. Offered: AW.

TECHIN 542 Integrated Launch Studio 2 (8) The final quarter of the two-quarter, team-based project, students continue their work to plan and complete the final phases of a comprehensive MSTI Launch Project. Teams will build on previous phases of exploration with more technical prototyping to develop and refine their solutions, culminating in the

development of a technology-based solution proposal, prototype demonstration, and proposed business case for further development or funding. Prerequisite: TECHIN 510; TECHIN 512; TECHIN 513; TECHIN 514; TECHIN 515; TECHIN 523; and TECHIN 540. Offered: A.

TECHIN 599 Special Projects (1) Individual graduate projects for the Masters of Science in Technology Innovation. Credit/no-credit only. Offered: Sp.

TECHIN 600 Independent Study or Research (1-10, max. 10) Supervised independent study work to individual students in order to flexibly address the academic and professional development and research interests of individual students. Offered: AWSpS.

TECHIN 601 Internship (1-) An experiential learning opportunity with technology employers that provide skill building and professional formation activities for students for future professional employment. Students will complete project work and skill-building activities such as goal setting; analysis and reflection; giving and receiving feedback; and debriefing their learning experience. Prerequisite: TECHIN 510; TECHIN 511; TECHIN 512; TECHIN 513; TECHIN 514; TECHIN 515; TECHIN 520; TECHIN 521; TECHIN 522; TECHIN 523; TECHIN 524; TECHIN 530; TECHIN 531; TECHIN 532; TECHIN 533; TECHIN 534; TECHIN 540; and TECHIN 542. Offered: W.

TECHIN 700 Master's Thesis (1-2, max. 2) Individual graduate thesis research and presentation for the Global Innovation Exchange (GIX) Dual Degree program. Offered: AWSpS.

INTERSCHOOL OR INTERCOLLEGE PROGRAMS

BIOENGINEERING

BIOENGINEERING

BIOEN 215 Introduction to Bioengineering Problem Solving (3) *Alyssa C Taylor* Introduces bioengineering through a problem solving approach. Topics include: creative problem solving techniques, self-directed inquiry, engineering ethics, social constraints, and engineering design process.

BIOEN 217 MATLAB Fundamentals for Bioengineers (1) *Christopher Neils* Introduction to scientific programming, using both standard programming methods and MATLAB-specific strategies. Intended as preparation for the Bioengineering core sequence. Applications include curve fitting, simulations, ODE solutions, and image processing fundamentals, executed as in-class tutorials and final project. Prerequisite: either CSE 142, CSE 160, or AMATH 301, which may be taken concurrently. Credit/no-credit only.

BIOEN 290 Guided Independent Studies on Transformative Science (4) *NW G. POLLACK* Intensive laboratory experience mixed with lectures, readings, and discussions aimed at achieving deep understanding of scientific approach, particularly the nature of paradigm shifts, role of governmental support and management of science, power of orthodoxy, role of challenger, and fate of unpopular scientific views. Offered: W.

BIOEN 299 Introduction to Bioengineering (1) *G. POLLACK* Lectures on the various aspects of bioengineering; orientation in bioengineering studies and practice. Credit/no-credit only. Offered: ASp.

BIOEN 315 Biochemical Molecular Engineering (3) *V. Daggett, D. Ratner* Introduces the requisite organic, physical, and biochemistry for incoming bioengineers to understand biological systems at the molecular level. Prerequisite: CHEM 223, CHEM 237 or CHEM 335; BIOL 200, which may be taken concurrently. Offered: Sp.

BIOEN 316 Biomedical Signals and Sensors (4) *C. NEILS* Introduces the sources, detection, and

processing of signals in medical instrumentation. Includes analog and digital signal processing in the time and frequency domains. Emphasizes component strengths and limitations, to develop systems that improve safety, accuracy, and reliability. Prerequisite: AMATH 301 and PHYS 122; BIOEN 317, which must be taken concurrently; either MATH 307 or AMATH 351, which may be taken concurrently. Offered: Sp.

BIOEN 317 Biomedical Signals and Sensors Laboratory (2) *A. Yazdan-Shahmorad* Uses computational and experimental projects covering methods to acquire, process, and analyze signals from physiological and biochemical origins. Co-requisite: BIOEN 315 and BIOEN 316. Offered: Sp.

BIOEN 325 Biotransport I (4) *Y. Zheng* Introduces momentum and heat transport in medical and biological systems. Examines how differential and control-volume analyses produce ordinary and partial differential equations; develops analytical and computational solution methods. Prerequisite: AMATH 301; either MATH 136, MATH 307, or AMATH 351; PHYS 122. Offered: A.

BIOEN 326 Solid and Gel Mechanics (4) *W. THOMAS* Introduces solid mechanics and interactions of biological structures and medical materials. Emphasizes the relationships between composition, structure, properties, and performance of metals and ceramics, synthetic and natural macromolecules, cells, tissues, and self assembling systems. Prerequisite: either CHEM 162, CHEM 164, or CHEM 165; PHYS 122; minimum grade of 2.0 in BIOEN 315. Offered: A.

BIOEN 327 Fluids and Materials Laboratory (2) *C. NEILS* Practical exploration of the behavior of fluids and soft materials that occur in biological systems and biomedical devices; and the interaction between cells and their environment. Includes methods of measurement, analysis, and design. Co-requisite: BIOEN 325 and BIOEN 326. Offered: A.

BIOEN 335 Biotransport II (3) *J. BRYERS* Studies the principles of combined mass transport in homogeneous and heterogeneous reaction systems

as applied to biological processes. Introduces chemical and biochemical reaction kinetics, methods of evaluating kinetic parameters for reaction rate data, and prediction of the performance of biological and biochemical processes. Prerequisite: minimum grade of 2.0 in BIOEN 325. Offered: W.

BIOEN 336 Bioengineering Systems and Control (3)

H. SAURO Reviews linear and nonlinear systems analysis and control system design and biological and medical applications. Prerequisite: minimum grade of 2.0 in BIOEN 327; either MATH 136, MATH 308, or AMATH 352. Offered: W.

BIOEN 337 Mass Transport and Systems Laboratory (2)

Alyssa C Taylor Uses computational and experimental laboratory exercises to demonstrate time- and space-dependent linear and nonlinear systems with specific emphasis on bioengineering application. Prerequisite: BIOEN 327; BIOEN 335 and BIOEN 336, which must be taken concurrently; and either STAT 311, STAT 390, Q SCI 381, or IND E 315, which may be taken concurrently. Offered: W.

BIOEN 345 Failure Analysis and Human Physiology (4)

S. Pun, M. Regnier, M. Scatena Applies engineering analysis to understand human physiology of the engineering of solutions to medical and biological problems. Includes laboratory. Prerequisite: BIOL 220; minimum grade of 2.0 in each of BIOEN 215, BIOEN 335, BIOEN 336, and BIOEN 337. Offered: Sp.

BIOEN 400 Fundamentals of Bioengineering Design (3)

Kim A. Woodrow Preparatory project-based course that develops understanding of the engineering design process and incorporates modern tools and methodologies for developing innovative health technologies. Prerequisite: BIOEN 337; either STAT 311, STAT 390, Q SCI 381, or IND E 315; BIOL 220; and PHYS 122. Offered: Sp.

BIOEN 401 Bioengineering Capstone Proposal (1)

P. Yager Teaches proposal-writing principles and guides the development and planning of individually-based senior capstone projects. Prerequisite: BIOEN 337; STAT/MATH 390 or IND E 315; BIOL 180, 200, 220; PHYS 121, 122. Co-requisites: BIOEN 400 Offered: Sp.

BIOEN 402 Bioengineering Capstone Research and Design ([2-6]-, max. 10) Independent senior design project. Prerequisite: BIOEN 401. Offered: AWSpS.

BIOEN 403 Bioengineering Capstone Research (2-, max. 4) Independent senior research project.

Prerequisite: BIOEN 401. Offered: AW.

BIOEN 404 Bioengineering Team Design I (3)

C. Neils First course in team design project course sequence.

Prerequisite: BIOEN 400. Offered: W.

BIOEN 405 Bioengineering Team Design II (4)

A. TAYLOR AMOS Second course in team design project course sequence. Prerequisite: BIOEN 404. Offered: Sp.

BIOEN 410 Bioengineering Honors Seminar (1)

Service-learning for departmental honors students.

Credit/no-credit only. Offered: A.

BIOEN 415 Bioconjugate Engineering (4)

D. Ratner Applies bioconjugate and molecular engineering methods for use in nanotechnology, drug delivery, biomaterials, diagnostics, medical devices, and biomedical research. Students learn how to engineer molecular and macromolecular systems using versatile bioconjugate techniques applicable to both industry and academia. Prerequisite: BIOEN 315, CHEM 221, CHEM 224, CHEM 239, or CHEM 337 Offered: A.

BIOEN 420 Medical Imaging (4)

C. YUAN Various medical imaging modalities (x-rays, CT, MRI, ultrasound, PET, SPECT optical imaging, etc.) and their applications in medicine and biology. Extends basic concepts of signal processing (BIOEN 303) to the two and three dimensions relevant to imaging physics, image reconstruction, image processing, and visualization. Prerequisite: either BIOEN 316 or E E 235; either MATH 136, MATH 308, or AMATH 352; either CSE 142 or AMATH 301.

BIOEN 423 Introduction to Synthetic Biology (3)

Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136, MATH 307, or AMATH 351; and either MATH 308, AMATH 352, or CSE 311 Offered: jointly with CSE 486/E E 423; A.

BIOEN 424 Advanced Systems and Synthetic Biology

(3) H. Kueh Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems, signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 401, BIOEN 423, E E 423, or CSE 486. Offered: jointly with CSE 487/E E 424; Sp.

BIOEN 425 Laboratory Methods in Synthetic Biology

(4) Designs and builds transgenic bacterial using promoters and genes taken from a variety of organisms. Uses construction techniques including recombination, gene synthesis, and gene extraction. Evaluates designs using sequencing, fluorescence assays, enzyme activity assays, and single cell studies using time-lapse microscopy. Prerequisite: either BIOEN 423, E E 423, or CSE 486; either CHEM 142, CHEM 144, or CHEM 145. Offered: jointly with CSE 488/E E 425; W.

BIOEN 436 Quantitative Physiology (3) Hao Yuan

Kueh Develops a foundation of human physiology by examining the homeostasis of vital parameters within the body, and the physiological properties of human cells, tissue, and organs. Recommended: MATH 107 or AMATH 351; courses in ordinary differential equations; probability theory; introductory programming; and introductory cell and molecular biology.

BIOEN 440 Introduction to Biomechanics (4) J.

SANDERS Presents the mechanical behavior of tissues in the body and the application to design of prostheses. Tissues studies include bone, skin, fascia, ligaments, tendons, heart valves, and blood vessels. Discussion of the structure of these tissues and their mechanical response to different loading configurations. An important part of the class is a final project. Offered: jointly with M E 445; Sp.

BIOEN 447 Fundamentals of Magnetic Resonance and Ultrasound Imaging (4) M. Averkiou

Principles and uses of biomedical imaging with magnetic resonance imaging (MRI) and ultrasound are presented from an engineering viewpoint. Topics include the physics of MRI and ultrasound, principles of image formation, clinical applications, and the technology supporting important modes of modern imaging equipment. Prerequisite: BIOEN 316 or BIOEN 317. Offered: W.

BIOEN 449 Therapeutic and Diagnostic Ultrasound

(4) M. AVERKIOU Fundamentals of ultrasound leading to real-time ultrasound imaging; sound beams and signals, transducers, arrays and array beamforming; ultrasound interaction with tissue; Doppler and Color-flow; nonlinear imaging and contrast agents. Ultrasound bioeffects and therapeutic ultrasound: thermal therapies, HIFU, hyperthermia and BIO heat equation; cavitation, lithotripsy; drug delivery. Elastography, photoacoustic imaging. Prerequisite: BIOEN 316 or BIOEN 317. Offered: Sp.

BIOEN 451 Optical Coherence Tomography (4) R.

Wang Describes the basic physics and engineering principles of optical coherence tomography, and rapid development of imaging applications in medicine and biology. Extends basic concepts of signal processing and instrumentation to imaging physics (optics) , image reconstruction, image processing, and visualization. Prerequisite: BIOEN 316 or E E 235; and MATH 136, MATH 308, or AMATH 352; recommended: Contemporary Light Microscopy and Biophotonics Offered: A.

BIOEN 454 Bioengineering Solutions to Improve the Health of Families Worldwide (1) I&S, DIV Alexis L

Kaushansky Seminar series that engages students in interdisciplinary discussions about global health. Explores how bioengineering approaches contribute to (1) the study of problems of global health importance, (2) the development of diagnostics, and (3) the discovery of interventional strategies to improve human health. Emphasizes collaboration between students and researchers with backgrounds in infectious disease, basic science, and bioengineering. Credit/no-credit only. Offered: jointly with G H 454; A.

BIOEN 455 BioMEMS (4) Albert Folch

Introduction to BioMEMS. State-of-the-art techniques in patterning biomolecules, machining three-dimensional microstructures and building microfluidic devices. Various biomedical problems that can be addressed with microfabrication technology and the engineering challenges associated with it. Biweekly labs. Prerequisite: BIOEN 316. Offered: W.

BIOEN 457 Advanced Molecular Bioengineering (4)

P. STAYTON Fundamentals of molecular recognition: thermodynamics, forces, kinetics. Manipulation of recognition processes for current molecular

bioengineering research and development. Fundamental physical chemistry of molecular recognition in the context of biomedicine. Therapeutics based on cells. Prerequisite: either BIOEN 315 and BIOEN 335. Offered: A.

BIOEN 460 Neural Engineering (3) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Introduces the field of Neural Engineering: overview of neurobiology, recording and stimulating the nervous system, signal processing, machine learning, powering and communicating with neural devices, invasive and non-invasive brain-machine interfaces, spinal interfaces, smart prostheses, deep-brain stimulators, cochlear implants and neuroethics. Heavy emphasis on primary literature. Prerequisite: either BIOL 130, BIOL 162, or BIOL 220; and one of the following: MATH 308, AMATH 301, or AMATH 352. Offered: jointly with E E 460; A.

BIOEN 461 Neural Engineering Tech Studio (4) *Azadeh Yazdan-Shahmorad, Chet T Moritz* Neural engineering design and translational engineering. Groups design, build and present a neural engineering prototype project to a panel of industry judges. Prerequisite: BIOEN 460/E E 460. Offered: jointly with E E 461.

BIOEN 463 Optogenetics (3) *Andre Berndt* Overview of optogenetics, which utilizes light-activated ion channels and fluorescent proteins to control and monitor neuronal activity through remote light stimulation in intact brain tissue. Includes (1) molecular basis, (2) tools and instrumentation, (3) experimental design, and (4) application range of optogenetic approaches. Builds a robust foundation for designing contemporary optogenetic experiments. Offered: W.

BIOEN 466 Neural Computation and Engineering Laboratory (3) *NW Amy Orsborn* Introduces neural recording and quantitative analysis techniques to students with a background in quantitative methods. Prerequisite: Either AMATH 342, BIOL 162, or BIOL 220; and one of the following: MATH 308, AMATH 301, or AMATH 352. Offered: jointly with E E 466.

BIOEN 467 Biochemical Engineering (3) *F. BANEYX* Application of basic chemical engineering principles to biochemical and biological process industries such as fermentation, enzyme technology, and biological waste treatment. Rapid overview of relevant

microbiology, biochemistry, and molecular genetics. Design and analysis of biological reactors and product recovery operations. Prerequisite: CHEM E 340; either CHEM 223, CHEM 237, or CHEM 335. Offered: jointly with CHEM E 467; W.

BIOEN 468 Real-Time Biosignal Processing (3) *C. Neils* Lab-based introduction to techniques for real-time signal acquisition, processing, and output, emphasizing software as an interface between user and electronic circuits. Students write programs for implementation both in graphical programming environments and in portable microprocessor platforms. In-depth discussion of hardware specifications and implications for circuit design. Prerequisite: Either BIOEN 316, or E E 215 and E E 235. Offered: W.

BIOEN 470 Systems Immunology and Immunoengineering (3) *Hao Yuan Kueh* Explores current progress towards a quantitative, systems-level understanding of immune system function. Topics include sensitivity and selectivity in immune receptor signaling, cell-cell coordination by cytokine communication, and cell engineering for immunotherapy. Prerequisite: MATH 307 or AMATH 351.

BIOEN 472 Biosensors for Cancer (4) *Albert Folch* Introduces the broad field of biosensors for cancer diagnostics. Recommended: basic cancer biology, basic organic chemistry, basic materials science. Offered: A.

BIOEN 474 Immunoengineering (3) *K. Woodrow* Covers cell and tissues of immune system; lymphocyte activation and specificity; cell biology of antigen processing and preservation; and effector mechanisms. Includes discussion of concepts in theoretical immunology used to describe viral dynamics and the dynamics of immune responses. Students present case studies in the pathogenesis of immunologically mediated diseases. Offered: W.

BIOEN 475 Global Health Technology: Molecular Diagnostics (4) *B. Lutz* Teaches engineering principles, tools, and technologies needed to practice or develop nucleic acid (DNA/RNA) diagnostics and their context in global health. Recommended: Advanced Engineering, Chemistry or math background. Offered: W.

BIOEN 481 Engineering Cell Biology (3) *D. Kim*

Introduces engineering approaches for analysis and control of cell structure and function, and application of such technologies in cell biology studies. Covers the basics of cell biology, engineering cellular microenvironments, as well as effects of external engineering stimuli on cellular processes, which have significant implications in various diseases such as cancer, neuromuscular disease, and cardiovascular disease. Prerequisite: CHEM 142 and BIOL 200; recommended: Introductory Biology, General Chemistry Offered: A.

BIOEN 483 Vascular Biology and Engineering (3) *Y. Zheng*

Vascular Engineering has emerged to provide strategies for generating vascular grafts with long-term patency, and vascularized tissues for regenerative medicine and disease modeling. Focuses on understanding the structure and function of different vascular beds in vivo, and learning the cutting edge research and engineering principles in vascular biology and engineering. Recommended: Introductory Biology, General Mechanics, and Cell Biology Offered: W.

BIOEN 485 Computational Bioengineering (4) *W. THOMAS*

Introduction to computational and mathematical analysis of biological systems, including control, stochastic, and transport systems. Lectures and laboratory sessions emphasize biochemical systems, but also include electrical, mechanical, and fluidic systems. Prerequisite: BIOEN 335; either AMATH 351 or MATH 307. Offered: Sp.

BIOEN 486 Tissue Engineering (3) *D. Kim* Tissue structure and function, scaffold design, applications to specialized tissues and organs. Prerequisite: BIOEN 315. Offered: W.

BIOEN 487 Bioengineering and Nanotechnology (3)

X. Gao Explores basic concepts of nanoscience and the current literature, focusing on practical applications for nanotechnology in biology and medicine. Prerequisite: CHEM 142, CHEM 144, or CHEM 145; BIOL 180. Offered: W.

BIOEN 488 Computational Protein Design (4) *V. Daggett*

Explores methods in protein engineering, emphasizing biomedical and biotechnological applications. Includes molecular visualization, homology modeling, molecular dynamics, computational protein design, and evaluation of

designs. Introduces current research in subject area. Students learn to use and apply computational tools to investigate design problems. Prerequisite: BIOEN 315. Offered: W.

BIOEN 489 Advanced Tissue Engineering (3)

Develops advanced knowledge in tissue engineering. Primarily through critical assessment of seminal publications in areas such as biomaterials, biofabrication, organ decellularization, cellular self-organization, organoids, and regenerative medicine. Students identify groundbreaking studies in tissue engineering and communicate the impact to other scientists and the public. Prerequisite: BIOEN 486.

BIOEN 490 Engineering Materials for Biomedical Applications (3) *J. Bryers*

Combined application of principles of physical chemistry and biochemistry, materials engineering, to biomedical problems and products. Applications include implants and medical devices, drug delivery systems, cell culture processes, diagnostics, and bioseparations. Offered: jointly with CHEM E 490; A.

BIOEN 491 Controlled-Release Systems (3) *S. PUN*

Mechanisms for controlled release of active agents and the development of useful drug delivery systems for this purpose. Release mechanisms considered include diffusive, convective, and erosive driving forces. Delivery routes include topical, oral, and in vivo. Some special case studies covered in detail. Offered: jointly with CHEM E 491; W.

BIOEN 492 Surface Analysis (3) *D. Castner*

Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials, science wear, and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger) : ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with CHEM E 458; Sp.

BIOEN 493 Advanced Surface Analysis (3)

Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 458 or BIOEN 492. Offered: jointly with CHEM E 493; W.

BIOEN 494 Advanced Drug Delivery (3) S. PUN

Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Prerequisite: BIOEN 491. Offered: Sp.

BIOEN 497 Bioengineering Education Outreach (1-2, max. 6)

Work with K-12 schools or community organizations. Current science education research and instructional techniques. May involve presentations or instruction in hands-on activities. Credit/no-credit only.

BIOEN 498 Special Topics (1-6, max. 15)

Topics of current interest in the field, offered as lectures, conferences, or laboratory. Offered: AWSpS.

BIOEN 499 Special Projects (1-6, max. 24)

Individual undergraduate bioengineering projects (research or independent study) under the supervision of an instructor. Credit/no-credit only. Offered: AWSpS.

BIOEN 501 Molecular Bioengineering (4)

Examines advanced topics in molecular diffusion, reaction kinetics, and convective transport modeling as applied to biological systems. Includes mathematical analysis and numerical simulation techniques applied to: Non-Fickian diffusion, rotational versus translational diffusion, immobilized enzyme kinetics, drug release, and gene delivery.

BIOEN 502 Cellular Bioengineering (4)

Covers basic principles of cell biology (including cell structure, function, and signaling), recombinant RNA/DNA technology, and specific examples of cellular bioengineering applications including gene delivery, RNA silencing, and tissue engineering. Prerequisite: BIOEN 501.

BIOEN 503 Systems Bioengineering (4)

Explores whole-body or organ physiology topics from an engineering perspective. Uses various model systems to elucidate engineering principles such as feedback control and homeostatic regulation. Includes real-world examples, computer modeling, and research design approaches. Prerequisite: BIOEN 502.

BIOEN 504 Introduction to Technology Commercialization (4) M. O'Donnell, B. Ratner

Explores essential business, legal, engineering, and other skills necessary to take new technology from research to market. Covers intellectual property, market analysis, licensing, funding mechanisms such as venture capital, and product marketing. Offered: A.

BIOEN 505 Biomedical Entrepreneurship (4)

Explores essential business, legal, engineering, and other skills necessary to take new technology from research to market. Covers intellectual property, market analysis, licensing, funding mechanisms such as venture capital, and product marketing; introduces strategic planning, management of commercialization effort. Offered: W.

BIOEN 506 Applying Technology Commercialization (1)

Focuses knowledge of entrepreneurship within the spaces of medical devices, hardware/software, and energy, into a practical description of a potential start-up company. Corequisite: ENTRE 540. Credit/no-credit only.

BIOEN 509 Bioengineering Departmental Seminar (1, max. 16)

Research review and discussions centered on demonstrating approaches and solving scientific problems. Seminar lectures led by faculty and visiting faculty in Bioengineering and related disciplines. Credit/no-credit only. Offered: WSp.

BIOEN 511 Biomaterials Seminar (1, max. 18) D. CASTNER, L. GAMBLE

Presentation of student research results. Prerequisite: permission of instructor. Credit/no-credit only. Offered: jointly with CHEM E 511.

BIOEN 513 Current Topics in Cardiac Physiology (1, max. 3) M. REGNIER

Current research in cardiac physiology. Student presentation and discussions of current research methodologies. Credit/no-credit only.

BIOEN 515 Bioconjugate Engineering (4) D. Ratner

Applies bioconjugate and molecular engineering methods for use in nanotechnology, drug delivery, biomaterials, diagnostics, medical devices, and biomedical research. Students learn how to engineer molecular and macromolecular systems using versatile bioconjugate techniques applicable to both industry and academia. Recommended: Basic organic chemistry, biochemistry, molecular engineering Offered: A.

BIOEN 516 Medical Imaging Seminar (1) Weekly seminars, presented by UW faculty members, researchers and graduate students from UW, other academic institutions, and industry, on image computing and medical imaging. Topics include digital video, image processing, computer graphics, video/image compression, image analysis, algorithms and systems, pattern recognition, multimedia computer architectures, and other applications. Credit/no-credit only.

BIOEN 518 Healthcare Transformation: Forces, Directions, Implications (2) *L. HUNTSMAN* Introduces the history, current realities and forces driving change in healthcare and provides an opportunity to use this knowledge to evaluate contemporary attempts to innovate. Addresses implications for those involved in the science, technology, business and policy of medicine. Offered: W.

BIOEN 520 Musculoskeletal Biomechanics (4) Engineering principles and mechanics applied to the musculoskeletal system including structure-function property relationships of musculoskeletal tissues, the biomechanics of joint systems, and applications of biomechanics in industry and research. Offered: jointly with M E 527.

BIOEN 522 Biomechanics of Soft Tissue (3) *J. SANDERS* Applies soft tissue biomechanics to medical research. Develops specific biomechanical questions and experiments to address those aims or hypotheses.

BIOEN 523 Introduction to Synthetic Biology (3) Studies mathematical modeling of transcription, translation, regulation, and metabolism in cell; computer aided design methods for synthetic biology; implementation of information processing, Boolean logic and feedback control laws with genetic regulatory networks; modularity, impedance matching and isolation in biochemical circuits; and parameter estimation methods. Prerequisite: either MATH 136 or MATH 307, AMATH 351, or CSE 311 and MATH 308 or AMATH 352. Offered: jointly with CSE 586/E E 523/MOLENG 525.

BIOEN 524 Advanced Systems and Synthetic Biology (3) Covers advanced concepts in system and synthetic biology. Includes kinetics, modeling, stoichiometry, control theory, metabolic systems,

signaling, and motifs. All topics are set against problems in synthetic biology. Prerequisite: either BIOEN 523, E E 523, or CSE 586. Offered: jointly with CSE 587/E E 524; Sp.

BIOEN 530 Bioengineering Professional Series I: Literature Analysis (2) *V. DAGGETT* Skills in scientific literature analysis developed through topics in bioengineering. Credit/no-credit only. Offered: A.

BIOEN 531 Bioengineering Professional Series II: Proposal Writing (2) *M. SCATENA* Covers grant and fellowship proposal writing. Offered: W.

BIOEN 532 Bioengineering Professional Series III: Professional Skills Development (1) *M. Averkiou* Key areas of professional development related to the bioengineering field, including oral communication, management, networking, and interviewing. Credit/no-credit only. Offered: Sp.

BIOEN 536 Quantitative Physiology (3) *Hao Yuan Kueh* Develops a foundation of human physiology by examining the homeostasis of vital parameters within the body, and the physiological properties of human cells, tissue, and organs. Recommended: MATH 107, AMATH 351, or equivalent; courses in ordinary differential equations; probability theory; introductory programming; and introductory cell and molecular biology.

BIOEN 540 Bioengineering Clinical Practicum (4) Clinical needs identification for the Master of Applied Bioengineering. Students observe diagnosis and treatment in a clinical setting to learn current practice, drivers, and constraints. Students learn to identify and communicate clinical needs not met by current technology, but with potential bioengineering design solutions. Addresses ethics, patient privacy, and medical/academic communication.

BIOEN 541 Design Skills I: Clinical Needs Evaluation (3) First quarter of Design Skills sequence in Master of Applied Bioengineering. Student teams initiate design process through needs evaluation, market analysis, prior art research, identification of design specifications, and brainstorming of design concepts. Offered: A.

BIOEN 542 Design Skills II: Clinical Needs Evaluation (4) Second quarter of Design Skills sequence.

Students conceive, evaluate, and present design options to potential clinical users, utilize feedback to revise design concepts, and prepare a formal design proposal. Prerequisite: BIOEN 541 Offered: W.

BIOEN 543 Design Skills III: Project Implementation (4) Culmination of the three-quarter Design Skills sequence in the Master of Applied Bioengineering. Students create and test a proof-of-principle deliverables for the device or system proposed in the previous quarter, and prepare a formal business plan. Prerequisite: BIOEN 542. Offered: Sp.

BIOEN 544 Advanced Clinical Design Project (1-10) Summer-long culminating design experience in which student teams generate and test a solution to meet desired clinical needs. Prerequisite: BIOEN 543 Offered: S.

BIOEN 546 Fundamentals of Biomedical Imaging: X-ray and Nuclear (4) *P. Kinahan* Explores core principles of biomedical imaging with a focus on x-ray and nuclear imaging. Fundamental concepts common to all modalities are reviewed: Multi-dimensional Fourier transforms, the imaging equation, the inverse problem, image SNR, and contrast agents. Lectures will emphasize a systems approach that is reinforced through computational mini projects using Matlab. Recommended: Signal and systems (linear systems) , Fourier transforms and advanced linear algebra, scientific programming (e.g. Matlab or other languages) . Offered: A.

BIOEN 547 Fundamentals of Magnetic Resonance and Ultrasound Imaging (4) *M. Averkiou* Principles and uses of biomedical imaging with magnetic resonance imaging (MRI) and ultrasound are presented from an engineering viewpoint. Topics include the physics of MRI and ultrasound, principles of image formation, clinical applications, and the technology supporting important modes of modern imaging equipment. Offered: W.

BIOEN 549 Therapeutic and Diagnostic Ultrasound (4) *M. Averkiou* Fundamentals of ultrasound leading to real-time ultrasound imaging; sound beams and signals, transducers, arrays and array beamforming; ultrasound interaction with tissue; Doppler and Color-flow; nonlinear imaging and contrast agents. Ultrasound bioeffects and therapeutic ultrasound: thermal therapies, HIFU, hyperthermia and BIO heat

equation; cavitation, lithotripsy; drug delivery. Elastography, photoacoustic imaging. Offered: Sp.

BIOEN 551 Optical Coherence Tomography (4) *R. Wang* Describes the basic physics and engineering principles of optical coherence tomography, and rapid development of imaging applications in medicine and biology. Extends basic concepts of signal processing and instrumentation to imaging physics (optics) , image reconstruction, image processing, and visualization. Recommended: Signal processing and linear systems (at a level of BIOEN 316) Mathematical skills (at a level of AMATH352) Physics level at PHYS 122 BIOEN 498/599: Contemporary Light Microscopy and Biophotonics Offered: A.

BIOEN 552 Microfabrication and Microfluidics (3) *A. FOLCH, P. YAGER* Studies the use of 2- and 3-dimensional structures in research and biomaterials, cells, and complex liquids. Focuses on micropatterning of surfaces and microfluidic chemical analytical systems. Co-requisite: BIOEN 553.

BIOEN 553 Microfabrication and Microfluidics Laboratory (2) *A. FOLCH, P. YAGER* Studies the creation of 2- and 3-dimensional structures for use in research with biomaterials, cells, and complex liquids. Each student will fabricate at least one PDMS device and demonstrate its function. Co-requisite: BIOEN 552. Credit/no-credit only.

BIOEN 554 Bioengineering Solutions to Improve the Health of Families Worldwide (1/2) *Alexis L Kaushansky* Seminar series that engages students in interdisciplinary discussions about global health. Explores how bioengineering approaches contribute to (1) the study of problems of global health importance, (2) the development of diagnostics, and (3) the discovery of interventional strategies to improve human health. Emphasizes collaboration between students and researchers with backgrounds in infectious disease, basic science, and bioengineering. Credit/no-credit only. Offered: jointly with G H 554; A.

BIOEN 555 Water, Nature, and Biological Function (3) *G. Pollack* Explores emerging concepts of water at interfaces as a new and simpler way to understand many features of chemistry, physics, and biology. Considers new understanding in cell

function, energy transduction, solar energy, flow, transport, weather, green science, and other basics of nature and engineering.

BIOEN 557 Advanced Molecular Bioengineering (4)

P. STAYTON Covers fundamentals of molecular recognition and design: thermodynamics, dynamics, and kinetics. Includes molecular design of macromolecules, recognition processes for current molecular engineering applications in biomedicine, and therapeutics based on cells. Offered: jointly with MOLENG 515; A.

BIOEN 560 Neural Engineering (3)

Azadeh Yazdan-Shahmorad, Chet T Moritz Introduces the field of Neural Engineering: overview of neurobiology, recording and stimulating the nervous system, signal processing, machine learning, powering and communicating with neural devices, invasive and non-invasive brain-machine interfaces, spinal interfaces, smart prostheses, deep-brain stimulators, cochlear implants and neuroethics. Heavy emphasis on primary literature. Offered: jointly with E E 560; A.

BIOEN 561 Neural Engineering Tech Studio (4)

Azadeh Yazdan-Shahmorad, Chet T Moritz Neural engineering design and translational engineering. Groups design, build and present a neural engineering prototype project to a panel of industry judges. Prerequisite: BIOEN 560 Offered: jointly with E E 561; W.

BIOEN 563 Optogenetics (3)

Andre Berndt Overview of optogenetics, which utilizes light-activated ion channels and fluorescent proteins to control and monitor neuronal activity through remote light stimulation in intact brain tissue. Includes (1) molecular basis, (2) tools and instrumentation, (3) experimental design, and (4) application range of optogenetic approaches. Builds a robust foundation for designing contemporary optogenetic experiments. Offered: W.

BIOEN 566 Neural Computation and Engineering

Laboratory (3) *Amy Orsborn* Introduces neural recording and quantitative analysis techniques to students with a background in quantitative methods. Offered: jointly with E E 564.

BIOEN 568 Real-Time Biosignal Processing (3)

C. Neils Lab-based introduction to techniques for real-

time signal acquisition, processing, and output, emphasizing software as an interface between user and electronic circuits. Students write programs for implementation both in graphical programming environments and in portable microprocessor platforms. In-depth discussion of hardware specifications and implications for circuit design. Recommended: Basic Electrical Engineering Offered: W.

BIOEN 570 Systems Immunology and Immunoengineering (3)

Hao Yuan Kueh Explores current progress towards a quantitative, systems-level understanding of immune system function. Topics include sensitivity and selectivity in immune receptor signaling, cell-cell coordination by cytokine communication, and cell engineering for immunotherapy.

BIOEN 572 Biosensors for Cancer (4)

Albert Folch Introduces the broad field of biosensors for cancer diagnostics. Offered: A.

BIOEN 573 Biosensors and Biomedical Sensing (3)

P. Yager In-depth overview of the principal types of biosensors. Topics include: how biological molecules are used in sensing, how the sensors operate, how different sensors compare, under what circumstances sensors can be useful, and the applicability of sensors to biomedical sensing. Offered: W.

BIOEN 574 Immunoengineering (3)

K. Woodrow Covers cell and tissues of immune system; lymphocyte activation and specificity; cell biology of antigen processing and preservation; and effector mechanisms. Includes discussion of concepts in theoretical immunology used to describe viral dynamics and the dynamics of immune responses. Students present case studies in the pathogenesis of immunologically mediated diseases. Offered: W.

BIOEN 575 Global Health Technology: Molecular Diagnostics (4)

B. Lutz Teachers engineering principles, tools, and technologies needed to practice or develop nucleic acid (DNA/RNA) diagnostics and their context in global health. Recommended: Advanced Engineering, Chemistry or math background. Offered: W.

BIOEN 576 Laboratory Techniques in Protein Engineering (4)

Practical introduction to

fundamentals of recombinant DNA technology and protein engineering. Gene design, bacterial molecular biology, genetic engineering strategy. Laboratory project focused on making site-directed protein mutations. Techniques include the Polymerase Chain Reaction, DNA sequencing, DNA cutting/splicing, protein expression. Prerequisite: background in biochemistry or molecular biology or permission of instructor.

BIOEN 577 Cell and Protein Reaction with Foreign Materials (3) Study of ways in which cell and protein interactions with foreign materials affect the biocompatibility of biomaterials. Description of phenomenology and mechanisms of protein adsorption, mammalian cell adhesion, and cell receptor biology and of methods used to study these phenomena. Surface properties of materials discussed in context of the course. Prerequisite: permission of instructor.

BIOEN 578 Biomembranes (3) *P. YAGER* Develops an understanding of the molecular principles that underlie the self-assembly of surfactants into natural and model membranes; in particular, on the relationship between the chemical structure of lipid molecules and the three-dimensional aggregates that they form in water.

BIOEN 579 Host Response to Biomaterials (3) *C. GIACHELLI* Basic cell and molecular biology of the pathologies associated with biomaterial implantation that limit bioprosthetic use, including hemostasis, infection, acute and chronic inflammation, wound healing and fibrosis, and structural alterations. Major methods for histological analysis of retrieved implants. Prerequisite: general biology, BIOEN 490 (may be taken concurrently) , or permission of instructor.

BIOEN 581 Engineering Cell Biology (3) *D. Kim* Introduces engineering approaches for analysis and control of cell structure and function, and application of such technologies in cell biology studies. Covers the basics of cell biology, engineering cellular microenvironments, as well as effects of external engineering stimuli on cellular processes, which have significant implications in various diseases such as cancer, neuromuscular disease, and cardiovascular disease. Recommended: Introductory Biology, General Chemistry Offered: A.

BIOEN 583 Vascular Biology and Engineering (3) *Y. Zheng* Vascular Engineering has emerged to provide strategies for generating vascular grafts with long-term patency, and vascularized tissues for regenerative medicine and disease modeling. This course focuses on understanding the structure and function of different vascular beds in vivo, and learning the cutting edge research and engineering principles in vascular biology and engineering. Recommended: Introductory Biology, General Mechanics, and Cell Biology Offered: W.

BIOEN 585 Computational Bioengineering (4) *W. THOMAS* Introduction to computational and mathematical analysis of biological systems, including control, stochastic, and transport systems. Lectures and laboratory sessions emphasize biochemical systems, but also include electrical, mechanical, and fluidic systems.

BIOEN 586 Tissue Engineering (3) *D. Kim* Tissue structure and function, scaffold design, applications to specialized tissues and organs. Offered: W.

BIOEN 587 Bioengineering and Nanotechnology (3) *X. Gao* Explores basic concepts of nanoscience and the current literature, focusing on practical applications for nanotechnology in biology and medicine.

BIOEN 588 Computational Protein Design (4) *V. DAGGETT* Explores methods in protein engineering, emphasizing biomedical and biotechnological applications. Includes molecular visualization, homology modeling, molecular dynamics, computational protein design, and evaluation of designs. Introduces current research in subject area. Students learn to use and apply computational tools to investigate design problems.

BIOEN 589 Advanced Tissue Engineering (3) Develops advanced knowledge in tissue engineering. Primarily through critical assessment of seminal publications in areas such as biomaterials, biofabrication, organ decellularization, cellular self-organization, organoids, and regenerative medicine. Students identify groundbreaking studies in tissue engineering and communicate the impact to other scientists and the public. Recommended: BIOEN 586.

BIOEN 590 Advanced Topics in Biomaterials (3) Major, controversial issues in application of

synthetic materials to medical problems. Blood compatibility, bioadhesion, intraocular lenses, contact lenses, polyurethanes, biodegradation, protein adsorption, corrosion, bone fixation, new materials, artificial heart, medical device regulation. Prerequisite: BIOEN 490 or CHEM E 490. Offered: jointly with CHEM E 590.

BIOEN 591 Controlled Release Systems (3) *Suzie H Pun* Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Offered: W.

BIOEN 592 Surface Analysis (3) *D. Castner* Understanding of solid surfaces for research and development in microelectronics, catalysis, adhesion, biomaterials science, wear and corrosion science. Newer methods available to study surfaces of materials. Electron emission spectroscopies (ESCA, Auger) ; ion scattering, ion spectroscopic, photon spectroscopic, and thermodynamic methods. Offered: jointly with CHEM E 558.

BIOEN 593 Advanced Surface Analysis (3) *D. CASTNER* Covers the latest advanced in surface analysis instrumentation and methodology, including advanced methods of biorecognition AFM, surface Plasmon resonance, x-ray photoelectron spectroscopy, sum frequency generation spectroscopy, time-of-flight secondary ion mass spectrometry, and multivariate analysis. Prerequisite: either CHEM E 558 or BIOEN 592. Offered: jointly with CHEM E 593; W.

BIOEN 594 Advanced Drug Delivery (3) *S. PUN* Provides students with an understanding of the current state of the art for advanced drug delivery. Covers the major families of biologic drugs, major challenges associated with their delivery and specific disease applications. Offered: Sp.

BIOEN 598 Research Rotation (1-10, max. 30) Research rotation in the laboratories of core or adjunct faculty in the Department of Bioengineering. Credit/no-credit only. Offered: AWSpS.

BIOEN 599 Special Topics in Bioengineering (1-6, max. 30) Offered at a graduate level periodically by faculty members within the Department of Bioengineering; concerns areas of research activities

with current and topical interest to bioengineers. Prerequisite: undergraduate or graduate courses (or equivalent) determined individually for each special topic.

BIOEN 600 Independent Study or Research (*-) Offered: AWSpS.

BIOEN 601 Internship (1-10, max. 10) Bioengineering graduate internship program. Requires written report. Prerequisite: permission of supervisory committee chair. Offered: AWSpS.

BIOEN 700 Master's Thesis (*-) Offered: AWSpS.

BIOEN 800 Doctoral Dissertation (*-) Offered: AWSpS.

PHARMACEUTICAL BIOENGINEERING

PHARBE 500 Molecular and Cellular Biology for Pharmaceutical Bioengineering I (4) Case based examination of fundamental molecular processes that occur in organisms. Topics include structure and organization of prokaryotic and eukaryotic cells, prokaryotic and eukaryotic gene structure and regulation, signaling pathways, RNA, DNA, metagenomics, and systems biology. Integrates online literature/media resources and bioinformatics. Cultivates critical thinking approaches to latest developments. Offered: A.

PHARBE 502 Pharmaceuticals I (4) Covers the drug development process for both small molecules and biological form discovery stage through the end of phase 1. Addresses the science, logistics, and regulatory environment of preclinical (pharmacology, PKDM, toxicology, CMC) and early clinical development. Offered: A.

PHARBE 503 Pharmaceuticals II (4) Covers phases II and III of the drug development process. Topics include clinical study design, safety, pharmacology, and statistics. Provides an overview of the preparation and filing of the New Drug Application (NDA) . Uses case studies to demonstrate key concepts. Prerequisite: PHARBE 502 or permission of instructor. Offered: W.

PHARBE 505 Pathophysiology for Pharmaceutical Bioengineering (4) Introduction to human anatomy,

physiology, molecular biology and cell biology of major organ systems. Emphasis on the structural, molecular, and cellular mechanisms of common pathological conditions (pathophysiology). Additional emphasis on pharmaceuticals development for common pathologic states. Students will understand the basics of normal and aberrant human physiology. Offered: W.

PHARBE 506 Pharmaceutical Bioengineering Seminar (2) Provides a deeper understanding of the biotech and pharmaceutical industries through a mix of scientific talks, presentations by industry leaders, and discussions with program alumni. Students also practice professional skills, such as resume and cover letter writing and interviewing skills. Credit/no-credit only. Offered: A.

PHARBE 510 Applied Pharmacokinetics (5) Covers basic principle of pharmacokinetics and its impact on treatment, including: single-dose intravenous and oral kinetics, multiple dosing, nonlinear pharmacokinetics, metabolite kinetics, pharmacogenetics, the role of disease in drug clearance and dose requirements, and kinetics of drug-drug interactions. Offered: A.

PHARBE 511 Process Development (5) Examines the principles involved in designed and developing production processes for protein therapeutics. Covers technologies, methods, and unit operations used in the development and GMP manufacture of biopharmaceuticals. Includes interdependencies of upstream, downstream, analytical, formulation and drug delivery technologies, illustrated with key biochemical, chemical, and physical chemical reaction examples. Offered: W.

PHARBE 513 Clinical Development (6) Evaluates clinical development strategies including comprehensive drug candidate life cycle plan. Covers clinical trial design, FDA and Institutional Review Boards, ethics, consents, safety, and quality. Discusses target product profiles, phase III study synopses, informed consents, and SWOT analyses. Students present phase II results and debate go/no go decisions. Offered: A.

PHARBE 521 Drug Discovery and Design (5) Explores general principles and current approaches involved in modern drug discovery and development. Includes specific aspects of human biology and

disease, case studies in discovery, and the evolution of how these topics have merged. Covers novel drug discovery techniques, emerging non-standard therapeutics, and the history of drugs and drug discovery. Offered: A.

PHARBE 522 Molecular Targets and Drug Classes (5) Discusses select medicinal compounds, emphasizing mechanism of action, biotransformation, and structural and physical properties governing absorption, distribution, and excretion. Design of therapeutics to focus on maximizing efficacy while reducing toxicities. Compounds include classical organic small-molecules, peptides, proteins, nucleic acids, lipids, carbohydrates, and other bioactive chemical classes. Offered: Sp.

GLOBAL HEALTH

G H 101 Introduction to Global Health: Disparities, Determinants, Policies, and Outcomes (5) I&S *Todd Fabian, Stephen Gloyd* Provides an introduction to global health, including: the burden and distribution of disease and mortality; the determinants of global health disparities; the making of global health policies; and the outcomes of global health interventions. Offered: jointly with GEOG 180/JSIS B 180; Sp.

G H 201 Multidisciplinary Perspectives in Global Health (1) I&S, DIV *David Citrin* Presenters from a multidisciplinary group of professionals introduce key topics, challenges, and opportunities in the field of global health. Speakers provide a broad-based overview of disparities, determinants, policies, and outcomes in global health, as influenced by factors such as communication, culture, and global power structures, among others. Credit/no-credit only. Offered: A.

G H 210 Confronting Global Diseases: Introductory Biologic Principles and Context (3) NW *Joshua Herbeck, Stephen J. Polyak* Provides a broad introduction to the leading causes of disability and death globally. Covers the basic biologic and scientific principles of globally prevalent human health problems, including the connections between the biology of disease and current prevention and treatment interventions used in public health. Not intended for biological science majors. Offered: Sp.

G H 220 Global Environmental Change and Public Health (3) I&S *Kristie L Ebi* Humans are the primary drivers of global environmental changes that are changing the planet on the scale of geological forces. Students will be introduced to these changes and their consequences for human health and well-being, with a focus on climate change and its consequences. Offered: jointly with ENV H 220.

G H 305 Global Health and Justice (3) I&S *Beth E. Rivin* Explores health as a human right, focusing on injustices and inequities that occur around the world that result in disease, disability and death. Using a justice framework, considers social determinants of health and vulnerabilities of marginalized groups. Students learn about SDGs, human rights law, bioethics and the pivotal role that law and ethics play in addressing injustices in health. Offered: jointly with LAW 305; W.

G H 306 Introduction to Collaborative Approaches and Respectful Partnerships in Global Health (5) I&S *K. Beima-Sofie, K. West* Introduces students to principles and concepts of community-based participatory research (CBPR), and other approaches that center the community and focus on respect, relationships, and mutual benefit. Emphasizes self-reflection of our own abilities to respectfully engage with communities, and prepares students to be mentees in global community partnerships. Recommended: G H 101 Offered: A.

G H 307 Introduction to Implementation Science for Global Health (5) I&S *Anjali D Wagner, Gabrielle O'Malley* Introduces the concepts, theories, and methods of implementation science in global health. Through team-based learning approach, students will acquire and use knowledge to solve problems, answer questions, and make decisions about selecting, adapting, disseminating, implementing, and scaling evidence-based interventions. Special topics include quality improvement, de-implementation, capacity building, and sustainability. Recommended: G H 101 Offered: Sp.

G H 308 Contemporary Issues in Non-Communicable Diseases (5) I&S, DIV *Rachel A Nugent, David Watkins* Introduces noncommunicable diseases by putting their causation, health and socioeconomic impact, and control strategies into a global context. It examines their global burden, determinants, risk factors,

health disparities, and preventive actions. Both health service interventions and intersectoral measures are explored based on evidence review and economic evaluation. Global policies to foster and monitor action are reviewed. Recommended: G H 101 Offered: W.

G H 345 Global Health Economics (5) I&S *C. Levin* Introduces the application of health economics and the tools economists use to inform global health solutions in low and middle-income countries. Examines relationship between global health and development, survey of health economic evaluation concepts with focus on diseases and conditions in low and middle-income countries. Recommended: ECON 200 strongly recommended, G H 101 recommended Offered: jointly with ECON 345; A.

G H 399 Global Health Study Abroad (1-5, max. 15) I&S For participants in approved study abroad programs. Requires credit evaluation by department or faculty. Does not automatically apply to major or minor requirements. Offered: AWSpS.

G H 401 Core Topics in Global Health (1/3) Patricia B Pavlinac Examines a variety of foundational global health topics including maternal, adolescent, and child health; nutrition; infectious diseases; environmental health; non-communicable diseases; and mental health. Within each topic area, we will define the problems, complexities, and context, and establish the need for multidisciplinary approaches. Offered: A.

G H 402 Current Research and Programs in Global Health (1/3) Christine J McGrath Examines current research and programs in Global Health priority areas with an emphasis on the use of research evidence to inform policy and implementation strategies in programmatic settings. Evidence-based approaches to address key global health issues in maternal, adolescent, and child health, infectious diseases, environmental health, and non-communicable diseases will be evaluated. Offered: W.

G H 406 International Climate Negotiations within the United Nations Framework Convention on Climate Change (1) I&S *Kristie L Ebi* Explores the status of the negotiations under the United Nations Framework Convention on Climate Change, including key agreements reached; the role of science; and the

diverse perspectives of countries and sectors.
Offered: A.

G H 410 Advanced Biologic Principles of Global Diseases (3) NW *Lucy A. Perrone* Presents selected communicable and noncommunicable diseases of global health importance at an advanced level. Students learn about biological principles, host-pathogen interactions, and other factors that influence the burden of global health diseases. Prerequisite: either BIOL 180, G H 210, or MICROM 301. Offered: W.

G H 415 War and Health (4) I&S *A. Hagopian, E. Kanter* Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity) . Offered: jointly with HSERV 415; Sp.

G H 418 Understanding and Managing the Health Risks of Climate Change (3) *Kristie L Ebi* The health risks of climate change are multiple and range across the public health space. Addresses current and projected health risks of climate change and the policies and measures to manage these risks as the climate continues to change. Offered: jointly with ENV H 418; W.

G H 419 Global Perspectives in Bioethics (3) I&S, DIV N. *Jecker* Examines problems in bioethics from diverse global standpoints, including East Asian, Sub-Saharan African and Western. Our emphasis is on developing a deeper understanding of the cultural assumptions that lie just beneath the surface of bioethics debates. Readings from contemporary philosophy, film and literature. Recommended: Prior course work in ethics, philosophy, or global health. Offered: jointly with B H 488; Sp, odd years.

G H 446 Global Perspectives on Reproductive Health (3) I&S, DIV A. *Drake, J. Unger* Provides comprehensive overview of global reproductive health, with an emphasis on current issues and challenges in resource-limited settings. Students will be engaged in topics from diverse disciplines, including public health, demography, epidemiology, policy, sociology, and medicine. Topics covered include contraception, abortion, human rights, HIV, access to services, and politics. Offered: Sp.

G H 454 Bioengineering Solutions to Improve the Health of Families Worldwide (1) I&S, DIV *Alexis L Kaushansky* Seminar series that engages students in interdisciplinary discussions about global health. Explores how bioengineering approaches contribute to (1) the study of problems of global health importance, (2) the development of diagnostics, and (3) the discovery of interventional strategies to improve human health. Emphasizes collaboration between students and researchers with backgrounds in infectious disease, basic science, and bioengineering. Credit/no-credit only. Offered: jointly with BIOEN 454; A.

G H 456 Global Mental Health (3) I&S, DIV *Rao* Examines the socio-cultural and political forces that impact assessment, manifestation, and treatment of mental illnesses worldwide. Students take a critical view of diagnostic systems and examine cultural differences in presentation of mental illness. Also reviews treatment practices in low resource settings, cultural-specific communication, and stigma. Offered: A.

G H 458 Global Violence and Health (3) I&S, DIV *S. Benki-Nugent* Examines the socio-politico-cultural forces that give rise to violence and the impact of violence on population health. Discusses public health methods, policies, and interventions that can be used to decrease the occurrence and severity of violence in real world circumstances, including countries at all economic levels. Offered: W.

G H 482 The Health of Populations (4) I&S, DIV Explores what makes a population healthy or unhealthy. Examines why the United States is less healthy than all other rich countries, despite being one of the healthiest fifty years ago. Offered: jointly with HSERV 482.

G H 490 Special Topics (1-5, max. 15) Offered: AWSpS.

G H 499 Undergraduate Research (1-15, max. 15) Offered: AWSpS.

G H 501 Core Topics in Global Health (1) *Patricia B Pavlinac* Examines a variety of foundational global health topics including maternal, adolescent, and child health; nutrition; infectious diseases; environmental health; non-communicable diseases; and mental health. Within each topic area, we will

define the problems, complexities, and context, and establish the need for multidisciplinary approaches. Offered: A.

G H 502 Current Research and Programs in Global Health (1) *Christine J McGrath* Examines current research and programs in Global Health priority areas with an emphasis on the use of research evidence to inform policy and implementation strategies in programmatic settings. Evidence-based approaches to address key global health issues in maternal, adolescent, and child health, infectious diseases, environmental health, and non-communicable diseases will be evaluated. Offered: W.

G H 505 P-Advanced Global Health (2) Prepares health profession students for work in developing countries. Includes healthcare delivery systems, political, social, and economic determinants of health, major global health issues, and personal well-being while abroad. Lecture and seminar format with guest speakers, student presentations, and discussion. Offered: jointly with MED 560.

G H 511 Problems in Global Health ([0-4]-, max. 4) *Steve Gloyd* Explores social, political, economic, and environmental determinants of health and societal responses to health problems globally. Covers impact of colonialism, equity strategies, Primary Health Care, neoliberalism, war, international agencies, the climate crisis, water, sanitation, and traditional health systems. Student groups develop proposals to improve health systems or address social determinants of health in a specific low-income country. Offered: jointly with HMS 511; A.

G H 514 Global Societal Determinants of Health (2-3) *S. Bezruchka* Examines societal determinants of health of nations around the globe. We look at the Americas, Africa, countries of the former Soviet Union, India/China and Western Europe. Asks why there is an increasing inequity in health outcomes today? Topics include early life, population health biology, medical care, mental health, and the environment. Offered: Sp.

G H 515 War and Health (4) *A. Hagopian, E. Kanter* Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war

(advocacy, measurement and application of epidemiology methods, promotion of social equity) . Offered: jointly with HSERV 515; Sp.

G H 516 Health and Human Rights (3) *Beth E. Rivin* Examines the basic concepts in the fields of human rights law and public health, and uses those concepts to examine the interdependence and tensions between the two fields. Introduction to the fields of public health and human rights law, examining the impact of health policies and programs on human rights. Offered: jointly with LAW H 540; Sp.

G H 517 International Bioethics, Social Justice, and Health Seminar (1, max. 3) *Rivin* Explores case studies of ethical dilemmas in research and medical practice and violations of international human rights norms in the design, implementation, and evaluation of health programs and policies. Bioethics and human rights law are the foundational tools for critically evaluating global health impact. Credit/no-credit only. Offered: jointly with LAW H 506; Sp.

G H 518 Understanding and Managing the Health Risks of Climate Change (3) *Kristie L Ebi* The health risks of climate change are multiple and range across the public health space. Addresses current and projected health risks of climate change and the policies and measures to manage these risks as the climate continues to change. Offered: jointly with ENV H 518; W.

G H 519 Global Perspectives in Bioethics (3) N. *Jecker* Examines problems in bioethics from diverse global standpoints, including East Asian, Sub-Saharan African and Western. Our emphasis is on developing a deeper understanding of the cultural assumptions that lie just beneath the surface of bioethics debates. Readings from contemporary philosophy, film and literature. Recommended: Prior course work in ethics, philosophy, or global health. Offered: jointly with B H 588; Sp, odd years.

G H 521 Leadership Development in Global Health (3) *Nancy M Campbell* Focus on enhancing ability to lead in complex global health environments. Self and group assessment, case studies, and small group work. Topics include personal and professional vision, mission, and values; communication and influencing strategies; understanding strengths and weaknesses as a leader. Offered: W.

G H 522 Global Program Management and Leadership (3) *Ann Downer, Britt Yamamoto* Focuses on management and leadership skills for complex global health settings. Includes personal leadership strengths/values; management dilemmas, data-driven decisions; program planning design and evaluation; and resource management. Offered: W.

G H 523 Policy Development and Advocacy for Global Health (3) *J. Lane* Primarily taught through case- and problem-based learning and small group work, explores complex factors affecting global health policy and how context (e.g., ideology, culture, and history), international institutions, scientific knowledge, and stakeholder interests affect the structure of and changes to a nation's health system and its performance. Offered: Sp.

G H 524 Project Management in Global Health (3) Covers the fundamentals of project management, including conducting needs assessments, creating planning and implementation documents, managing resources, transitioning projects, and monitoring and evaluating projects. Discusses practical tips, tools, and techniques for how to address unexpected challenges that inevitably arise in international and other low resource settings. Offered: W.

G H 530 Methods, Tools, and Data in Global Health (2) *Emmanuela Gakidou* Familiarizes students with current global health issues and their analytical challenges. Introduces analytical methodologies, quantitative concepts, statistical packages applied to global health challenges, and software used in health metrics and evaluations research. (Two weeks). Credit/no-credit only. Offered: jointly with HMS 539; A.

G H 531 Research and Evaluation Methods in Global Health (3-4) *Caryl Feldacker* Provides an overview of a range of evaluation and research designs used in global health. Students learn practical methodologies to obtain, validate, and analyze information regarding health status, services, and programs. Discusses usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, and qualitative methods. Offered: jointly with EPI 539; Sp.

G H 532 Responsible Conduct of Research: Global and Local (3) *Alison Drake, Carey Farquhar* Prepares international and U.S. students to develop research

proposals; conduct international and domestic field research; and present scholarly work. Credit/no-credit only. Offered: jointly with EPI 586; A.

G H 533 Survey Research Methods (4) *A. MOKDAD* Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BOST 517/BOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with CS&SS 527/HSERV 527.

G H 534 Statistical Methods for Spatial Epidemiology (3) Motivates the need for, and describes methods for the analysis of spatially indexed epidemiological data. Covers four major topics: clustering and cluster detection, disease mapping, spatial regression, and an introduction to geographical information systems. Considers both point-references and spatially aggregated data. Offered: jointly with BOST 555/EPI 555.

G H 535 Advanced Methods for Global Health I (4) *Bryan Weiner* Focuses on the advanced concepts, theories, and methods of implementation science in global health, with a specific focus on fidelity, adaptation, strategy selection, de-implementation, sustainability, scale-up, advanced trials designs, qualitative methods, and mixed methods. Assumes prior knowledge of the fundamentals of implementation science. Prerequisite: G H 541 or permission of instructor. Offered: jointly with HMS 535; A.

G H 536 Advanced Methods for Global Health II (4) Presents applications of the cluster-randomized trial design to estimate the impact of interventions for a global health and implementation science audience. Covers trial design and implementation, reviews methods commonly used for analysis. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BOST 528/EPI 553/HMS 536; W.

G H 537 Advanced Methods for Global Health III (4)

Brad Wagenaar Focuses on applying advanced non-randomized methods to quantitatively evaluate global health implementation science questions, including a specific focus on applying difference-in-differences, interrupted time-series, and regression discontinuity designs. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BIOST 525/EPI 556/HMS 537; Sp.

G H 538 Advanced Qualitative Methods in

Anthropology and Public Health (5) Provides students with both a theoretical foundation in qualitative approaches to research in anthropology and public health and in-depth training in qualitative data management, analysis, interpretation, and presentation. Focuses on how to frame research questions, design, appropriate research strategies that incorporate qualitative methods, and analyze data. Offered: jointly with ANTH 519; even years.

G H 539 Analyzing Qualitative Data (3)

Kristin M Beima-Sofie Expands upon qualitative data analysis methods introduced in other courses to ensure students gain practical skills to complete independent qualitative analysis. Students gain expertise with coding strategies and approaches, use of frameworks, translation and presentation of findings, approaches for rapid data analysis, and mechanics for writing manuscripts and reports. Recommended: prior coursework in qualitative research methods including study designs and data collection procedures

G H 541 Fundamentals of Implementation Science in Global Health (4/5)

Judith N. Wasserheit, Kenneth Sherr Provides an introduction to the emerging field of implementation research by outlining various methods that are applied to improving implementation (including applied engineering, management tools, health systems, and policy research), and using experiential case studies from global health leaders. Addresses barriers to effective replication and scale-up in local settings. Offered: jointly with HMS 541; Sp.

G H 543 Global Health Pharmacy: Medicines, Practice, and Policy (2)

Andy Stergachis Introduces the critical role of pharmaceutical in addressing major diseases (such as HIV/AIDS, malaria, tuberculosis) affecting persons in resource-limited settings. Addresses the wide range of relevant issues, including burden of disease, human resource capacity, regulation, drug safety/pharmacovigilance, drug distribution, pharmacoeconomics, financing, intellectual property, and drug trade policies. Offered: jointly with PHARM 581.

G H 544 Maternal and Child Health in Low and Middle Income Countries (3)

D. DENNO Emphasizes critical health problems of women and children in developing countries in social, economic, and cultural contexts. Practical approaches to developing MCH programs shared via lecture/discussions, exercises, and small group work. Students acquire skills in baseline assessment, setting objectives, planning and evaluating interventions, and involving communities. Offered: jointly with HSERV 544; W.

G H 545 Child Health in Low and Middle Income Countries ([0-3]-, max. 3)

Denno Provides an understanding of the causes and functional effects of the most prominent child health problems. Examines trends and progress in global child health and explores potential explanations for these trends. Offered: Sp.

G H 546 Global Perspectives on Reproductive Health (3) I&S, DIV A.

Drake, J. Unger Provides comprehensive overview of global reproductive health, with an emphasis on current issues and challenges in resource-limited settings. Students will be engaged in topics from diverse disciplines, including public health, demography, epidemiology, policy, sociology, and medicine. Topics covered include contraception, abortion, human rights, HIV, access to services, and politics. Offered: Sp.

G H 547 Adolescent Health in Low-Resource Settings (1)

Keshet Ronen Highlights issues affecting adolescents in resource limited settings with an initial focus on what makes adolescents unique. Topic-based seminars, journal article discussions, and student-led discussions will include: adolescent development; physical and psychological trauma; illicit activities; ethics and the law; adolescent-focused research and programming; and public policy. Credit/no-credit only. Offered: Sp.

G H 549 Global Laboratory Systems (1) *Olusegun O. Soge, Lucy A. Perrone* Provides an overview of the role of clinical and public health laboratories in a national public health system, both in US and globally. Covers the functional components of a laboratory system and the importance of quality laboratory information on public health policy making. Topics include disease diagnosis, surveillance, outbreak response, law and regulation and how laboratory information contributes to health policy development. Offered: jointly with LAB M 549; Sp.

G H 554 Bioengineering Solutions to Improve the Health of Families Worldwide (1/2) *Alexis L Kaushansky* Seminar series that engages students in interdisciplinary discussions about global health. Explores how bioengineering approaches contribute to (1) the study of problems of global health importance, (2) the development of diagnostics, and (3) the discovery of interventional strategies to improve human health. Emphasizes collaboration between students and researchers with backgrounds in infectious disease, basic science, and bioengineering. Credit/no-credit only. Offered: jointly with BIOEN 554; A.

G H 555 Nutrition in Developing Countries (3) Introduces issues of nutrition in developing countries, with an emphasis on the control and prevention of undernutrition and micronutrient deficiencies. Offered: jointly with NUTR 555; Sp, odd years.

G H 556 Global Mental Health (2-3) *Deepa Rao* Examines the socio-cultural and political forces that impact assessment, manifestation, and treatment of mental illnesses worldwide. Students take a critical view of diagnostic systems and examine cultural differences in presentation of mental illness. Also reviews treatment practices in low resource settings, cultural-specific communication, and stigma. Offered: A.

G H 558 Global Violence and Health (2-3) *Sarah F. Benki* Examines the socio-political-cultural forces that give rise to violence and the impact of violence on population health. Discusses public health methods, policies, and interventions that can be used to decrease the occurrence and severity of violence in real world circumstances, including countries at all economic levels. Offered: W.

G H 560 Principles of STD/HIV Research (2) *Renee Heffron, Christine M Khosropour* Provides MD and PhD fellows and graduate students with a comprehensive overview of the current state of knowledge in specific areas of STD/HIV research, including study design, laboratory methods, production of instruments for data collection, and methods for data analysis. Credit/no-credit only. Offered: S.

G H 561 Tropical Medicine (1) *Seth Cohen, Frederick S Buckner* Intended for professional health science students interested in learning the pathophysiology, epidemiology, and clinical presentation of disease conditions that are more commonly seen in less-developed countries, resource-limited settings, or tropical climates, and how to diagnose, treat, and follow the resolution of these diseases with commonly limited resources. Credit/no-credit only. Offered: Sp.

G H 562 AIDS: A Multidisciplinary Approach (2) *Carey Farquhar* Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare; and prospects for prevention and control. Credit/no-credit only. Offered: jointly with EPI 530/MED 530.

G H 563 HIV/STI Prevention Research Methods (3) *R. Heffron, A. Roxby* Focuses on current research and implementation of HIV/STI prevention including biomedical, behavioral, and public health interventions. Includes analyzing strength of research evidence to support novel interventions, understanding key features of study design, and applying interventions that are most appropriate and feasible for specific settings and populations. Offered: jointly with EPI 549.

G H 565 Diseases and Issues in Global Health (2) *O. Soge* Provides a broad perspective on global health issues; the biology and strategies for control of diseases of global importance; the global health landscape; and factors that influence global health. Recommended: Background in cellular and molecular biology, and microbiology recommended. This course is intended for students pursuing

laboratory-based research in pathogen biology.
Offered: jointly with PABIO 550; A.

G H 566 Biochemistry and Genetics of Pathogens and Their Hosts (4) Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate-level coursework in molecular biology or biochemistry, or permission of instructor. Instructors: L. Campbell Offered: jointly with PABIO 551; A.

G H 571 Essential of Clinical Care and Capacity Building in Low Income Countries (2) *M. Blank, J. Zunt* An interdisciplinary case-based forum of presentations by local and international lecturers and class discussions on realities of providing healthcare in low-income settings. Covers issues in prevention, socioeconomic underpinnings, management of medical and surgical conditions, and sustainable strategies to build capacity. Credit/no-credit only. Offered: W.

G H 572 Global Health Fieldwork: Preparation, Integration, Reentry (2) *Susan M. Graham* Prepares students for community-based global health experiences, and provides them the opportunity to share, discuss, and reflect on these experiences after returning to the United States. Explores the problems and promise of current global health strategies. Prerequisite: participation in International Health Opportunities Program or similar experience. Credit/no-credit only. Offered: A.

G H 573 Clinical Management of HIV (2-3) *H. Kim* Provides in-depth case-based training on the diagnosis and clinical management of HIV and associated conditions. Includes interactive format with speakers who have experience in both resource-rich and resource-limited settings. Offered: Sp.

G H 574 Global Health Nursing (3) Reviews global health topics and the complex local and global conditions that affect the health and illness of individuals, communities, and populations. Emphasizes the multi-faceted roles of health care providers. Offered: jointly with NURS 581; A.

G H 575 Global Health Leadership for the Clinician (3) *Carey Farquhar, Aliza Monroe-Wise* One-month intensive course for clinicians interested in careers in global health. Designed to teach the skills necessary to become future leaders in this field. Comprised of several different components, including field visits to local global health organizations, lectures, and small group case-based discussions. Credit/no-credit only. Offered: A.

G H 576 Health in Complex Humanitarian Emergencies (2) *D. TOWNES* Covers the principles of planning, implementing, and evaluating health programs for refugees and internally displaced persons during complex humanitarian emergencies in resource poor countries. Topics include rapid assessment; surveys; surveillance; nutrition; camp management; epidemiology of infectious diseases; water and sanitation; and vaccination campaigns during international relief operations for complex humanitarian emergencies. Credit/no-credit only. Offered: A.

G H 580 Global Health Doctoral Seminar (1/2, max. 4) *Bernardo Hernandez Prado, Kenneth Sherr* Examines the most critical issues in global health and currently available solutions. Introduces complementary perspectives of metrics and implementation science to build a multidisciplinary understanding of these issues, including effective and appropriate strategies for their control. Credit/no-credit only. Offered: jointly with HMS 580; AWSp.

G H 590 Selected Topics in Global Health (1-5, max. 15) Focuses on topics relevant to global health. Offered: AWSpS.

G H 592 Program Seminars (1-6, max. 6) Addresses specific educational needs of students within the Department of Global Health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

G H 593 Rethinking Global Health (1, max. 3) *Deepa Rao, Ahoua Kone* Focuses on building a global health Master of Public Health cohort with a sense of camaraderie, confidence, and communication skills to participate effectively in future work in global health. Topics covered include social injustice, inequity, and a deep examination of our roles as public health professionals within the field of global

health. We use an open forum for exchange of viewpoints. Students are considered co-developers of the course. Offered: AWSp.

G H 595 Master's Practicum (1-6, max. 6) Supervised practice experience providing an opportunity to apply knowledge and skills in a setting of relevance to global health. Prerequisite: permission of faculty adviser. Credit/no-credit only. Offered: AWSpS.

G H 600 Independent Study or Research (*-) Prerequisite: permission of instructor. Offered: AWSpS.

G H 700 Master's Thesis (*-) Prerequisite: permission of instructor. Offered: AWSpS.

G H 800 Doctoral Dissertation (*) Prerequisite: permission of Graduate Program Advisor. Offered: AWSpS.

UNIVERSITY CONJOINT

UCONJ 100 Introduction to Health Professions (1) *Garcia* Opportunities in health professions. Information on educational requirements, professional/patient interaction, licensing, registering for practice in profession, salaries, and career opportunities.

UCONJ 290 Diversity Issues in the Healthcare Environment (1-2, max. 2) I&S Introduction to the complexity of the issues surrounding culture and health, the interrelatedness of ethic and cultural characteristics and healthcare access, health and healthcare concerns of specific communities, traditional and alternative health-care practices, and community-based promotion and disease prevention programs. Credit/no-credit only.

UCONJ 411 Psychology of Aging (3) Kiyak Focuses on developing the skills necessary for critically evaluating current psychological theories of aging, research findings in this area, and the implications of findings on the aging person. Special consideration given to the effects of socioeconomic, sex, and ethnic differences in the psychology of aging. Open to upper-division undergraduates and beginning graduate students interested in the field of gerontology.

UCONJ 412 The Family in Later Life (3) Focuses on issues affecting older persons and their families. Addresses demographic influences on families; roles, rules for and function of family members; inter-generational relationships; economic, political, and social policy affecting family life; and cultural variations and supportive resources for older persons and their families.

UCONJ 413 Current Issues in Aging (3) Describes the population trends at work in the United States and other developed nations with significant societal implications for care and management of elders. Evaluates selected public policies related to aging. Gives students proficiency in using resources related to aging on the Internet. Evaluates alternative long-term care models.

UCONJ 420 Biological Safety Practices (1) Kenny General introduction to appropriate laboratory procedures used for handling potentially hazardous biological agents. Particular focus on laboratory safety and appropriate protocols that should be employed by those engaged in infectious disease and recombinant DNA research. Credit/no-credit only.

UCONJ 422 Sexually Transmitted Diseases: An Overview (2) Gardner Clinically oriented course designed to provide a knowledge base for upper-division health science students to participate effectively in community outreach programs for the prevention of sexually-transmitted diseases. Offered cooperatively by the departments of Pharmacy and Medicine.

UCONJ 440 Biological Aspects of Aging (3) Introduction to aspects of the biology of human aging and functional changes associated with normal aging and with illnesses that may be present in the elderly. Explores the relationship between changes in physical function, environment, and quality of life. Includes theoretical perspective on aging as well as the aging process in specific physiological systems. Designed for upper-level undergraduate students with an interest in aging.

UCONJ 442 Social and Cultural Aspects of Aging (3) Involves faculty members from the various social science fields examining the range and variation of relationships among age-linked attitudes and cultural values related to aging; the social and

economic factors that influence the elderly in contemporary society; the effects of ethnic and sex differences in sociocultural aging. Open to upper-division undergraduates and beginning graduate students interested in gerontology.

UCONJ 500 Seminar in Interprofessional Collaboration ([1-3]-, max. 7) Interdisciplinary teams of students and community members placed in diverse urban settings address an identified community need by developing and implementing collaborative, community-based projects. Seminars emphasize interprofessional collaborative practice, intrapersonal understanding, interpersonal group process skills, organizational savvy, community awareness, and sociocultural sensitivity. Offered through Graduate School of Public Affairs. Offered: AWSp.

UCONJ 504 Advanced Interdisciplinary Case Studies in Global Health (3) *Gorstein, Kurth, Shell-Duncan* Uses actual multidisciplinary case studies to (1) analyze quantitative parameters of diseases, (2) contrast the descriptive and analytic approaches of health sciences, anthropology, and nutritional sciences, (3) integrate diverse disciplinary perspectives into cohesive information, (4) organize class presentations, and (5) apply critical thinking in approaching complex health issues. Offered: Sp.

UCONJ 510 Introductory Laboratory Based Biostatistics (2) Introduces methods of data description and statistical inference for experiments. Covers principles of design and analysis of experiments; descriptive statistics; comparison of group means and proportions; linear regression; and correlation. Emphasizes examples from laboratory-based biomedical sciences, and provides demonstrations using standard statistical programs.

UCONJ 517 Interdisciplinary Clinical Research Methods Seminar (2) Provides an introduction to clinical/translational relational research methods, including selection of research questions, study design, measurement, data analysis, and practical aspects of conducting research in clinical settings. Prerequisite: Students from Health Sciences schools conducting research under the Multidisciplinary Predoctoral Clinical Research Training Program. Credit/no-credit only. Offered: S.

UCONJ 520 Molecular Biophysics Research Seminar (1) *N. Zheng* A series of research seminars for faculty and students involved with the molecular biophysics program. Credit/no-credit only.

UCONJ 524 Developmental Neurobiology (3) Survey of contemporary issues in developmental neurobiology, including neurogenesis and differentiation; electrophysiological, morphological, and neurochemical regulation of cellular phenotype; neuronal pathways and synaptic contacts; cellular and synaptic plasticity; and behavior. Examination of molecular biological, morphological, electrophysiological, and behavioral approaches. Prerequisite: background in neurophysiology, neuroanatomy, molecular neurobiology. Instructors: Raible, Reh Offered: Sp.

UCONJ 525 Overview of Faculty Research in Neurobiology (1) Reviews research topics currently being studied in neurobiology. Student preparation consists of reading pertinent articles published on each topic. Prerequisite: first-year graduate student in neurobiology. Credit/no-credit only.

UCONJ 530 Issues in Indian Health (2) Surveys historical and contemporary issues in Indian health. Covers Indian contributions to health, traditional Indian medicine, current disease epidemiology, development of federal Indian health policy, the Indian Health Service, tribal health programs, and consequences of major legislation on Indian health. Prerequisite: current health science student or permission of instructor.

UCONJ 531 Introduction to Mind Body Medicine-An Experiential Elective (2) Sessions contain a didactic component followed by an experiential component and cover a variety of self-care techniques including meditation, exercise, and nutrition. Goals are to promote personal well being, a healthy lifestyle, reduce burnout, and reduce academic difficulties. Credit/no-credit only.

UCONJ 532 Health Sciences Common Book Seminar (1, max. 4) *R. ARNOLD* Covers material related to the current health sciences common book, and provides knowledge of key barriers underserved populations face in obtaining adequate healthcare, and strategies health professions can use to effectively care for underserved individuals. Guest speakers

include community leaders. Service learning course. Credit/no-credit only. Offered: W.

UCONJ 545 Emergency Preparedness for Health Professionals (1) Introduces the roles of health professionals in preparing for community-wide disasters. Emergency preparedness content for graduate and professional students in health sciences. First of two interdisciplinary courses focusing on "all-hazards" preparedness. Credit/no-credit only.

UCONJ 546 Emergency Response for Health Professionals (2, max. 6) Focuses on interdisciplinary emergency preparedness and response for graduate students in health professions. Includes system and policy issues with emphasis on clinical relevance for health professionals. Second of two interdisciplinary courses focusing on "all-hazards" preparedness. Credit/no-credit only.

UCONJ 548 Current Issues in First Nations Behavioral Health: Mental Health and Substance Abuse (3) Historical and intergenerational antecedents of tribal psychiatric and substance abuse disorders. Oppression, economic circumstances, and family functioning as shaping mechanisms for attachment. Implications of insufficient attachment for neuro-development and developmental psychopathology. Traditional vs. mental health and substance abuse assessment and treatment. Self as provider to tribal clients, communities, systems.

UCONJ 550 Healthcare in the Underserved Community (1) *Jocelyn James* Gives graduate/professional students in health sciences an introduction to health related issues faced by underserved populations. Credit/no-credit only.

UCONJ 565 P-The Healer's Art: Awakening the Heart of Medicine (1) Encourages cultivation of humanism in medicine while strengthening a personal commitment to service as our life's work. Facilitates student recognition of common issues

related to resiliency, self-care, working with clinical teams, and supporting peers; also, caring for patients in a healing community of discovery with recognition and appreciation of uncertainty, awe, grief, and loss in the practice of medicine. Prerequisite: health science professional training program. Credit/no-credit only.

UCONJ 584 Plant Tumors (1, max. 9) Discussion of the literature of plant tumors and current research work being done in this area at the University. Offered cooperatively by the departments of Biochemistry, Biology, and Microbiology and Immunology. Prerequisite: offered only to persons actively pursuing work in this area. Instructors: Gordon Credit/no-credit only.

UCONJ 599 Selected Readings in Interdisciplinary Clinical Research (1, max. 6) Analysis and synthesis of selected readings and works in progress related to multidisciplinary and interdisciplinary clinical research. Prerequisite: UCONJ 517; permission of instructor. Instructors: Marshall, Mitchell Credit/no-credit only. Offered: AWSp.

UCONJ 624 Health Equity and Community Organizing (1) *Arnold* Equips students with tools to organize themselves and others to address social and structural injustices that perpetuate health disparities. Didactic coursework complemented with opportunities to apply skills and gain confidence through hands-on collaboration with local leaders and engagement in community-driven listening and advocacy campaigns. Credit/no-credit only. Offered: AW.

UCONJ 646 Introduction to Advocacy for the Health Professions (1) *Genevieve L. Pagalilauan* Learn from advocacy and topic specific experts about fundamental elements of health advocacy. Develop hands-on skills for moving beyond witnessing health disparities to upstream action rooted in community-centered advocacy. Credit/no-credit only. Offered: AWSpS.

SCHOOL OF LAW

LAW

LAW 100 Introduction to American Law (2-5, max. 5) I&S *Theodore A Myhre* Examines the structure of the American legal system and how laws are made. Surveys key doctrinal areas of the law learning fundamental legal concepts, and explore how the law functions and evolves over time, including legal issues and decision-making related to statutory or common law. Offered: A.

LAW 300 Introduction to Law (3-6, max. 6) I&S Understanding the legal system, its functions in the social-economic order, legal reasoning, and the world of legal education and the legal profession. Open to nonlaw students only.

LAW 305 Global Health and Justice (3) I&S *Beth E. Rivin* Explores health as a human right, focusing on injustices and inequities that occur around the world that result in disease, disability and death. Using a justice framework, considers social determinants of health and vulnerabilities of marginalized groups. Students learn about SDGs, human rights law, bioethics and the pivotal role that law and ethics play in addressing injustices in health. Offered: jointly with G H 305; W.

LAW 310 Law, Science, and Technology (4) I&S

LAW 410 Problems in Professional Responsibility (4) I&S

LAW 415 Criminal Justice (3) I&S Examines pre-trial rights of persons suspected or accused of crime, primarily those rights covered by the Fourth, Fifth, Sixth, and Fourteenth Amendments of the U.S. Constitution.

LAW 416 International Contracting: Negotiation and Drafting (3) I&S Skills course designed to introduce process and problems of negotiating and drafting international agreements. Client interviewing and counseling and negotiation and drafting of a contract between parties in the United States and Japan. Open to nonlaw students only. Credit/no-credit only.

LAW 422 Copyright (3) I&S

LAW 429 Public Land Law (3) I&S

LAW 440 Legal Issues of Internet Law (3) I&S Introduces the basic legal issues raised by networked digital technologies, such as the Internet. Covers jurisdiction, speech, privacy/access, propriety rights (copyrights, domain names), emerging law, leading policy debates, as well as fundamental Internet technical skills. Offered: S.

LAW 442 Land Law and the Urban Environment (3) I&S Examination of the major legal tools available to shape the urban environment by controlling the use of land. Considers zoning, subdivision controls, urban renewal, private land-use restrictions, and the rules of nuisance law. Open to law and nonlaw students. Credit/no-credit only.

LAW 443 The Legal Process I (3/5) I&S The system of law and its functions rather than substantive law pertaining to any particular subject or discipline. Open only to nonlaw students.

LAW 444 Constitution and American Public Education (3-6, max. 6) I&S Examines the relationships between the Constitution of the United States and the American system of public education, excluding higher education, in areas of constitutional freedom and legal controls, racial desegregation, and equal educational opportunity, including equal financing of the public schools. Credit/no-credit only. Offered: jointly with EDLPS 444.

LAW 445 Major Issues in American Constitutional Law (3) I&S Significant themes in American constitutional law. Doctrine of judicial review, application of the Bill of Rights to the states, Supreme Court's recognition of fundamental rights, the Equal Protection clause, the Religion clauses, freedom of speech, and presidential powers. Open to law and nonlaw students.

LAW 447 Critical Perspectives in Law (3) I&S Examination of modern critical legal thought and critics views regarding proposed alternative forms of social ordering.

LAW 476 International Economic Relations and Trade Policy (3) I&S Consideration of international control of national trade policies and permissible transnational reach of national trade or other regulation. The General Agreement on Tariffs and Trade (GATT) and the international monetary system examined from legal and economic perspective. Examination and comparison of prescriptive jurisdiction to public international law.

LAW 477 Law, Literature, and Film ([2-4]-, max. 4) VLPA/I&S An examination of literary and cinematic portrayals of and issues important to law, lawyers, and the legal system. Considers both portrayals purporting to depict the legal system as well as works envisioning lawyers and the legal system in a "better world."

LAW 481 Land, American Culture, and the Law: Perspectives on the Use and Ownership of the Natural Environment (1-6, max. 6) I&S

LAW 489 Law and Aging (3) I&S Survey of principal areas of law of special concern to aging population, considering healthcare and healthcare decision-making, public and private income maintenance programs, taxation, guardianships, conservatorships, and other methods of protecting the property of the elderly, counseling, and professional responsibility.

LAW 600 Independent Study or Research (*-)

LAW 800 Doctoral Dissertation (*-)

LAW A

LAW A 500 Introduction to Perspectives on the Law (1) Explores critical perspectives as a method of understanding common laws to provide context for black letter law. Creates a basic framework for understanding the relationship between race, class, gender, sexuality, and the law to help students deepen their ability to represent and counsel clients from diverse backgrounds and personal identities. Credit/no-credit only. Offered: W.

LAW A 501 Contracts ([2-8]-, max. 8) Focuses on guiding principles of contract law, including formation, consideration, bargaining, performance, conditions, termination, breach, defenses, damages,

and remedies available to parties to enforceable agreements. Offered: A.

LAW A 502 Civil Procedure I ([2-6]-, max. 6) Studies procedure that governs how civil disputes in United States are resolved. Offered: ASp.

LAW A 503 Property I ([2-8]-, max. 8)

LAW A 504 Torts ([2-8]-, max. 8) Basic objectives develop an understanding of principles, concepts, and purposes of private law governing injuries and common-law method of adjudication. Topics covered include intentional harms to persons, negligence, and strict liability. The course may cover conversion, trespass to property, nuisance, products liability, misrepresentation, defamation, privacy, misuse of legal procedures, and interference with advantageous relationships.

LAW A 505 Criminal Law ([2-5]-, max. 5)

LAW A 506 Legal Analysis, Research, and Writing ([1-7]-, max. 7)

LAW A 507 Constitutional Law I: Constitutional Structures of Government ([2/6]-, max. 6)

LAW A 508 Transnational Law (3) Survey of basic principles of public international law; comparative and historical overview of various legal traditions (civil law, common law, Islamic law, and mixed systems) . Examines sources, subjects, and challenges of international law, and methodology of comparing foreign legal systems, providing perspective on U.S. legal system and rules. Offered: Sp.

LAW A 509 Administrative Law (3-5)

LAW A 510 Sales (3-4)

LAW A 511 Payment Systems (2/4)

LAW A 512 Secured Transactions (3-4)

LAW A 513 Creditor-Debtor Law ([2-3]-, max. 5)

LAW A 514 Publicly Held Corporations (3)

LAW A 515 Business Organizations (4-5)

LAW A 516 Legal Accounting (2-3)

LAW A 517 Securities Regulation (4) Examines the federal regulations of the offer and sale of securities and the public offering process under the Securities Act of 1933; exemptions from federal registration; the reporting obligations of public companies under the Securities Exchange Act of 1934, and the examination of the impact of the Sarbanes-Oxley Act of 2002.

LAW A 518 Restitution (3)

LAW A 519 Trusts and Estates (5) A survey of the law governing gratuitous transfers of property during life and at death. Primary emphasis on the law of wills and intestate succession, trusts and fiduciary relationships. Consideration also given to disability planning, future interests, and common will substitutes such as life insurance, joint tenancy, and multiparty bank accounts.

LAW A 520 Property II ([2-8]-, max. 8)**LAW A 521 Community Property (2/3)****LAW A 523 Real Estate Transactions (3/4)**

LAW A 524 Law, Science, and Technology (3) P. *KUSZLER* Considers how the linkage between science and law has become more pivotal with advancements in technology. Topics include science in the context of criminal law, public regulation, and individual rights. Explores the power of science to promote justice and expose injustice. Offered: A.

LAW A 525 Water Law (3/4)**LAW A 526 Copyrights and Trademarks (5)****LAW A 527 Environmental Law (4)**

LAW A 529 Public Land Law (3/4) Covers history of federal public land law, including grants of public land to private interests and the creation of management regimes for lands still publicly owned; aspects of legal rules that govern public timber, grazing, wilderness, and wildlife resources. Also, covers such matters as the public trust doctrine and provides a context for understanding current disputes about use of public lands and resources.

LAW A 530 Individual Income Tax ([2-6]-, max. 6)

Study of federal income tax law as it applies to individuals apart from their capacities as partners, shareholders, or beneficiaries of trusts or estates. Examination of the concept of gross income and net income, including investigation of what constitutes income, when it should be taxed, to whom it should be taxed, and its character as unearned, earned, or capital gain income.

LAW A 531 Death and Gift Taxation (2-5, max. 5)**LAW A 532 Taxation of Business Entities (5)**

LAW A 534 Mergers and Acquisitions (4-6) Deals with tactics, strategy, and state and federal law relating to transactions by means of which corporations and other forms of business entity combine. Emphasizes corporate law with some treatment of federal tax and securities law issues. Prerequisite: either LAW A 515 or LAW A 567.

LAW A 535 Trademarks and Unfair Competition (2)**LAW A 536 Securities and Shareholder Litigation (2)**

Covers securities and shareholder litigation in its broadest sense including federal securities litigation, state securities litigation, SEC enforcement, and state law-based derivative litigation. Offered: Sp.

LAW A 537 Taxation of Corporations, Partnerships, and Limited Liability Companies (4-)**LAW A 538 Estate Planning Workshop (3-4)****LAW A 540 Land Use Planning Seminar (3)****LAW A 541 Transnational Tax (5)****LAW A 542 Land Law and the Urban Environment (3)****LAW A 543 Business Reorganization Under the Bankruptcy Code (4)**

LAW A 544 Comparative and Transnational Commercial Law (1-4, max. 4) Examines the political economy of transnational commercial law. Uses select international harmonization instruments (e.g. Cape Town Convention on International Interests in Mobile Equipment, UNCITRAL Model Law on Cross-

Border Insolvency, Vienna Convention on Contracts for the International Sale of Goods) to illustrate and critique different methodological and institutional approaches.

LAW A 545 International Environmental Law (3-4)

LAW A 547 Critical Perspectives on Law Seminar ([2-4]-, max. 4) Considers law from the point of view of Continental philosophy and critical social theory. Involves close readings and intensive discussion of canonical texts from various critical traditions of thinking about law. Students also write and present papers concerning themes raised by the readings. Offered: A.

LAW A 548 Civil Rights ([2-6]-, max. 6)

LAW A 549 Advanced Legal Research (4)

LAW A 550 Constitutional Law ([2-8]-, max. 8)

LAW A 551 Global Governance Seminar (3-4) Introduces international and transnational regimes governing issues as varied as international economic inequality and instability; conflict and peace-building; humanitarian crises and intervention; and global environmental change. Explores principles of regime design and legal architecture. Evaluates the effectiveness and legitimacy of various modes of global governance.

LAW A 552 Antitrust Law and Policy ([2-5]-, max. 5)

LAW A 553 Feminist Jurisprudence Seminar (4) Explores the intersections of law and sex, gender, and sexuality with the aid of various theoretical lenses, prominently feminist legal theory. Focuses on those areas of law where notions of sex, gender, and sexuality seem conflated and confused.

LAW A 554 Labor Relations and the Law ([1-5]-, max. 5)

LAW A 556 Employment Discrimination ([2-4]-, max. 4)

LAW A 558 National Security Law Seminar ([2-6]-, max. 6) Three-quarter seminar that provides an opportunity for study and research in selected legal issues relating to national security law and its

processes and institutions. Prerequisite: LAW A 507. Instructors: Allen Offered: AWSp.

LAW A 560 Employment Issues (2/3) Examination of issues under selected employee protection laws. Analysis of the Fair Labor Standards Act, Workers' Compensation, and Social Security Act (related to retirement, disability, and supplemental income benefits) . Includes assessment of public assistance issues for low-wage workers. Prerequisite: LAW A 509, LAW A 562, or permission of instructor.

LAW A 561 Law and Economics (2-4, max. 4)

Examines the applications of Law and Economics to: torts, property, contract, and criminal law; intellectual property, tobacco litigation, employment law, human organ sales, and U.S. regulatory design. Offered: jointly with PUBPOL 519.

LAW A 562 Employment Law (3-5) Examines the law governing the employment relationship, including the establishment and termination of employment. Topics include employee duties, prohibited employment practices, regulation of wages, hours, and benefits of employment, workers' compensation, and occupational safety and health.

LAW A 563 Local Government Law (3)

LAW A 564 American Legal History (1-4, max. 4)

Reviews the American legal history from colonial times to the civil rights era. Readings cover early constitutionalism, the republican revolution, the antebellum movement, the end of slavery, the regulatory state, and rights of women and minority groups.

LAW A 565 American Indian Law (3-4)

LAW A 566 Theories of Justice ([2-4]-, max. 4)

LAW A 567 Closely Held Business Organizations (4)

Examines elements of various unincorporated business forms and closely held corporations. Reviews relevant state statutes and case law related to each form relevant to advising small business clients on the choice of business form utilized in their ventures. Not open to students who have taken LAW A 515. Offered: A.

LAW A 568 Collective Bargaining and Labor Arbitration (2-4)

LAW A 569 Investments Funds and Managers Seminar (3) *Krug* Explores U.S. regulation of investment managers and invest companies, including hedge funds and mutual funds. Topics draw heavily from federal securities laws, particularly the Investment Advisers Act and the Invest Company Act of 1940, and encompass regulatory developments/proposals and policy considerations underpinning investment industry regulation. Offered: Sp.

LAW A 571 International Organizations Seminar (3)

Provides a critical introduction to some of the issues that are important to understanding how international organizations function today. Focuses on the role of international organizations in the modern forms of international law-making, regulation, and global governance.

LAW A 572 Criminal Justice Policy (4) Provides overview of key policy issues arising in the criminal justice system, such as mass incarceration, victim's rights movement, racial disparities, and wrongful conviction. Considers role of prosecutors and public defenders in contributing to or alleviating these problems, and how participants in the system can provide leadership in addressing them.

LAW A 574 International Law (2-4, max. 4)

LAW A 575 Human Rights History Seminar: Rights, Revolutions, Republics (4) Comparative constitutional history of rights lawyering. Includes political trials from French Revolution in Europe through postcolonial Jacksonian American Republic. Covers basic rhetoric of early human rights discourse: on treason, seditious libel, racial equality, servitude, labor conspiracy, religious liberty, consumer protection, and codification.

LAW A 576 Cross-Border and International Criminal Law (3-4)

Examines responses by states and international organizations to international and transnational crimes. Covers substantive and procedural international criminal law, criminal responsibility, defenses and immunities, and the prosecution and punishment of international criminals in both national and in international

tribunals. Prerequisite: LAW A 505. Instructors: Allen Offered: W.

LAW A 577 Immigration Law (3/4)**LAW A 578 International Business Transactions ([1-4]-, max. 4)****LAW A 579 Child Advocacy Seminar (2-4, max. 4)**

Includes child abuse and neglect, parental rights termination, paternity, and an overview of other practice areas as they intersect with issues of child abuse and neglect. Focuses on Washington law and practice, covering applicable substantive and procedural law, local practice rules, and professional responsibility. Offered: A.

LAW A 580 Family Law (3-5)**LAW A 581 Washington Constitutional Law ([3/4]-)**

Studies the history, structure, content, and role of state constitutions generally, and the development of Washington's constitution in particular. Examines the important distinctions between the federal constitution and state document, and the interplay between them. Covers state declarations of rights and the substantive sections of state constitutions that relate to the structure, role, and constraints. Offered: A.

LAW A 582 Bankruptcy (3-4)**LAW A 583 Insurance Law (4)****LAW A 584 American Public School Law (3)**

Constitutional, statutory, and common law principles common to all public education systems within the United States. Applicable law in a variety of substantive legal areas such as torts, property, contracts, administrative law, and fundamental rights. Offered: Sp.

LAW A 585 Admiralty (3-5)**LAW A 586 Advanced Family Law Seminar (2-4)**

Discusses family law topics previously excluded or covered only minimally including: adoption, paternity, guardianship, third-party custody, parenting plans in the child welfare context, and family law in the intimate partner violence context. Prerequisite: LAW A 580.

LAW A 588 Survey of the American Judiciary Seminar (1) This course provides a survey of the American Judiciary. Students will learn about a variety of legal proceedings through firsthand observations. Students will compare their observations of the American Judiciary with Afghanistan's judicial system. Prerequisite: either LESPA LLM students, or permission of instructor. Credit/no-credit only.

LAW A 589 Elder Law (4)

LAW A 590 Constitutional Law: Equal Protection, Fundamental Rights, and Due Process of Law (2-5, max. 5) Constitutional rights of equal protection, substantive due process, and procedural due process. Also, rights under the Takings Clause and Contracts Clause.

LAW A 591 Constitutional Law: Freedom of Expression (4-5)

LAW A 592 Constitutional Law II ([2-8]-, max. 8) Examines individual constitutional rights, primarily involving guarantees of due process and equal protection found in the 5th and 14th Amendments. Focuses on constitutionality of laws that classify people on basis of race, sex, sexual orientation, and other bases, as well as laws that restrict abortion, contraception, sexual activity, and other individual freedoms. Prerequisite: LAW A 507.

LAW A 595 Jurisprudence and Moral Philosophy ([2/4]-, max. 4) Surveys classic questions in jurisprudence and moral philosophy including the nature, norms, and justifications of legal systems. Considers conceptions of justice in major twentieth- and twenty-first century schools of jurisprudential thought, such as American Legal Realism, Natural Law, Legal Positivism, and Critical Legal Theory.

LAW A 597 Intensive Legal Writing Workshop (2-4) Focuses on how the rhetorical situation of legal writing influences choices about grammar, syntax, sentence structure, and paragraph structure. Students learn to use structures that best serve law-trained readers' needs for clear, concise, cohesive writing, and practice critical reading skills and techniques for self- and peer-editing.

LAW A 598 Legal Research I (3) Introduction to legal bibliography and law librarianship. Basic primary and

secondary legal bibliographic tools. Integration of manual and computer resources for effective legal research. Emphasis on state materials. Offered: jointly with LIS 591.

LAW A 599 Legal Research Methods (3/4) Legal tools that answer more complex legal research problems, such as federal legislative histories, sources of administrative law, specialized subject research. Federal emphasis. Builds on skills and techniques taught in LIS 591/LAW A 598. Extensive work with online resources. Offered: jointly with LIS 592.

LAW B

LAW B 500 Civil Procedure II (2-4) *Margaret Ann Kolberg* Joinder of claims and parties, complex litigation including class actions, securing and enforcing judgments, appellate procedure, and the binding effect of prior decisions: res judicata and collateral estoppel.

LAW B 503 Evidence ([2-6]-, max. 6)

LAW B 505 Introduction to Law for Masters of Jurisprudence (5) Builds on and incorporates knowledge and fundamental principles of constitutional, contract, tort, property, administrative, and criminal law. Designed for graduate students, seeks to delve more deeply into how law is applied in modern society across many industries. Offered: A.

LAW B 506 Conflicts of Laws ([2-6]-, max. 6)

LAW B 507 Federal Courts and the Federal System (3/4)

LAW B 508 Business, Social Responsibility, and Human Rights (2-4, max. 4) *Anita Ramasastry* Addresses business obligations to respect human rights. International human rights norms have historically constrained the behavior only of states. Human rights NGOs, investors, consumers, and governments have increasingly pressed businesses to address human rights, the environment, corruption, and other "social" concerns as part of their operations. Offered: A.

LAW B 510 Problems of Professional Responsibility (2-4, max. 4)

LAW B 511 Decision Making for Lawyers: Concepts, Duties, and Skills (3) Enhances students' legal judgment, problem-solving, and prediction skills. Analyzes the psychology of decision making; describes the legal malpractice and disciplinary implications of deficient decision making; identifies the frequency, costs, and predictors of adverse legal outcomes; and demonstrate methods to improve decision making.

LAW B 512 Legislation and the Formulation of Public Policy (3/4) Overview of the constitutional and procedural rules governing the lawmaking process in Washington State. Provides a survey of the processes common to all proposed legislation, regardless of the substantive area addressed in a particular bill. Covers content in an "issue-neutral" format. Offered: A.

LAW B 513 Advanced Evidence ([2-4]-, max. 4) Covers advanced topics in evidence law and policy. Prerequisite: LAW B 503, which may be taken concurrently.

LAW B 514 Street Law ([1-8]-, max. 8)

LAW B 515 Criminal Procedure: Investigation (3-5)

LAW B 516 International Contracting ([2-4]-, max. 4)

LAW B 517 Juvenile Justice Seminar ([1-6]-, max. 6)

LAW B 518 Appellate Advocacy ([1-3]-, max. 3) Credit/no-credit only.

LAW B 519 Pre-Trial Practice (3-4) Offered: A.

LAW B 520 Trial Advocacy ([2-6]-, max. 6) Credit/no-credit only.

LAW B 521 Trial Advocacy II (3-, max. 6) Addresses more advanced trial advocacy issues than are covered in LAW B 520. Includes a civil or criminal track of study and work with trial lawyers who specialize in that area of practice on more sophisticated issues of strategy, evidence, creative use of exhibits at trial, technology in the courtroom, and ethics. Prerequisite: LAW B 520; permission of

the Director of the Trial Advocacy Program. Offered: WSp.

LAW B 522 Mediation Skills Training (1) Focuses on collaborative style of mediation. Through a mix of theory and practice, students learn the skills, tools, and processes used by mediators. Students observe and practice the five-steps of the mediation process, through demonstrations and roleplaying. Individual coaches work with students to hone their skills. Credit/no-credit only. Offered: AW.

LAW B 523 Negotiation (2-4, max. 4) Credit/no-credit only.

LAW B 524 Alternative Dispute Resolution Seminar (2-, max. 4) Provides opportunities for study, research, and writing related to the legal, policy, and ethical issues in the emerging field of alternative dispute resolution (ADR). Research papers satisfy the advanced writing requirement for JD students. Prerequisite: permission of instructor if LAW B 525 already completed.

LAW B 525 Alternative Dispute Resolution (3) Overview of alternative dispute resolution including negotiation, mediation, arbitration, med-arb, early neutral evaluation, mini-trials, summary jury trials, and E-ADR. Critical evaluation of each process occurs through a combination of assigned readings, roleplay exercises, videotapes, guest presentations, and student-designed classes.

LAW B 526 Mediation Clinic ([1-10]-, max. 10) Credit/no-credit only.

LAW B 527 Criminal Prosecution Clinic (8) Credit/no-credit only.

LAW B 528 Workers' Rights Clinic ([2-8]-, max. 12) Provides clinical training in workers' rights and administrative law under the supervision of members of the Law School faculty. Students represent workers in employment law matters such as unemployment compensation benefits or wage claims. Credit/no-credit only.

LAW B 529 Advanced Environmental Law and Practice ([1-4]-, max. 4)

LAW B 530 Judicial Externship (1-18, max. 18)

LAW B 531 Immigration Law Clinic ([1-12]-, max. 12)

Clinical training in immigration law under the supervision of members of the Law School faculty. The clinic offers a seminar component covering applicable immigration law and procedure, skills training and professional responsibility concerns. The clinic's practice component will consist of students representing clients in deportation and political asylum cases. Credit/no-credit only.

LAW B 532 Advanced Clinic (1-4, max. 4)

Advanced clinical training under the supervision of a law school faculty member in order to complete a project or case begun by the student during a clinic, or to pursue in more depth the subject of the clinic. Prerequisite: Clinical basis for continued work. Credit/no-credit only.

LAW B 533 Interviewing and Counseling for Lawyers (2/3) Credit/no-credit only.**LAW B 534 Counseling Workshop (1-, max. 3)**

Provides an introduction to the culture of counseling in the legal profession. Students learn about effects of power and privilege in the United States and implications for counseling relationships. Students increase their abilities to engage in respectful practice of counseling people from all backgrounds.

LAW B 535 Legislative Externship (1-18, max. 18)

Credit/no-credit only.

LAW B 536 Drafting Business Documents ([1-3]-, max. 3)**LAW B 537 Refugee Advocacy Clinic ([1-12]-, max. 12) Credit/no-credit only.****LAW B 538 Agency Externships (1-18, max. 18)**

Credit/no-credit only.

LAW B 539 Public Interest Law Externship ([1-18]-, max. 18) Credit/no-credit only.

LAW B 540 Japanese Law (3-4) Basic institutions and processes of the Japanese legal system. Historical development and traditional role of law, reception of Western law, and cultural and structural factors that influence the function of law and legal institutions. Offered: jointly with JSIS A 540.

LAW B 541 Chinese Law (4) Introduction to the institutions and processes of the Chinese legal system. Focuses on the contemporary system and its role in relation to political, economic, and social developments. Examines legal aspects governing foreign trade and investment in China. Offered: jointly with JSIS A 541.

LAW B 542 Comparative Korean Law (2-4)

Introduction to basic institutions and processes of the Korean legal systems. Emphasis on the historical development and traditional roles of law, the reception of Western law, and cultural and structural factors that influence the function of law and legal institutions.

LAW B 544 Civil Litigation in Comparative Context ([2-4]-, max. 4)

Covers international jurisdiction, service process abroad, taking evidence abroad, applicable laws and treaties, comparison of trial procedures, enforcement of foreign judgments, and use of arbitration. Uses United States and translated Japanese cases.

LAW B 545 Deposition Practice (3)

Offers intensive training in the applicable law, strategy, skills, and techniques of deposition practice. Combines traditional lectures and demonstrations with the case model developed by the National Institute for Trial Advocacy. Multiple opportunities to prepare, take, and defend depositions, with substantial feedback and criticism. Prerequisite: LAW B 503 or LAW B 513; LAW B 520, either of which may be taken concurrently. Credit/no-credit only.

LAW B 546 Cross-Border Business Transactions Between China and the United States (4)

Uses case study methodology to explore how United States law and Chinese economic policy and business laws are used in achieving Chinese-United States cross-border transactions. Open to law, business, and international studies students.

LAW B 547 Comparative Constitutional Law (2-5)

Examines the constitutional structure of the U.S. government and the jurisprudence of U.S. constitutional courts, and compares them with the constitutional structures and jurisprudence of several foreign countries.

LAW B 548 Forensics (4) *Bailey* Introduces the world of expert witnesses in both criminal and civil cases,

looking at the forms of scientific and technical knowledge commonly involved. Covers not only the standard and rules governing expert testimony, but also provide opportunities for hand on experience. Offered: W.

LAW B 549 Government Regulation of Business in Japan (3) Offered: jointly with JSIS D 549.

LAW B 550 American Legal Systems and Method ([1-6]-, max. 6) Provides an integrated introduction to the basic structure and principles of the U.S. public and private law systems; the sources and techniques for basic legal research; and the analytical and writing skills expected of U.S. trained lawyers. Offered: A.

LAW B 551 Comparative Law Seminar ([2-6]-, max. 6) Provides an introduction to comparative legal scholarship and comparative methods for research in Asian, European, and American law. Examines the challenges and controversies found in comparative law and comparative legal studies as well as methodological innovations in modern comparative legal studies

LAW B 552 Tutorial in Comparative Law ([1-4]-, max. 6)

LAW B 553 Chinese Legal Tradition (3) Offered: jointly with JSIS D 553.

LAW B 554 Research Tutorial ([1-15]-, max. 15) Introduces students to social science research methods that may be applicable to their research agenda. Focuses on reading, discussion, commentary, writing, and especially rewriting under close and targeted supervision by the professor. Offered: jointly with JSIS 595.

LAW B 555 Roman Law (2/3) Constitutional and historical background of Roman law as it evolved over a thousand years: the law of persons (marriage, families, and slavery) ; the law of property and inheritance; the law of contracts; the law of crimes and torts; and constitutional public law. Focus on the "classical" period of Roman law, roughly 100 BCE to 200 CE. Knowledge of Latin not necessary.

LAW B 556 Islamic Law (2-5) Selected topics in Islamic law that highlight major aspects of Islamic civilization. Offered: jointly with NEAR E 536.

LAW B 557 Graduate Writing Seminar ([2-6]-, max. 6) Through class instruction and individual tutoring, students select research topics, submit periodic writing assignments, and make formal presentations, culminating in the submission of a major research paper.

LAW B 558 Doctoral Seminar ([2-10]-, max. 10) Covers basic analytical frameworks and methodology to help prepare students for writing a dissertation. Surveys doctrinal and interdisciplinary legal theory. Examines law teaching and academic scholarship. Students research, draft, edit, and submit a scholarly article for publication. Offered: AW.

LAW B 559 Comparative Law: Europe, Latin America, and East Asia (4)

LAW B 560 Criminal Justice Externship (1-18, max. 18) Credit/no-credit only.

LAW B 561 International Law of the Sea (3-4)

LAW B 562 Quantitative Methods (4) Covers logic, applications, and limits of quantitative reasoning in the law. Includes mathematics from areas such as statistics, game theory, and social-choice theory, together with legal examples from areas such as discrimination, torts, and CLS to help (re) consider issues such as proof, deterrence, and identity politics.

LAW B 563 Marine Law and Policy Seminar ([2-6]-, max. 6) Study and research in selected legal problems relating to ocean and coastal law, marine trade and transportation, marine resources, and protection of the marine environment. Students prepare and present a research paper and critique papers prepared by other students. Prerequisite: LAW B 561, LAW B 565.

LAW B 564 Women, Poverty, and Natural Resource Management (2-3) Seminar examines the links between women, law, land/natural resources, poverty in international development. Issues covered include reasons for focusing on women or

men within households rather than households as units; land/natural resource rights as critical to household food security and development; the role of law in supporting women's rights. Issues are examined through the lens of a legal practitioner in international development. Offered: A.

LAW B 565 U.S. Coastal and Ocean Law (3-5) Study of the legal framework in the United States controlling allocation and use of coastal and marine resources. Topics include coastal zone management, fisheries management, protection of marine mammals and endangered species, marine pollution, offshore oil and gas development, and marine transportation.

LAW B 566 Legal Problem Solving in the Corporate Context (3) Focuses on the lawyer as a problem-solver in advising corporate and business clients. Topics include resolution of legal risks at the intersection of the duties of officers and directors, corporate governance, securities regulation, internal investigations, whistleblowers, alternative means of resolving disputes, and related issues. Offered: Sp.

LAW B 567 General Externship Perspectives Seminar (2, max. 6) Credit/no-credit only.

LAW B 568 Field Seminar in Law, Rights, and Governance (3-5) *Saadia M. Pekkanen, Angelina Snodgrass Godoy, Kathie Friedman* Exposes students to theoretical and policy debates about the causes and consequences of legal evolution, rule of law, and a broad range of world governance concerns. Topics include human rights, markets, commerce, climate, environment, migration, institutions, justice, order, and rule of law. Offered: jointly with JSIS 599.

LAW B 569 Development Innovations Laboratory (1-3, max. 6) *J. LENGA* Students work in teams on international development and human rights projects for nonprofit/nongovernmental organizations under the close supervision of faculty. The work includes legal and factual research and often fact-gathering through interviews. Students present their findings and recommendations to client organizations orally and in writing. Offered: WSp.

LAW B 570 Bio-entrepreneurship and the Law (3) Covers legal issues in bio-entrepreneurship by

tracking product development through a VC-backed start-up company.

LAW B 571 PhD Colloquium (1-3, max. 3) Designed for students to engage with research agendas in the academy and to build a professional skill set for success - from writing conference abstracts and preparing articles for publication to 'workshopping' papers and developing their dissertations. Credit/no-credit only.

LAW B 572 Election Law (3-4) Examines the law of elections in the United States. Major themes include the design of electoral maps; the protection of voting rights; political parties and state action; money in politics; and the administration of elections.

LAW B 573 Supreme Court Decision Making Seminar (2-4, max. 4) Examines Supreme Court decision making from both a theoretical and practical perspective. Surveys representative cases on the Court's current docket. Extensive preparation required of participants, who play the roles of lawyers, justices, and commentators. Emphasis on developing appellate advocacy skills.

LAW B 575 Family Law: Selected Topics (2-3) Covers current cutting-edge and complex areas of family law that challenge traditional definitions of "family." Examines marriage, dissolution, and parenting disputes through the lens of "nontraditional" families and families created through medical intervention. Prerequisite: LAW A 580 or permission of instructor. Instructors: Mastroianni, Price Offered: A.

LAW B 576 Climate Justice Seminar ([1-6]-, max. 6)

LAW B 577 Law, Literature and Film ([2-4]-, max. 4) An examination of literary and cinematic portrayals of, and issues important to law, lawyers, and the legal system. Considers both portrayals purporting to depict the legal system as well as works envisioning lawyers and the legal system in a "better world."

LAW B 578 Seminar on Legal Problems of Economic Development ([1-6]-, max. 6) Focuses on the application of law of international development (comparative, transnational and international) to a series of issues; income redistribution (prominently

including comparative land reform and decollectivization experience) , health and population, environmental and other aspects of "sustainability", women's participation, and role of transnational resource flows.

LAW B 579 Law and Development: History and Theories (3/4) Examines the role of law in fostering economic and social development in developing countries, emerging markets, and nations in transition. Provides a historical overview of the role of law in alleviating poverty and exposes students to key theoretical perspectives. Offered: A.

LAW B 580 Externship Tutorial (2) Credit/no-credit only.

LAW B 581 Land, American Culture, and the Law: Perspectives on the Use and Ownership of the Natural Environment ([1-6]-, max. 6)

LAW B 582 International Development Practicum (1-8, max. 8) Provides experience with an approved non-profit organization, business, judicial or legislative body, or intergovernmental or governmental agency on issues related to law and development and sustainable development. Students work under the guidance of experienced practitioners. Credit/no-credit only. Offered: AWSpS.

LAW B 584 Indigenous Governance Law ([2-6]-, max. 6) Covers advanced topics in Indian Law. Prerequisite: LAW A 565 or permission of instructor.

LAW B 585 Natural Resources Law ([1-4]-, max. 4)

LAW B 586 Global Development Law and Policy Workshop (2-, max. 4) *R. HEDIN, A. RAMASASTRY* Students engage in hands on legal research to address current development challenges in partnership with key development organizations. Offered: WSp.

LAW B 588 Title Leadership in Sustainable Development Colloquium (1-2, max. 2) *Anita Ramasastry* Professional development colloquium for students in Sustainable international Development graduate program. Students will meet with experts from the nonprofit sector, governmental and intergovernmental organizations and the private sector to learn about different career

paths in the field of sustainability. Students will learn about key skills necessary for career placement. Offered: Sp.

LAW B 589 Social Enterprise Law (2-3) Social enterprise is increasingly driving commerce, corporate norms, and investment foals globally. Begins with an introduction of social enterprise, including underlying principles and legal framework, followed by in-depth analysis of governance, operational and investment considerations, both domestic and abroad Includes lectures, reading, and one student project. Offered: W.

LAW B 590 Constitutional Law: Current and Future Issues Seminar (2) Examines cutting edge constitutional claims currently making their way through the lower courts or that seem likely to be litigated in the near future. Prerequisite: LAW A 507 and LAW A 592.

LAW B 591 Law and Society in Asia ([2-6]-, max. 6)

LAW B 593 Natural Resources Commons Property (3) A review of the different forms of natural resources and an exploration of the desirability of managing certain resources as commons or private property. Covers a review of the successes and failures by various groups in setting policy in this area.

LAW B 594 Public Land Law Seminar ([2-6]-, max. 6)

LAW B 595 International Humanitarian Law (3-5) *Lorenz* Investigates International Humanitarian Law (sometimes called the Law of Armed Conflict) , the field concerned with rules developed by civilized nations to protect victims of armed conflict, including the Geneva Conventions. Case studies include the conflict between Israel and the Palestinians, as well as developments in Afghanistan and Iraq. Offered: Sp.

LAW B 596 International Human Rights ([2-4]-, max. 6) Examines international treaties and customary laws protecting fundamental human rights against abuse by governments. Covers major international systems including UN, Council of Europe, European Union, Inter-American, and African Union. Readings include international and American judicial opinions, treaties, and studies by human rights groups and scholars.

LAW B 597 Journal Seminar (1-3, max. 3) Focuses on topic selection, research, and drafting to assist students on one of the law school journals. Provides students with the opportunity to explore a topic in depth, to think critically about current law, and to consider future developments by writing a substantial note or comment. Does not satisfy the advanced writing requirement.

LAW B 598 Advanced Research and Writing Seminar ([1-6]-, max. 6)

LAW B 599 Special Topics (1-12, max. 12)

LAW C

LAW C 507 Constitutional Law I: Constitutional Structures of Government for International Law Graduates (3) Seeks to provide an understanding of the history and theories behind the Constitution, including the source of the federal government's power, the division of power between the federal and state governments, and the distribution of federal power among the legislative, executive, and judicial branches of government.

LAW C 510 Professional Ethics for International LLM Students (1-4, max. 4) *Karen E Boxx* Provides foreign-trained LLM students background in professional responsibility issues, including confidentiality, conflicts of interest, role of the lawyer, and understanding business issues. Designed for international students to master professional responsibility rules online prior to arrival at law school, with discussion sections while in residence. Offered: S.

LAW C 530 For-Profit Small Firm Externship (4-6) Field-based experience in pre-approved for-profit small law firm (10 attorneys or fewer) under supervision of authorized field supervisor. Students may not receive any monetary compensation for the work, nor may clients be billed for work performed by a student. Students must enroll concurrently in an approved companion seminar. Credit/no-credit only.

LAW C 535 For-Profit Corporate Counsel Externship (4-6) Field-based experience in pre-approved corporate legal department under supervision of authorized field supervisor. Students may not receive any monetary compensation for the work,

nor may clients be billed for work performed by a student. Students must enroll concurrently in an approved companion seminar. Credit/no-credit only.

LAW E

LAW E 500 Advanced Writing Project (1-3, max. 3) Independent research and writing project supervised by a faculty member. Projects are structured to develop skills in research, analysis, and writing. Offered: AWSpS.

LAW E 502 White Collar Crime (3-4)

LAW E 503 Analytic Writing (3)

LAW E 505 International Business Compliance (4) Examines legal regulations covering businesses operating internationally, including ways businesses structure efforts to comply with those regulations. Risk management principles applied by businesses, the roles of lawyers, directors, and others in the compliance program, and the underlying law that compliance programs address. Offered: W.

LAW E 506 Business and Financial Literacy for Law Students (3) Introduces students to a broad range of fundamental business and financial topics. Emphasizes breadth, relevance, and promoting a basic understanding of foundational business concepts and terms; financial statements; quantitative concepts; how markets function; core business challenges; and practical, business-related challenges often faced by lawyers.

LAW E 507 Access to Justice Seminar (2) Explores the legal, ethical, and financial issues involved in providing legal services to moderate income persons. Uses a combination of lectures and interactive discussion. Credit/no-credit only.

LAW E 508 Persuasive Writing (2-4) *Anderson* Studies persuasion and rhetoric by practicing legal argument: working with facts, framing issues, constructing legal arguments. Studies examples of good and bad persuasive writing. Students practice written advocacy skills in a number of assignments. Students practice advocacy in the context of pre-trial motions and appeals.

LAW E 509 European Union Law (2-4) Survey of the legal origins of the European Union and the synthesis of the major European legal traditions achieved. Focus on the process of harmonizing national laws of the member states and economic integration in the area of competition law and free movement of goods and services.

LAW E 510 Banking Law (2-3) Introduces the basics of banking law and regulation. Topics include separate sections on U.S. regulation of financial services with emphasis on federal regulation of banks, and on international, cross-border, and comparative banking regulatory issues.

LAW E 511 Venture Capital Deals (4) *O-Conner* Focuses on the legal environment of venture capital (VC) financing of technology start-ups. Analyzes relevant statutes and regulations, and the standard set of negotiated terms in typical VC deals. Students negotiate and draft VC deal documents. Offered: W.

LAW E 512 Rule of Law in a Global Context (2/3) *Anita Ramasastry* Political systems must operate according to the "rule of law" to be deemed legitimate. What does this mean? Explores the meaning of the rule of law, and the importance of the rule of law in terms of economic, socio-political, and human development. Offered: Sp.

LAW E 513 Theories and Tools for Combatting Corruption ([1-4]-, max. 4) Corruption has been identified as an obstacle to development, and a 'cost of doing business' in many countries. Examines theories, causes and consequences of corruption, and select regimes established to combat and measure it, e.g., UNCAC, ORCD Anti-Bribery Convention, U.S. Foreign Corrupt Practices Act, and the Transparency International's Corruption Perceptions Index.

LAW E 514 The Law of Nonprofit Organizations (2-4, max. 4) Examines laws generally applicable to nonprofit corporations and legal issue relating to cooperatives, credit unions, and thrift/mutual associations. Attention given to the Washington Nonprofit Corporations Act with comparable statutes and model legislation.

LAW E 515 Post-Conviction Review (2-4) Covers direct appeals and collateral remedies in state and federal criminal proceedings. Topics include

jurisdictional issues, harmless error, exhaustion, time limits, cognizable claims, history of the Great Writ of habeas corpus, and the federal AEDPA statute. Offered: Sp.

LAW E 516 Criminal Procedure: Adjudication (4/5) Covers the formal charging, trial, and appellate stages of criminal proceedings, including grand jury proceedings, prosecutorial discretion in charging, pretrial release and detention, charging and venue joinder and severance, double jeopardy assistance of counsel, discovery, and disclosure, criminal trials appeals, and collateral post-conviction remedies.

LAW E 517 Legal Information Technology (2-4) *A. THOMSON, B. WILLIAMS* Introduces the theory and practice of legal informatics.

LAW E 518 Torts II (2-4, max. 4) Covers advanced topics in tort law, including defamation, invasion of privacy, intentional infliction of mental distress, medical malpractice, misuse of legal proceedings, misrepresentation, interference with prospective advantage, nuisance, products liability, toxic torts, trespass to chattels, conversion, and vicarious liability. Prerequisite: LAW A 504. Offered: Sp.

LAW E 519 Philosophy of Law (4) Explores jurisprudence as "the jurist's quest for a systematic vision that will order and illuminate the realities of the law" and legal philosophy as "the philosopher's effort to understand the legal order and its role in human life." Examines various texts, emphasizing works of one or more proponents and critics of liberalism.

LAW E 520 European Union Constitution (4) Examines the European Union constitution adopted in the Lisbon Reform Treaty: history, values, and objectives; EU institutions and finances; economies, political, and constitutional competences; citizenship and democracy; human rights and fundamental freedoms; common foreign policy; security and defense; and amending the constitution. Offered: A.

LAW E 521 Litigation Perspectives: Bench to Trench (3) Focuses on areas of trial practice, highlighting difference between state/federal practice: client communications; cost effective case management; pleadings, discovery and motion practice; Rule 11 sanctions; local rules of Western District of Washington; mysteries inside judicial chambers;

managing "big" case; settlement negotiation/ alternative dispute resolution; expert witnesses; demonstrative evidence; trial preparation; and the trial itself.

LAW E 522 Advanced Constitutional Law: Sexual Orientation and Gender Identity (1-4, max. 4)

Examines various constitutional provisions from a gay rights perspective. Topics include the rights of equal protection and substantive due process, as well as the First and Ninth Amendments and the Full Faith and Credit Clause. Offered: A.

LAW E 523 Entrepreneurial Law Clinic ([1-9]-, max. 9) Prerequisite: LAW A 526, LAW E 547, or LAW A 546. Offered: S.

LAW E 524 Child Advocacy Clinic ([3-12]-, max. 12)

LAW E 525 Poverty Law (3-4) Overview of legal issues affecting poor people, including relevant background readings on poverty and access to justice, and selection problems such as housing and homelessness, education, employment issues of low-wage workers, income support and welfare reform, consumer law, family law, and child care. Offered: A.

LAW E 526 Law Reform in Transition Economies Seminar ([2-4]-, max. 6) Using interdisciplinary perspectives and case studies, this seminar probes the assumptions, methods and outcomes of commercial law reform in transition economies. Also highlights and critiques the role of international lawyers in this important, emerging area of practice.

LAW E 527 Bankruptcy Client Representation Project ([1-4]-, max. 4) *Kuno* Provides an opportunity for students to interview a client, evaluate the appropriateness of different forms on bankruptcy as a solution to their debt problems, and provide representations in obtaining the bankruptcy. Student teams are paired with pro bono attorneys under the supervision of a part-time faculty member. Credit/no-credit only. Offered: W.

LAW E 528 Masters of Jurisprudence Practicum (1/6) Experience with an approved non-profit organization, judicial or legislative body, or governmental agency on issues related to law and/or policy. Students work under the guidance of experienced practitioners. Both student and field supervisor provide the supervising law faculty

member with a final written evaluation. Credit/no-credit only. Offered: AWSpS.

LAW E 529 Tribal Court Public Defense Clinic (4-, max. 12) Offers clinical training in substantive areas of law implicated in representation of Native American tribal court criminal and dependency proceedings. Open to third year students in the JD program. Offered: AWSp.

LAW E 530 Race and Justice Clinic (3-4, max. 12) Focuses on how lawyers can address racial disparities for youth in the juvenile justice system by advocating in multiple forums. Students participate in direct representation on clients, community education, and coalition building. Topics include the history of race in juvenile justice, past efforts to reduce disproportionate minority contact in juvenile justice, the School to Prison Pipeline, skills training, community lawyering, and systems cha

LAW E 533 Rights in America Seminar: Equality, Liberty, and Democracy (4) Deep historical exploration of a jurisprudentially revolutionary constitutional conflict that pits courts, local government, and the U.S. Congress in passionate struggles over gay and lesbian antidiscrimination rights; freedoms of speech and religion; and African-American political equality in the nation's capital. Offered: S.

LAW E 534 Risk and Reward in Sustainable Development (3) Focuses on the intersection of green, high performing buildings and the law. Students learn to identify and understand the risks and challenges presented by high-performing buildings, and analyze frameworks and strategies to manage and overcome these challenges. Offered: jointly with R E 559; Sp.

LAW E 535 Basic Income Tax Concepts (3) Basic federal income tax principles, how the tax law impacts a wide variety of business and personal transactions and decisions, and what a reformed tax law might look like.

LAW E 536 Practical and Professional Responsibility Issues in the Small or Solo Law Practice (3-4) Credit/no-credit only.

LAW E 537 Refugee Law (2) Examines the processes in the United States for the admission of refugees

and for the adjudication of asylum claims. Explores international refugee policy and evolving legal norms concerning asylum, temporary protection, repatriation, resettlement, and internal displacement.

LAW E 538 Transnational Civil Litigation in U.S.

Courts (3-4) Examines the law governing private civil disputes in U.S. courts arising from transnational transactions, including: jurisdiction; forum selection and choice-of-law clauses; extraterritorial service of process, discovery, and application of U.S. law; parallel proceedings; foreign sovereign immunity; Act of State doctrine; and recognition and enforcement of foreign judgments.

LAW E 539 United States and European Union E-Commerce Law (2/3)

Compares the different attitudes to regulation of e-commerce and the information society in the U.S. and the European Union. Topics may include: an introduction to European Union institutions, regulatory, cultural themes in the Internet; e-society and e-commerce in Europe; regulation of illegal, harmful content, and Internet Service Provider liability, etc.

LAW E 540 Transnational Litigation (3) *John O Haley*

Considers transnational litigation involving civil, common, and hybrid law jurisdictions. Students learn nuances of how jurisdiction is asserted and forum determined in global transnational disputes. Offered: A.

LAW E 541 Cannabis Law Seminar (2) Seminar introduces student to federal and state laws governing medical and recreational cannabis. Guest lecturers will include government officials, cannabis law practitioners, and industry leaders. Students will write and present a substantial research or policy paper. Offered: A.

LAW E 542 Queer Youth Advocacy (2) Addresses the legal needs of lesbian, gay, bi-sexual, and transgendered youth. Topics include educational advocacy; legal consequences within the parent-child relationship, access, consent, and right to refuse physical and mental health services; and accessing services for homeless and foster youth.

LAW E 544 Privacy Law (2) Examines the legal doctrines of privacy and confidentiality used to protect personal information. Aims to understand

how courts and legislatures seek to protect information as new technologies and institutional practices emerge. Studies scope and implications of federal statutes that attempt to establish fair information practices with respect to electronic personal information.

LAW E 545 International Trade Law (2-4, max. 4)

Introduces the legal framework, policies, and jurisprudence of the World Trade Organization (WTO). Provides an overview of the regulation of trade in goods, services, and intellectual property that is necessary for international legal practice, and provides the policy analysis to better understand the trade dimensions of international legal disputes.

LAW E 546 International Commercial Arbitration (2-3)

Introduces the legal framework of international commercial arbitration (ICA) with a focus on the New York Convention of 1958 and the United States Federal Arbitration Act of 1925.

LAW E 547 Robotics Law and Policy (2)

Explores the legal and policy aspects of near-term robotics and artificial intelligence. Relevant technologies include driverless cars, drones, medical, personal or service robots, and various expert systems. Readings draw from multiple disciplines, but focus particularly on legal or policy sources. Offered: Sp.

LAW E 548 India Trade and Transactions Seminar (2)

A comparative commercial law course taught simultaneously to students at UW and law school in India. After learning the law and legal practice of US and India, students will negotiate agreements based on a hypothetical joint venture. Students will learn the cultural differences in the practice of law and business. Offered: AWSp.

LAW E 549 International Investment Law and Practice (4/5)

Examines the rise of international investment law and practice, including topics such as Bilateral Investment Treaties (BITs), standards of treatment, investor-state arbitrations, and social and political controversies related to the governance of foreign direct investment (FDI) in developed and developing countries. Offered: jointly with JSIS B 549.

LAW E 550 Complex Litigation Seminar (2-4)

Examines practical and theoretical problems associated with complex litigation, including class

actions and multidistrict litigation. Prerequisite: either LAW B 500 or LAW B 507.

LAW E 551 Law and Entrepreneurship (3/4)

Planning-oriented course uses the problem method to explore the corporate tax and securities law, general business and financial considerations related to small business formation and financing.

Prerequisite: LAW A 515; LAW A 530.

LAW E 552 Moderate Means Program Practicum (4)

The UW Moderate Means Program Practicum provides students, working under faculty supervision, a hands-on, experiential course that will enhance their interviewing, issue spotting, legal research and legal writing skills, while at the same time providing help to individuals in Washington State who need civil legal assistance. Credit/no-credit only. Offered: A.

LAW E 553 Technology Law and Public Policy (2)

Survey of the domains of public policies that have been affected by the information revolution. Examines issues from Internet taxation, to personal data privacy, information warfare. Discusses the implications of the new public policies and whether it is feasible for states to enact different information policies.

LAW E 554 Technology Law and Public Policy Clinic ([2-4]-, max. 12)

Clinical training in legislative and public policy advocacy under supervision of law school faculty. Examines legislative process, drafting, commentary and advocacy, appellate advocacy, and professional responsibility concerns. Supervised practice experience representing public interest with respect to law and technology. Prerequisite: LAW E 553, which may be taken concurrently. Credit/no-credit only.

LAW E 555 Legislation ([2-5]-, max. 5)

Studies topics related to legislation and the legislative process. Examines the structure and operation of legislative bodies as well as the contemporary debates and laws that surround the process. Considers the theories and canons of statutory construction and interpretation. Introduces the basic techniques of statutory drafting. Offered: W.

LAW E 556 International Human Rights Clinic ([1-12]-, max. 12)

Interdisciplinary clinical training in international human rights. Includes seminar

component on legal issues, practice skills, and reflections on human rights projects. Fieldwork on human rights projects tests, develops, and enhances skills training through real-world human rights practice with cross-campus, U.S., and international partnerships. Credit/no-credit only. Offered: AWSp.

LAW E 557 Human Rights Advocacy Seminar ([2-4]-, max. 4)

Provides interdisciplinary training in international human rights advocacy. Provides background knowledge and exposure to skills needed to participate effectively in advocacy efforts, including the Interdisciplinary International Human Rights Clinic. Offered: AW.

LAW E 558 Voting Rights Research and the Law (3)

Address two primary topics related to the Voting Rights Act of 1965, Sections 2 and 5, and their application today: 1) redistricting and minority representation; and 2) the protection or suppression of the right to vote. Also includes introductory research methods and statistical analysis.

LAW E 560 Contemporary Muslim Legal Systems Seminar (2-6, max. 6)

Provides a forum for in-depth research of legal developments in nations where governments are trying to establish legal systems that ensure economic development and human rights, while at the same time ensuring that their law respects "Islamic norms." Prerequisite: LAW B 556. Instructors: Lombardi Offered: A.

LAW E 561 Critical Race Theory (2-4)

Provides an overview of Critical Race Theory (CRT) and the contrasts between CRT and liberal and conservative analytical frameworks on race and the law. Examines the questions and criticisms raised about CRT, as well as the impact of the field on legal and political discourse.

LAW E 562 Museum Law (3) Adam Eisenberg

Explores the legal issues faced by art and science museums. Topics include copyright/trademark law, how the First Amendment protects controversial exhibits, repatriating Native American remains and cultural artifacts, donor rights, art appraising, wartime looting, and the ongoing debate over stewardship and ownership of the world's natural and cultural resources. Offered: jointly with MUSEUM 562; A.

LAW E 566 Washington Innocence Project Clinic (3-4, max. 12) Offers students clinical training investigating and litigating claims of actual innocence on behalf of prisoners serving lengthy sentences for serious crimes. Open to second- and third-year students in the JD program.

LAW E 567 Technology Transfer Law and Policy Seminar (2) *O'Connor* Covers the law and policy affecting university and non-profit research commercialization and technology transfer. Focuses on the Bayh-Dole Act, the laws and regulations covering data, copyrightable works, materials, tax exempt issues, employee assignments, and other matters. Offered: W.

LAW E 568 Indian Law Clinic (4-, max. 12) Supervised practice component on Indian law practice and procedure and advocacy skills. Provide legal advice, brief services, and representation to low income Indian clients under the direct supervision of a practicing attorney. Client counseling research, negotiation, and community education. Offered: AWSp.

LAW E 569 Advanced Mediation Practicum (3) *Ewalt* Advanced clinical practicum in mediation under the supervision of the faculty and experienced mediators. Students convene and mediate cases referred to the Mediation Clinic from government agencies and other sources. Only for students who have successfully completed the Mediation Clinic LAW B 526, or have other comparable experience. Offered: A.

LAW E 570 International Economic Relations and Comparative Trade Policy (3/4)

LAW E 571 LatCrit Theory, Praxis and Community Seminar (2) Details LatCrit Theory from its origins to its present form as a branch of contemporary critical legal scholarship. Provides students with tools for understanding inter-group differences, including transnational dynamics, within the context of legal decisions and interpretations.

LAW E 572 Race and the Law (3-4) Evaluates the legal regulation of race in the United States. Addresses the racial and legal history of major groups in the United States, including African-Americans, Asian-American, Latinos, Native Americans, and whites, and examines the nexus

between law and the construction of race as a concept and locus of identity.

LAW E 575 Veterans Legal Aid Clinic (3, max. 9) Students provide legal aid to low income veterans on upgrading military discharges, child support, VA housing programs, correcting criminal convictions, reinstating suspended driver licenses, assistance before VA on overpayments or complex benefits issues. Specialized outreach and service provided to incarcerated veterans, veterans in treatment courts, women veterans and homeless/at-risk veterans.

LAW E 576 Persuasive Oral Communication (3) No matter whether in the office, the conference room or the courtroom, all great lawyers must be great communicators. Course is designed to help achieve more effective, dynamic and persuasive speech. Workshop setting gives opportunities for regular practice in vocal skills, physical presence, rhetorical devices and acting techniques. There will be weekly assignments to prepare, which will be presented to the class as well as required readings. Credit/no-credit only.

LAW E 578 Foundations in American Law tested on the Bar Exam (2-8, max. 8) Provides LLM students an early start on bar exam preparation. Students review heavily tested areas across several bar exam subject areas while learning test taking strategy for the Essay Multistate and MPT portions of the Washington UBE, NY, or CA bar exams. Offered: WSp.

LAW E 579 International and Foreign Law Research (2-3) Overview of international law materials. Examines primary materials in the vernacular and in translations: constitutions, charters, codes, administrative rules, cases, treaties, and other international agreements. Focuses on practice tools such as directories, guides, digests, and proceedings. Prerequisite: LAW A 506 or permission of instructor.

LAW E 580 Gender Violence and the Law (3-4) Introduces substantive legal areas including: evidence and rape shield laws; protection orders; civil liability of perpetrators and third-parties, and restorative civil remedies in housing, employment, and education contexts. Looks at national trends and primarily focuses on Washington State Law.

LAW E 581 Reproductive Rights and Justice Seminar

(4) Ainsworth Provides students with an in-depth study of the constitutional framework governing reproductive rights, as well as critiques of that framework from feminist theorist, those who oppose abortion and contraception, and those whose reproduction and sexuality have been historically marginalized and regulated. Studies different bases in the law for reproductive rights claims, including privacy, equality, and dignity. Offered: A.

LAW E 582 Information Policy: Domestic and Global

(5) National and international information policy: public and private sector policy in terms of privacy, access, and exploitation; technology infrastructures and policies supporting the information industries. Coverage includes freedom of information privacy, copyright, telecommunications, and emerging technologies.

LAW E 583 Globalization and the Law ([1-6]-, max.

6) Focuses on the rise of global law, intersection of national, international, and global law, and the legitimacy of global law.

LAW E 584 Masters of Jurisprudence Professional Development Seminar (1-, max. 2)

Professional development colloquium for Masters of Jurisprudence students. Students learn about professional opportunities available for Masters of Jurisprudence graduates, and obtain key skills to access positions to optimize their opportunities. Credit/no-credit only. Offered: WSp.

LAW E 590 Incarcerated Parents Advocacy Clinic ([4-5]-, max. 9)

Students advocate for incarcerated parents seeking to preserve relationships with children despite incarceration. Supervised by clinic faculty, students represent incarcerated parents in dependency and other court proceedings, working with clients and families to maintain the parent-child relationship. Students develop interviewing and counseling, negotiations, and trial preparation skills. Credit/no-credit only.

LAW E 591 Non-Profit Organizations Clinic (1-3, max. 3)

Provides students with an opportunity to represent a real client in setting up a non-profit organization and applying for tax-exempt status. Students draft multiple documents such as articles of

incorporation, applications for tax-exempt status, and client communications. Credit/no-credit only.

LAW E 592 Federal Appellate Advocacy (1-6, max. 6)

Representation of an otherwise pro se litigant in an appeal in the Ninth Circuit. Preparation of the opening and reply brief and conduct the oral argument. Requires substantial research, multiple drafts, and painstaking familiarity with the record. Prerequisite: permission of the instructor. Credit/no-credit only.

LAW E 594 Regulatory Environmental Law and Policy ([1-12]-, max. 12)

Examines the applied and theoretical dimensions of environmental rule-making, with particular emphasis on the development of an administrative record. Students prepare written comments on pending rules proposed by governmental agencies. Prerequisite: either LAW A 527 or LAW B 585; LAW A 509, which may be taken concurrently. Credit/no-credit only.

LAW E 595 Animal Law (3)

Examines substantive law and procedure, specific cases, legislation, and background societal mores that force an evolution and backlash in the level of jurisprudential and legislative comfort with new ways of seeing and speaking about animals other than humans. Offered: WSp.

LAW E 596 Wildlife Law Seminar (3) Anderson, Knudsen

Covers the basic issues involved in the law of fish and wildlife management. Topics include the relationship between property and wildlife, federalism issues, and international regulatory regimes.

LAW E 597 Global Warming and Justice Seminar (4)

Rodgers Explores case studies (worldwide but with an emphasis on indigenous peoples) addressing multiple legal responses to the consequences of climate change. Explores remedies under U.S. and international law. Offered: WSp.

LAW E 598 Climate Change Law (3-4) Rodgers

Develops student understanding of the consequences of anticipated climate change across a spectrum of issues that include human health, the Earth, and its oceans. Covers the practice of agriculture, revised energy futures, legislative responses to climate change, and local, state, regional, and tribal efforts to address it. Offered: Sp.

LAW E 599 Legislative Advocacy Clinic (2-6, max. 15)

Clinical training in legislative and public policy advocacy. Topics include the legislative process, drafting commentary, advocacy, building a legislative agenda, working with coalitions, and ethics. Direct work with non-profit and other organizations advocating in the state legislature to develop and move legislation as well as respond to proposed legislation. Prerequisite: LAW A 579. Offered: AWSp.

LAW (HEALTH)

LAW H 501 Fundamentals of Health Law (4)

Topics include: healthcare reform; obligations to provide care (including EMTALA) ; medical decision-making law; private health insurance and managed care (including ERISA, HIPAA, and COBRA) ; Medicare; Medicaid and SCHIP; regulation of healthcare providers; staff privileges and hospital-physician contracts; tax exemption; antitrust, and fraud and abuse laws.

LAW H 502 Medical Malpractice (3-4)**LAW H 503 Medical Ethics and Jurisprudence (3-)**

Dudzinski, Kuszler Examines the relationship between bioethics and law. Reviews the basic concepts of both disciplines; their theoretical and practical connections. Analysis of principle legal cases and statutes illustrating such issues as informed consent to treatment, foregoing life support, research with human subjects, confidentiality, and allocation of health care resources. Offered: jointly with B H 535.

LAW H 504 Legal, Ethical, and Social Issues in Public Health Genetics (3)

Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with B H 514/PHG 512; A.

LAW H 506 International Bioethics, Social Justice, and Health Seminar (1, max. 3) *Rivin* Explores case studies of ethical dilemmas in research and medical practice and violations of international human rights norms in the design, implementation, and evaluation of health programs and policies. Bioethics and human rights law are the foundational tools for

critically evaluating global health impact. Credit/no-credit only. Offered: jointly with G H 517; Sp.

LAW H 507 Law, Medicine, and Ethics in the Context of Pain Management (2)

Reviews the problem of physicians failing to relieve pain of patients in the dying process and legal and ethical issues they face as well as cultural sources of the problem.

LAW H 508 Beginning of Life: Rights and Choices (2)

Addresses the controversial legal issues engendered by our increasing control over the beginning of life. Focuses on the law, regulation, and policy implications of contraception; new reproductive and genetic technologies, including surrogate parenthood, sperm and egg donation, in-vitro fertilization, and other methods of conquering infertility; and abortion.

LAW H 509 End of Life: Rights and Choices (2)

Address controversial legal issues engendered by our increasing control over the end of life. Focuses on patient autonomy issues at the end of life including withdrawal of life support, surrogate decision making, advance directives, and patient choice to hasten death with medical assistance (physician aid in dying) . Offered: Sp.

LAW H 510 Topics in Law and Medicine ([1-4]-, max. 4)

Seminar deals with controversial issues arising from interface and relationship between law and medicine. Focuses on role of government and oversight bodies in understanding and regulating access, use and misuse of medical treatments, and technology.

LAW H 511 International Research Ethics, Law, and Policy (3)

Kuszler, Rivin Exploration of legal requirements and ethical principles related to responsible conduct and research in a variety of different government structures, healthcare systems, and research environment. Compares and contrasts law and ethical standards applicable to research enterprises in developing countries, industrialized countries, and ethically distinct communities. Offered: jointly with B H 553; A.

LAW H 512 Public Health Law (2-4, max. 4)

Focuses on the role of law in public health administration and in the increasingly regulated healthcare industry. Provides a foundation in the relevant law for public

health officers and healthcare industry administrators. Offered: jointly with HSERV 551; A.

LAW H 513 Legal Issues in Emerging Healthcare Technologies (4) Covers legal issues related to the cutting edge ways to deliver healthcare, including telemedicine, healthcare robots, mobile medical apps, gene sequencing, nanotechnology and personalized medicine.

LAW H 515 Global Health Law (3) *Kuszler* Provides an examination of the legal, economic, social, ethical, and political aspects of global health. Explores the emergence of global health law as a multilateral tool to address health disparities and improve the health of the vulnerable. Offered: A.

LAW H 516 Study Abroad: Global Health, Human Rights, and the Rights of the Child in Cambodia (10) Study abroad exploring the theoretical underpinnings and practical aspects of the rights of the child in the context of Cambodia's health system, focusing on children with disabilities. Approaches the rights of the child from legal and health services perspectives, combining methodologies of research and analysis for practical application. Offered: S.

LAW H 517 Legal Issues for Global Health Programs (2) *J. Lane* Examines the role of the law, legal strategy and legal research in supporting and advancing global health programs. Provides students an outline of the legal issues impacting global health programs and instruction on working with local counsel and research partners in foreign jurisdictions. Offered: W.

LAW H 518 Legal and Policy Solutions to Improve Global Health of Women, Adolescents, and Children (1-2, max. 2) *J. Lenga-Long, B. Shah, J. Sylker* Explores specific examples of how legal and policy frameworks can impact health inequities for women, children, and adolescents. Teaches to formulate multi-disciplinary strategies to improve health outcomes. Credit/no-credit only. Offered: W.

LAW H 520 Genetics and the Law (3) Explores and analyzes legal issues arising from genetic technologies and information. Statutes, regulations, and cases demonstrate the constitutional, contract, tort, criminal, and family law use of genetic science to determine rights, disputes, and controversies. Prerequisite: either LAW H 504/B H 514/PHG 512 or

permission of instructor. Offered: jointly with PHG 523; Sp.

LAW H 521 Medicare and Medicaid Finance and Reimbursement (2-3) *Gould, Williams* Covers the history of Medicare and Medicaid, how they are administered, how eligibility is determined, payments are made, and financing is structured. Includes changes to both programs from the Affordable Care Act, how the federal government audits providers, and the available appeals. Offered: W.

LAW H 522 Affordable Care Act Seminar: Legal and Policy Issues in Health Reform Implementation (2) *K. Merrikin, S. Thieme Sanford* Delves into the Affordable Care Act, including its historical context, key provisions, policy choices, legal challenges, implementation issues and future directions. As part of the seminar, which utilizes a multi-disciplinary approach, each student analyses an ACA provision of interest.

LAW H 524 Forensic Evidence (3) Examines the application of the rules of evidence in cases that involve forensic evidence. Examines paradigmatic cases involving homicide and physical or sexual assault, although the principles examined are applicable generally in civil and criminal cases.

LAW H 525 Business Transactions in Healthcare (3) *Snyder* Focuses on the complex business transactions involved in modern healthcare mergers. In addition to the transactional business aspects, the students also address government rules, regulations, and prohibitions that arise. Students in teams represent different sides of the transaction in this simulated experiential learning opportunity. Offered: W.

LAW H 526 Healthcare Employment Law (3) Focuses on employment in health care settings, and will specifically cover "at will" employment and the development of implied and express individual employment contracts, recruiting and hiring, negotiated collective bargaining agreements, managing health care employees, and termination of employment. Offered: Sp.

LAW H 528 Health Law Practicum (1-6, max. 6) Provides experience with an approved non-profit organization, judicial or legislative body, or

governmental agency on issues related to health law or policy. Students work under the guidance of experienced practitioners. Both student and field supervisor provide the supervising law faculty member with a final written evaluation. Credit/no-credit only. Offered: AWSpS.

LAW H 529 HIV and the Law: Legal and Political Developments of the AIDS Crisis (2-4, max. 4) *Price* Traces thirty years of the HIV/AIDS epidemic, beginning with the discovery of the disease through the present. Focuses on many of the socio-political-legal aspects of the HIV/AIDS crisis, including discrimination, quarantine, immigration, criminal law, insurance, public health, and family law issues. Offered: Sp.

LAW H 530 Disability Law and Policy (3-4) Considers the definition of disability as defined by statute (ADA, FRA), case law, and social perception. Focuses on education law and entitlements, access to and discrimination in employment, housing, public transportation, and healthcare.

LAW H 531 Health Law Advocacy (2-4, max. 4) *Fox, Lenga-Long* Explores select aspects of legal advocacy for vulnerable patients and surrogate decision-makers in healthcare settings. Focuses on practical, pragmatic solutions to complex health law advocacy issues, using both classroom participation and mock guardianship hearings. Offered: Sp.

LAW H 534 Mental Health and the Law (3) Covers medical and legal definitional issues as well as major civil and criminal law issues, including standards and procedures for involuntary commitment; consent for, and informed refusal of, treatment; de-institutionalization/community-based treatment; the insanity defense; competency to stand trial; and punishment of the mentally ill convict.

LAW H 536 Research Ethics and Regulation (3) *Mastroianni* Explores the ethical foundations, principles and concepts, and U.S. laws related to the conduct of research with human subjects. Required for graduate students in the Department of Bioethics and Humanities, School of Medicine. Offered: jointly with B H 536; W.

LAW H 540 Health and Human Rights (3) *Beth E. Rivin* Examines the basic concepts in the fields of human rights law and public health, and uses those

concepts to examine the interdependence and tensions between the two fields. Introduction to the fields of public health and human rights law, examining the impact of health policies and programs on human rights. Offered: jointly with G H 516; Sp.

LAW H 545 FDA Law (3) *Kuszler* Surveys the scope of regulatory authority accorded to the FDA. Focuses on products used in medical care, notably pharmaceutical drugs, medical devices, and biologics. Considers food safety, regulation of cosmetics, and oversight of carcinogenic substances. Offered: Sp.

LAW H 550 Medical Products Liability Law (3) Focuses on product liability claims arising from defective design/development, manufacture, marketing, and distribution of medical technologies. Considers the concepts of strict liability, negligence, breach of warranty, and informed consent as well as the relative roles of state and federal law. Offered: W.

LAW H 579 Interactive Seminar (1, max. 30) *Bruce S Weir* Seminar series on topics related to public health genetics, including current bioethical, legal, medical, biotechnology, and public policy issues. Credit/no-credit only. Offered: jointly with PHG 580; AWSp.

LAW H 580 Competition in Health Care (3) Examines the role competition and its opposite, regulation, play in the healthcare industry in the United States.

LAW H 582 Healthcare Fraud and Abuse (2-3) Considers federal and state laws that impose criminal and civil penalties on healthcare providers for activities ranging from payment for referrals, submissions of false claims, misconduct in medical research, the illegal disclosure of patient information, and the abuse and neglect of patients in long term care settings.

LAW H 590 Advanced Research and Writing Seminar in Health Law (2-, max. 4) *Kuszler* Dedicated research and writing seminar. Includes a substantial paper on a health law topic. Offered: WSp.

LAW H 599 Health Law Tutorial (1-4, max. 4) Focuses on a specialized area of health law.

Prerequisite: limited to students in the graduate program in health law; must be approved by the program director. Offered: AWSp.

LAW (INTELLECTUAL PROPERTY)

LAW P 501 Intellectual Property Law Core (6-8)

Intensive study of intellectual property law core subjects: patents, copyrights, trade secrets, and trademarks. Examines fundamental principles, their underlying policies, and how the laws inter-relate. Not open to students who have taken LAW A 522, LAW A 546, LAW E 567, or LAW E 588.

LAW P 502 Trademark and Trade Secret Law (3/4)

Knowledge of trade secret law and trademark law is particularly valuable to all intellectual property and business lawyers. Course explore issues relating to protection of trade secrets under state and federal law. Topics include philosophical bases & policies underlying trademark protection; distinctiveness requirement; protection of trade dress and product configurations; priority of usage; infringement/dilution; and the role of remedies. Offered: A.

LAW P 503 Introduction to American Legal Systems and Skills (2-3)

Introduces the U.S. system of state and federal courts in the context of intellectual property. Discusses how intellectual property laws come from the common law as well as state and federal statutes and regulations. Teaches legal research, writing, case briefing, and analysis skills. Offered: A.

LAW P 504 Economic Analysis of Intellectual Property (2-3)

Explores the intersection between intellectual property law and economics from both a macro and micro economic perspective; economic justification of intellectual property law; and portfolio management tools that can evaluate intellectual property protection as an investment. Prerequisite: either LAW P 501 or LAW E 567. Offered: W.

LAW P 505 International Intellectual Property Law (2-3)

Focuses on international treaties as they relate to protection of trademarks and copyrights. Introduces international aspects of branches of intellectual property, including general principles of comparative and international law, and specific law

related to obtaining and enforcing intellectual property rights in foreign countries. Prerequisite: either LAW A 522, LAW E 567, LAW E 588, or LAW P 501.

LAW P 506 Transnational Intellectual Property Law Theory and Practice (4)

Takenaka Studies comparative intellectual property law using a series of lectures, license exercises, and a mock trial. Consists of a series of lectures on campus followed by a one-week intensive transnational seminar hosted by a law school in Asia or Europe. Offered: Sp.

LAW P 507 Copyright Law (3/4)

Provides overview of copyright law/policy. Learn fundamental features of copyright law, includes validity, infringement, subject matter requirements/limitations, defenses, boundaries between copyright and other IP regimes. Explore source/nature of copyright protection, justifications for such protection, whether are philosophical, economic, or constitutional. Familiar with Copyright Act/extensive case law, gain understanding of copyright policy Offered: A.

LAW P 508 Patent Law ([2-4]-, max. 4)

Provides an overview of United States patent law. No technical background is required. The course will analyze the origins, evolution and policy behind our patent law, and will cover topics such as the patent-ability doctrine, the novelty and "inventive step" requirements, the interpretation of patent claims, infringement theories and remedies. A primary focus of the course will be the changing Supreme Court patent law jurisprudence. Offered: A.

LAW P 509 Antitrust and Intellectual Property Rights (2-4)

Bangasser Examines in-depth application of competition law and policy to the creation and exploration of intellectual property. Offered: Sp.

LAW P 510 Advanced Research and Writing Seminar (2-, max. 4)

Gomulkiewicz Instructs IP LL.M students in the research and writing skills necessary to write a major legal research paper. Offered: A.

LAW P 520 Intellectual Property Theory Seminar (3)

Seminar introduces students to the history and philosophy of intellectual property theories, justifications, and critiques. Students will write and present a substantial research paper.

LAW P 522 Advanced Copyright Law (2-5) Advanced, in-depth study of copyright law and policy. Explores the boundaries of copyright protection and how copyright law relates to other intellectual property laws. Prerequisite: either LAW A 522, LAW E 567, or LAW P 501.

LAW P 525 The Right of Publicity ([1-4]-, max. 4) Provides an understanding of the Right of Publicity and its interaction with other types of intellectual property. Drawing principles from trademark, unfair competition, copyright, and privacy law, the Right of Publicity must respect the First Amendment's guarantee of free expression while protecting the commercial interest of individuals in protecting against unauthorized commercial use of their names, likenesses, and personalities.

LAW P 528 LLM Intellectual Property Law Practicum (1-4, max. 6) Experience with an approved non-profit organization, judicial or legislative body, or governmental agency on issues related to intellectual property law and policy. Students work under the guidance of experienced practitioners; both student and field supervisor provide the supervising law faculty member with a final written evaluation. Credit/no-credit only.

LAW P 535 Entertainment Law (3) A primer on the various forms of legal protection (trade secrets, copyright, trademarks, publicity law, and licensing) that form the bases for various types of entertainment. Considers key industries: books, music, movies, television, internet, and computer games. Prerequisite: LAW P 501 or permission of the instructor.

LAW P 536 Music Law and Policy (3) Covers the broad range of legal issues at play in the music ecosystem - broadly construed as the chain of composition, performance, recording, distribution, and playback. Music recording/playback devices have often been at the forefront of each stage of media technology and so the course covers not only copyright issues, but also patents, other IP, and contract issues.

LAW P 539 Law, Technology, and Development (2-3) *Snyder, Winn* Provides an overview of selected principles and theories of development economies, and considers the implications of technological innovation, intellectual property rights, government

regulation, trade policy, and technical standards for the achievement of development objectives. Mass media coverage of current developments enriches class discussions.

LAW P 543 Intellectual Property Law in East Asia (2-3)

LAW P 545 Advanced Patent Law (3) Studies public policy and practice considerations relating to patenting research results in high technology. Examines the most up-to-date issues in legal protection of technology from the comparative law perspective. Prerequisite: either LAW A 546 or LAW P 501. Instructors: Taylor Offered: W.

LAW P 546 Advanced Trademark Law (3) Covers advanced procedural and substantive topics of trademark law including protection of trade dress, online trademark infringement, and global trademark protection including gray market issues. Students write and present a research paper on a topic related to trademark law and policy. Prerequisite: either LAW P 501 or LAW P 567 Instructors: Takenaka Offered: W.

LAW P 547 Legal Protection for Computer Software (3) Addresses copyright, patent, trademark, trade dress, trade secret, and contract protection for software. Also addresses how the law places boundaries around legal protection through anti-trust law and the doctrines of fair use and preemption.

LAW P 548 Litigation Strategies in Technology Protection (3) Deals with procedural and substantive legal issues in enforcement of patents. Proceeds through a litigation in the order that parties normally would. Teaches substantive legal issues in conjunction with procedural and strategic considerations. Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 550 Patent Prosecution (4) Addresses fundamentals of patent application drafting, through a combination of lectures and assignments. Addresses all aspects of proceedings before the U.S. Patent and Trademark Office, including preparing new applications, and examiner interviews. Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 552 Strategic Intellectual Property Commercialization (3) Comprehensive coverage of issues related to exploitation of intellectual property rights as a business asset for new companies, or as a source of income for existing businesses.
Prerequisite: either LAW A 546, LAW P 501, or LAW P 567.

LAW P 567 Survey of Intellectual Property (3-6, max. 6) Intended for both law students who are only interested in a general overview of intellectual property and non-law students who are seeding a certificate in intellectual property law and policy. Designed as an alternative to Patents, Trademark and Unfair Competition Law, and Copyrights.
Prerequisite: either LAW A 522, LAW A 546, LAW E 588, or LAW P 501. Instructors: O' Connor Offered: W.

LAW P 577 Drafting Intellectual Property Licenses (3) Covers advanced drafting and negotiating licenses and other technology agreements.
Credit/no-credit only.

LAW P 589 IP Innovations in Science and Technology (2-, max. 6) *Takenaka* Covers controversial intellectual property law and policy questions arising from evolving science, technology and e-commerce, and addresses cutting edge issues from a multidisciplinary perspective. Examines the current legal regimes and research environment and explores innovative methods for maximizing the exploitation of advanced science and technology.
Offered: AWSp.

LAW P 590 Graduate Intellectual Property Law Tutorial (1-4, max. 4) Focuses on a specialized area of intellectual property law. Limited to students in the graduate program in intellectual property law and policy. Tutorial must be approved by the program director.

LAW (TAXATION)

LAW T 502 Federal Tax Controversies and Procedures (2-3)

LAW T 503 Problems of Timing (2-3)

LAW T 504 Income Taxation of Business and Investments (3-5) *Michael W Hatfield* Addresses the

fundamental issues of the taxation of income related to businesses and investments. Topics include business deductions; capital expenditures; depreciation; below market loans; non-recourse debt; methods of accounting; gains and losses; like-kind exchanges; installment sales; passive activity losses and credits; and the at-risk rules. Offered: A.

LAW T 505 Introduction to Income Taxation (2) Addresses a number of fundamental income tax concepts, including the computation of individual tax liability, statutory exclusions, deductions, and gains. Also deals with issues related to character and timing.

LAW T 506 Tax Practice and Skills (1-4, max. 4) Orientation to core concepts of tax practice, including administrative structure and nature of tax law, nuances of statutory interpretation, and the relative authority of statutory, administrative, and judicial sources. Includes overview of print and online tools for federal tax research. Credit/no-credit only.

LAW T 507 Federal Tax Policy Seminar (2-4, max. 4) Examines the theoretical and policy considerations applied in assessing existing and proposed federal tax regimes. Topics include: the nature of the income tax as a tax on saving and consumption; consumption taxes as alternatives to taxes on income; tax policy and charitable giving; taxes and the poor; and more.

LAW T 508 U.S. Aspects of International Taxation (5/6) Analyzes principles of "inbound" and "outbound" investment in the U.S., including effectively connected income, source of income, tax treaties, treaty shopping, permanent establishments, the mitigation of double taxation, and the treatment of controlled foreign corporations and other multinational enterprises with a U.S. presence.

LAW T 510 Estate and Gift Taxation (3)

LAW T 511 Taxation of Partners and Partnerships ([1-4]-, max. 4)

LAW T 512 Exempt Organizations ([2-4]-, max. 4)

LAW T 513 Estate Planning (3)

LAW T 514 Drafting Estate Planning Documents (2)

Includes the drafting of several documents used in contemporary estate planning practice, including wills, trusts, client letters, powers of attorney, healthcare directives, gift and estate tax returns, and opinion letters. Prerequisite: LAW T 513, which may be taken concurrently. Instructors: Adams Offered: Sp.

LAW T 515 International Taxation I (3)**LAW T 516 International Taxation II (3)****LAW T 517 Estate and Gift Taxation II (2)****LAW T 518 Taxation of S Corporations (2)****LAW T 519 Canadian-United States Tax Issues (2)**

Overview to various cross-border issues, including the Canadian income tax (and its GST tax), residency for Canadian tax purposes, principles relating to operation of Canadian business in the United States and profit repatriation, and U.S. investment in Canada and similar repatriation issues.

LAW T 520 Professional Regulation of Tax Lawyers (2-3)

Addresses the professional regulation of tax lawyers by Congress, the IRS, state bars, and professional associations. May address legal malpractice and criminal liability issues for tax lawyers.

LAW T 521 Compensation and Benefits I (3)**LAW T 522 Compensation and Benefits II (2)****LAW T 523 International Estate Planning (2)****LAW T 524 Transfer Pricing Seminar (2) *Andrade***

Reviews section 482 of U.S. Internal Revenue Code and the Treasury regulations thereunder with a focus on multinational corporations (MNCs) and their related party transactions that are subject to the arm's length standard. Application of U.S. transfer pricing regulations to related party transactions involving MNCs.

LAW T 525 Advising Privately-Owned Businesses (3)

Explores the role of the lawyer as an adviser through case studies examining a range of structural planning issues and the practical and analytical challenges of

the planning process. Emphasizes tax and business considerations, and creative planning strategies.

Prerequisite: LAW A 530; LAW A 515, which may be taken concurrently.

LAW T 526 Federal Tax Clinic ([2/3]-, max. 9)

Clinical training in federal tax litigation under the supervision of members of the law school faculty.

LAW T 527 Taxation of Financial Instruments (2)

Examines the classification and tax consequences of various financial instruments including: fixed, variable, and contingent rate debt instruments; secondary market transactions in debt instruments, such as coupon stripping and market discount purchases; and transactions in common stock-equity derivatives, such as notional principal contracts, hedging transactions, and monetization strategies.

LAW T 528 Graduate Tax Practicum (1-6, max. 6)

Field-based experience in a department-approved public or private entity, of eight hours per week minimum under the guidance of experienced practitioners. The student and practitioner produce a final report summarizing the practicum experience to the supervising faculty member, who decides whether to award academic credit. Credit/no-credit only.

LAW T 529 International Tax Practice Seminar (2-3)

Kadet Utilizes case studies of real-world, multi-faceted international business transactions to develop the knowledge and skills to apply international tax principles and tools to both inbound and outbound investments. Offered: Sp.

LAW T 530 Tax Issues in Mergers and Acquisitions (2-3)

Examines the federal income taxation of business entities and their owners. Limited to coverage of the fundamental concepts of corporate and partnership taxation.

LAW T 531 Advanced Transactional Tax Problems (2)

Examination (through case studies) of consolidated tax returns, limits on the use of tax benefits, carryover of tax attributes, classifications of debt versus equity, and corporate penalty taxes.

LAW T 532 Taxation of Estates, Trusts, and Beneficiaries (2-3)

LAW T 533 Tax Crimes: Investigations, Prosecutions, and Penalties (2) *Chiconie* Focuses on elements of tax and related crimes with a view of the governmental investigative tools and powers, including IRS summonses, search warrants, and Grand Jury investigations. Covers taxpayer's rights and defenses in a criminal case; the IRS voluntary disclosure program; and the elements of civil penalties. Offered: AWSp.

LAW T 534 State and Local Taxation (4) Survey of taxes imposed by state and local governments, including income taxes, property taxes, and excise taxes (including sales and use taxes and gross receipts taxes such as those in Washington State) . Limitations on the power of states to tax will also be covered. Offered: A.

LAW T 536 Taxation of Trans-Pacific Transactions (2-3)

LAW T 537 Business Planning ([2-6]-, max. 6)

LAW T 538 Estate Planning for Business Interests (2-3) Business succession and estate planning issues for the owners of closely held business, including shareholder agreements, recapitalizations, family limited partnerships and limited liability companies, taxable acquisitions, split dollar agreements, redemptions to pay death taxes, electing small business trusts and more. Prerequisite: LAW T 510

LAW T 539 Matrimonial Tax (2) Covers tax aspects of married relationships and the tax impact of the dissolution of a marriage. Includes joint returns, the marriage tax penalty, innocent spouse relief from joint return liability, pre-nuptial agreements, transfer tax effects of inter-spousal transfers, alimony, child support, and marital property transfers incident to divorce.

LAW T 540 Federal Tax Research and Writing (2-4)

LAW T 541 Limited Liability Companies (2)

LAW T 542 State and Local Tax II: Advanced State Tax Concepts (2) *Okimoto* Covers the interplay between the federal tax and state tax systems. Covers attributional and economic nexus, unitary business principle, state combined reporting versus federal consolidated filings, expense disallowance,

adjustments to the federal tax base, fair appointment, alternative business tax, and state tax implications of mergers and acquisitions. Offered: W.

LAW T 543 Advanced Partnership Tax (2) Builds on the material covered in the basic course, Taxation of Partners and Partnership. Covers more sophisticated aspects of partnership allocations; transactions between partners and partnerships; and sale or exchange of partnership interests. Prerequisite: LAW T 511.

LAW T 544 Tax Aspects of Charitable Giving (2) Examines income, gift, and estate tax consequences of charitable gifts of cash and property. Includes: theoretical and policy bases of charitable deduction; technical requirements; effect of receipt of benefits; percentage limitations based on donee and type of property; application of carryover rules; effect of partial cash or cash equivalent consideration.

LAW T 545 International Taxation of Intellectual Property (2) *Smith* Overview of the tax consequences of various types of common commercial arrangements that involve the development, ownership, and use of intangible property within multinational groups. Explores tax efficient arrangements such as contract research and licensing arrangement, cost-sharing arrangement, and the use of intangible holding companies.

LAW T 546 Taxation of Real Estate Interests (2) An in-depth study and analysis of the tax consequences of acquiring, developing, operating, and disposing of interests in real property. Focuses on practical approaches to structuring sale-leaseback transactions, syndications, installment sales, and like-kind exchanges. Considers the application of the passive activity loss rules in real estate.

LAW T 547 International Taxation of Electronic Commerce (2-, max. 4) Electronic commerce is defined as the exchange of digital information in connection with the purchases and sale of goods and services. Seminar and discussion format. Explores the potential methods and approaches for the taxation of earnings associated with electronic commerce.

LAW T 548 Tax Writing (2) Designed to improve writing skills as they relate to practice of tax law.

Students draft many types of tax documents. Also considers professional responsibility aspects of tax practice.

LAW T 549 International Merger and Acquisition Transactions (2) Examines the rules applicable to international merger and acquisition transactions, both tax-deferred and taxable, including the anti-inversion rules of 7874 and the rules under 367 for a variety of tax-deferred transaction structures. Also covers the unique considerations applicable to taxable acquisitions of foreign target companies.

LAW T 550 Global Perspectives on International Taxation (2) International taxation of multinational corporations, including perspectives of both tax jurisdictions and multinational organizations such as OECD, as well as companies themselves. Topics include transfer pricing, permanent establishment, tax treaties, and tax arbitrage. Emphasizes evolving trends, case studies, and practical application of international tax rules. Offered: W.

SCHOOL OF MEDICINE

ANESTHESIOLOGY

ANEST 498 Undergraduate Thesis (*) *Sivarajan* By special arrangement. Time and credit to be arranged. Offered: AWSpS.

ANEST 499 Undergraduate Research (*) Specific research problems relating to pulmonary, cardiovascular, renal, obstetric, and central nervous system functions, and their alteration by anesthetic techniques and agents. Offered: AWSpS.

ANEST 501 P-Preceptorship in Anesthesiology (1, max. 12) An opportunity for first- and second-year medical students to gain experience with medical practice situations by observing clinical faculty members in the operating room. Prerequisite: permission of instructor. Offered: AWSpS.

ANEST 650 P-Pain Medicine Clerkship (8) Participation as part of a Pain Medicine team in evaluation and management of patients experiencing short term post injury (surgery, trauma) pain and/or long- term pain. (Four weeks, full time) . Prerequisite: Third- or fourth-year student.

ANEST 654 P-Chronic Care/Pain Management - Alaska - NAPM (8) Exposures to pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

ANEST 657 P-Chronic Care/Pain - VAPSHCS - Seattle, WA (8) Exposure to pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

ANEST 662 P-Chronic Care/Alaska - Fairbanks APCA (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management through the Chronic Care website and didactics. Students focus their clinical activities on chronic pain management.

ANEST 663 Basic Anesthesia Clerkship - Cheyenne, WY (4) Introduction to the principles of airway management, ventilator support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation.

ANEST 665 P-Basic Anesthesia Clerkship - Anchorage (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 667 P-Basic Anesthesia Clerkship - Billings (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 668 P-Basic Anesthesia Clerkship - Missoula (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 669 P-Basic Clerkship in Anesthesiology Bozeman Health - Gallitan Valley, MT (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student. Offered: AWSpS.

ANEST 670 P Advanced Clerkship in Anesthesiology Bozeman Health - Gallitan Valley, MT (8) Clerkship

for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: Third- or fourth-year student. Offered: AWSpS.

ANEST 671 P-Basic Anesthesia Clerkship - Boise (4)

Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 672 Basic Anesthesiology - Boise, ID VA (4)

Introduction to the principles of airway management, ventilator support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation (Two weeks, full-time) . Prerequisite: third- or fourth- year Medicine student.

ANEST 673 Outpatient Strategies for Pain Rehabilitation -- Missoula, MT (8) Emphasis on outpatient strategies for pain rehabilitation, including interventional modalities, with pain education as a foundation. (Four weeks.) Offered: AWSpS.

ANEST 674 P-Basic Anesthesia Clerkship - Spokane (4)

Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 675 P-Basic Clerkship - Deaconess - Spokane, WA (4)

Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student. Offered: AWSpS.

ANEST 677 P-Basic Anesthesia Clerkship - Swedish (4)

Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year student.

ANEST 681 P-Advanced Clerkship in Anesthesiology - UWMC (8)

Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: Third- or fourth-year student.

ANEST 682 P-Advanced Clerkship in Anesthesia - HMC (8)

Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. Prerequisite: Third- or fourth-year student.

ANEST 683 P-Advanced Clerkship in Anesthesiology - VAMC (8)

Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: Third- or fourth-year student.

ANEST 684 P-Advanced Clerkship in Anesthesiology - Spokane (8)

Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: third- or fourth-year medical students.

ANEST 685 P-Advanced Clerkship in Anesthesiology - Deaconess - Spokane, WA (8)

Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: third- or fourth-year student. Offered: AWSpS.

ANEST 686 P-Basic Clerkship in Anesthesia - Kalispell (4)

Exposure to anesthesiology as a specialty. Individual programs in the following areas:

surgical anesthesia, obstetrical anesthesia, and pain clinic. (Two weeks, full-time.) Prerequisite: third- or fourth-year medical student.

ANEST 687 P-Advanced Clerkship in Anesthesia - Kalispell (8) Continued exposure to anesthesiology as a specialty. Individual programs in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic. (Four weeks, full-time.) Prerequisite: third- or fourth-year medical student.

ANEST 688 Advanced Anesthesia - Cheyenne, WY (8) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs can be arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic.

ANEST 690 P-Basic Clerkship in Anesthesia - Wenatchee (Confluence) (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: Third- or fourth-year medical student. Offered: AWSpS.

ANEST 691 P-Advanced Clerkship in Anesthesia - Wenatchee (Confluence) (8) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Four weeks, full-time) . Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

ANEST 692 P - Basic Anesthesiology - Lander, WY (4) Introduction to the principles of airway management, ventilatory support, use of local anesthetics, techniques of patient monitoring, and fluid therapy. Skills taught include airway management, venipuncture, lumbar puncture, and endotracheal intubation. (Two weeks, full-time) . Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

ANEST 693 P - Advanced Anesthesiology - Lander, WY (8) Clerkship for students desiring greater exposure to anesthesiology as a specialty. Individual programs arranged in the following areas: surgical anesthesia, obstetrical anesthesia, and pain clinic.

(Four weeks, full-time.) Prerequisite: third- or fourth-year medical student. Offered: AWSpS.

ANEST 695 P-Chronic Care/Pain Management - Roosevelt (8) Exposure to pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

ANEST 697 P-Anesthesiology Special Electives (*, max. 24) Special clerkships, externships, or research opportunities can at times be made available at institutions other than the University of Washington. Students wishing to elect this course should obtain a special assignment form from the dean's office at least one month before advance registration. (Four to twelve weeks, full-time.) . Prerequisite: permission of instructor.

ANEST 699 P-WWAMI Anesthesiology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

BIOCHEMISTRY

BIOC 405 Introduction to Biochemistry (3) NW Neil King, David J Veesler, James B Hurley, Frank Dimaio Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in medicine, dentistry, pharmacy, medical technology. Prerequisite: BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Offered: AW.

BIOC 406 Introduction to Biochemistry (3) NW Peter Brzovic, Young Kwon, Alan Weiner, Michael Ailion Survey of basic principles of biochemistry and molecular biology, emphasizing broad understanding of chemical events in living systems in terms of metabolism and structure-function relationships of biologically important molecules. Suitable for pre-majors, for students interested in careers in

medicine, dentistry, pharmacy, medical technology.
Prerequisite: BIOC 405. Offered: WSp.

BIOC 426 Basic Techniques in Biochemistry (4)

NW *L. Gu, K. Lewis* Introduction to basic biochemistry experiments. Acquaints students (largely biochemistry majors) with basic biochemical laboratory techniques. Prerequisite: BIOC 440, which may be taken concurrently. Offered: ASp.

BIOC 440 Biochemistry (4) NW *S. Brockerhoff, J. Kollman*

Biochemistry and molecular biology for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: minimum grade of 2.5 BIOL 200; 2.5 in either CHEM 224, CHEM 239, or CHEM 337; 2.0 in either MATH 124, MATH 134, or MATH 144. Offered: A.

BIOC 441 Biochemistry (4) NW *S. Hoppins, D. Miller*

Biochemistry and molecular biology for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: minimum grade of 2.2 in BIOC 440. Offered: W.

BIOC 442 Biochemistry (4) NW *D. Kimelman, H. Ruohola-Baker*

Biochemistry and molecular biology for undergraduate students in molecular and cellular biology, for biochemistry majors, and graduate students in other science departments. Prerequisite: either 2.2 in BIOC 406 or 2.2 in BIOC 441, or a 2.2 in BIOC 451. Offered: Sp.

BIOC 450 Honors Biochemistry: Visualizing

Biochemical Concepts (4) NW *R. KLEVIT, A. WILLS*
For Biochemistry majors and molecular and cell biology majors. Core concepts in biochemistry, including protein structure, compartmentalization of reactions, thermodynamics and kinetics in a biological context, energy production, and regulation of metabolic pathways. HONORS BIOC covers the same topics as BIOC 440, but emphasizes group exercises and analysis of primary literature. Offered: A.

BIOC 451 Honors Introduction to Biochemistry (4)

A. Weiner BIOC is the honors version of BIOC 441; it covers the same topics in metabolism and gene expression using the same textbook, but is taught as a group discussion of selected publications from the primary literature, with an emphasis on research

strategy, experimental design, creative thinking, and scientific communication. Offered: W.

BIOC 495 Biology of Fermentation (3) NW *Alexander R. Paredes, Justin M Kollman*

Practical application of biology and chemistry in beer and winemaking. Students learn to culture yeast, ferment foods, brew beer from malted grains, and perform chemical analysis of wine must. Prerequisite: either BIOL 310, BIOL 313, BIOL 340, BIOL 350, BIOL 354, BIOL 355, BIOL 356, BIOL 360, BIOL 380, BIOC 405, BIOC 426, BIOC 440, or BIOC 450. Offered: jointly with BIOL 495; W.

BIOC 499 Undergraduate Research (*, max. 35)

Investigative work on enzymes, proteins, lipids, molecular biology, developmental biology, intermediary metabolism, physical biochemistry, and related fields. Credit/no-credit only. Offered: AWSpS.

BIOC 510 ISCRM Research Updates and Stem Cell Club ([0/1]-, max. 12) *Ruohola-Baker, Ware*

Presents ongoing research at the Institute for Stem Cell and Regenerative Medicine. Includes diverse subject matter in regenerative medicine, with new, unpublished data, and opportunity to identify collaborations and contacts for discussion, and an understanding of the state of the art. Credit/no-credit only. Offered: jointly with CONJ 510.

BIOC 520 Seminar (1) J. *HURLEY*

Seminar dealing with timely topics in the field of biochemistry. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

BIOC 530 Introduction to Structural Biology (3) D.

Baker, V. Daggett, W. Hol, R. Klevit, D. Maly, D. Veessler, A. Weiner, N. Zheng Graduate-level discussion of the structure, function, and chemistry of proteins, control of enzymatic reactions. Prerequisite: a comprehensive course in biochemistry and permission. Offered: A.

BIOC 533 Topics In Biochemistry (1, max. 30) N.

King, D. Miller Provides in-depth examination of current topics in biochemistry, molecular biology, and structural biology. Designed to help participants in basic science departments become acquainted with latest ideas on selected topics. Emphasis on analysis of key concepts in the field with reference

to classical papers and recent literature.
Prerequisite: permission of instructor. Offered: AW.

BIOC 534 Topics In Molecular Biophysics (1.5, max. 30) Emphasis on methods used to study macromolecular structure and dynamics, including x-ray crystallography, NMR, optical spectroscopy, computer modeling, protein folding and ligand binding. Two topics covered each quarter; students may register for one or both. Prerequisite: permission of instructor. Offered: AWSp.

BIOC 540 Literature Review (2) *C. Asbury, T. Davis* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: jointly with BPSD 540; A.

BIOC 541 Literature Review (2) *J. Chamberlain, Y. Kwon, L. Loeb, R. Palmiter* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: W.

BIOC 542 Literature Review (2) *A. Wills* Emphasizes critical evaluation of original articles in the literature. For first-year graduate students in biochemistry and students of other science departments, with permission of instructor. Offered: Sp.

BIOC 581 Introduction to Biochemical Research (4, max. 16) Student works with one of the research groups within the department for one quarter and then rotates to other laboratories for second and third quarters. Prerequisite: graduate standing in biochemistry or permission of instructor. Credit/no-credit only. Offered: AWSpS.

BIOC 600 Independent Study or Research (*-)
Offered: AWSpS.

BIOC 650 Biochemistry Clerkship in Scientific Teaching ([1-6]-, max. 15) The pedagogical requirement addressed by this course is direct experience in teaching undergraduate Biochemistry classes under the direct oversight and mentorship of regular course instructors. By the end of this course, the graduate student will have developed skills, abilities and insights as a science educator and communicator through the sustained support and

guidance of the instructor of record. Prerequisite: PhD student standing. Offered: AWSp.

BIOC 700 Master's Thesis (*-) Offered: AWSpS.

BIOC 800 Doctoral Dissertation (*-) Offered: AWSpS.

BIOETHICS AND HUMANITIES

B H 201 Topics in Population Bioethics (2) I&S
Introduces students to bioethical questions that arise in public health, population health, and global health, situating ethical questions and challenges within a broader social context and perspective. Students interact in a small-scale learning environment with classmates and faculty and have the opportunity to learn more about the Bioethics Minor. Credit/no-credit only. Offered: Sp.

B H 311 Ethical Issues in Modern Medicine (3) I&S N. JECKER Case-based approach to ethical topics in medicine, such as abortion, genetic testing, physician-assisted death, and euthanasia. Emphasizes utilizing ethical principles and methods of case analysis. Offered: Sp.

B H 339 Bioethics: Secular and Jewish Perspectives (3) I&S, DIV Hadar Khazzam-Horovitz Legal, ethical, scientific, and Jewish religious perspectives on contemporary medical and biomedical research practices. Legal and civil rights of women, people with disabilities, minors and minority or marginalized groups. Key differences between secular and Biblical/Rabbinic approaches in interpretation, analysis and application of bioethics, doctor-patient relationships; reproductive methods; abortion; euthanasia; and stem cell research. Offered: jointly with JEW ST 339/NEAR E 328.

B H 402 Ethical Theory (5) I&S N. JECKER Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Offered: jointly with PHIL 412.

B H 404 Metaethical Theory (5) I&S N. JECKER
Studies the major metaethical theories, including both cognitivist and noncognitivist approaches. Emphasizes moral philosophy during the twentieth

century, as well as contemporary commentary. Offered: jointly with PHIL 413.

B H 409 Ethics and the Social Determinants of Health (3) I&S, DIV E. Blacksher Examines ethical issues confronting healthcare workers caring for poor & minority populations, whose capacity for health and recovery from disease are compromised by social conditions in which they grow up, live, work, and age. Aims to broaden/reorient understandings of disease, patient autonomy, and clinician duties within contexts of structural inequalities related to socioeconomic status/race/ethnicity/gender/other salient social differences. Offered: Sp.

B H 420 Philosophical Problems in Bioethics (3) I&S Jecker Introduces the philosophical concepts and controversies that underlie contemporary bioethical debates. Explores issues using the literature of bioethics and philosophy, contemporary film, works of fiction, and conversations with health professionals. Students learn philosophical methods of analysis and argument, and debate different sides of ethical issues.

B H 421 History of Eugenics (5) I&S Woiaak Examines the history of ideas, policies, and practices associated with eugenics and human genetics from the late nineteenth century to the present in American society and other national contexts. Offered: jointly with DIS ST 421.

B H 440 Philosophy of Medicine (5) I&S N. JECKER Familiarizes students with central issues in the philosophy of medicine. Focuses on the nature of medical knowledge, the connection between theory and observation, the meaning of medical concepts, and the relationship between theories and the world. Offered: jointly with PHIL 459.

B H 444 Ethical Implications of Emerging Biotechnology (3) S. FULLERTON Introduces students to select biotechnology innovations and invites consideration of the ethical and policy implications surrounding their development and potential use. Offered: W.

B H 456 Social Justice and Health (5) I&S Blacksher Examines the moral grounds for the view that social inequalities in health are unjust using contemporary literature from moral philosophy and bioethics, case

studies, and film. Explores basic questions integral to determinations of social injustice as well as moral constraints on the pursuit of health equity.

B H 460 Reflections on Research, Responsibility, and Society (3) I&S Explores ethical and policy issues that emerge in the conduct of basic, applied, translational, community-based, and collaborative research. Addresses the ethical debates that arise in the context of planning, implementing, and disseminating research.

B H 474 Justice in Health Care (5) VLPA/I&S N. JECKER Examination of the ethical problem of allocating scarce medical resources. Emphasizes the fundamental principles of justice that support alternative health policies. Offered: jointly with PHIL 411.

B H 488 Global Perspectives in Bioethics (3) I&S, DIV N. Jecker Examines problems in bioethics from diverse global standpoints, including East Asian, Sub-Saharan African and Western. Our emphasis is on developing a deeper understanding of the cultural assumptions that lie just beneath the surface of bioethics debates. Readings from contemporary philosophy, film and literature. Recommended: Prior course work in ethics, philosophy, or global health. Offered: jointly with G H 419; Sp, odd years.

B H 497 Bioethics and Humanities Special Electives (*-, max. 30)

B H 499 Undergraduate Research (*, max. 5) Investigative work in biomedical ethics or history of the biomedical sciences.

B H 502 Ethical Theory (5) Jecker Studies the major normative ethical theories, including both teleological and deontological approaches. Emphasizes moral philosophy during the eighteenth and nineteenth centuries, as well as contemporary commentary. Offered: A.

B H 509 Ethics and the Social Determinants of Health (3) E. Blacksher Examines ethical issues confronting healthcare workers caring for poor & minority populations, whose capacity for health and recovery from disease are compromised by social conditions in which they grow up, live, work, and age. Aims to broaden/reorient understandings of disease, patient autonomy, and clinician duties

within contexts of structural inequalities related to socioeconomic status/race/ethnicity/gender/other salient social differences. Offered: Sp.

B H 510 The Humanities in Medicine (2) *Mark Tonelli* The humanities offer important perspectives on the nature and practice of clinical medicine. Focuses on the intersection of multiple disciplines in the humanities and medicine. Examines medicine through different lenses. Credit/no-credit only. Offered: W.

B H 513 P-Ethical Responsibilities of Medical Practice (2) *Dudzinski, McCormick* Provides intensive and practical guidance about management of principal ethical and legal problems that arise in clinical practice: informed consent, confidentiality, decisions regarding life-support, advance directives and surrogate decision-makers, duty to care for indigent and risky patients. One week intensive course. Offered: S.

B H 514 Legal, Ethical, and Social Issues in Public Health Genetics (3) Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with LAW H 504/PHG 512; A.

B H 518 Spirituality in Healthcare (2) Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with FAMED 547/SOC W 587; Sp.

B H 527 Social Science Research Methods (3) *D. BOWEN* Introduces students to research methods in bioethics, ranging from qualitative to quantitative: interviews, focus groups, surveys, and experimental and observational designs. Students write research questions, match research methods to research questions, and conclude with a proposal that uses a social sciences empirical approach to address their research question. Offered: jointly with PHG 527; Sp.

B H 535 Medical Ethics and Jurisprudence (3-) *Dudzinski, Kuszler* Examines the relationship between bioethics and law. Reviews the basic concepts of both disciplines; their theoretical and practical connections. Analysis of principle legal

cases and statutes illustrating such issues as informed consent to treatment, foregoing life support, research with human subjects, confidentiality, and allocation of health care resources. Offered: jointly with LAW H 503.

B H 536 Research Ethics and Regulation (3) *Mastroianni* Explores the ethical foundations, principles and concepts, and U.S. laws related to the conduct of research with human subjects. Required for graduate students in the Department of Bioethics and Humanities, School of Medicine. Offered: jointly with LAW H 536; W.

B H 539 Bioethics: Secular and Jewish Perspectives (5) *H. Khazzam-Horovitz* Explores legal, ethical, scientific, and Biblical-Rabbinic & contemporary religious perspectives on contemporary medical and biomedical research practices. Review of key differences between secular and Jewish approaches in interpretation, analysis and application of bioethics. The topics include: doctor-patient relationships; reproductive methods; abortion; euthanasia; and stem cell research. Offered: jointly with JEW ST 539.

B H 544 Ethical Implications of Emerging Biotechnology (3) *S. FULLERTON* Introduces students to select biotechnology innovations and invites consideration of the ethical and policy implications surrounding their development and potential use. Offered: jointly with PHG 544; W.

B H 548 Methods in Clinical Ethics (3) Introduces the history, practice, and research methods in clinical ethics. Case-based examination of methods including principalism, casuistry, narrative methods, virtue ethics. Prerequisite: permission of instructor. Instructors: Schellenberg Offered: A.

B H 551 Human Genomics: Science, Ethics, and Society (3) Explores the ethical and social implications of human molecular genetics and genomics investigation. Recent research is critically evaluated for its potential impact on scientific practice, research participation, and societal understandings. Prerequisite: LAW H 504/B H 514/PHG 512 or permission of instructor. Instructors: Fullerton Offered: jointly with GENOME 573; A.

B H 552 Advanced Qualitative Methods (4) *Starks* Examines and compares phenomenology, discourse

analysis, and grounded theory. Reviews the history of ideas and critically reads examples of published articles to appreciate how each method frames questions and produces different analyses.

B H 553 International Research Ethics, Law, and Policy (3) *Kuszler, Rivin* Exploration of legal requirements and ethical principles related to responsible conduct and research in a variety of different government structures, healthcare systems, and research environment. Compares and contrasts law and ethical standards applicable to research enterprises in developing countries, industrialized countries, and ethically distinct communities. Offered: jointly with LAW H 511; A.

B H 556 Social Justice and Health (5) *Blacksher* Examines the moral grounds for the view that social inequalities in health are unjust, using contemporary literature from moral philosophy and bioethics, case studies, and film. Explores basic questions integral to determinations of social injustice as well as moral constraints on the pursuit of health equity.

B H 560 Genomics, Ethics, and Policy (2, max. 10) *Burke, Edwards, Fullerton, Starks* Explores the intersection of genomics, ethics, and policy, with a particular focus on examining the benefits of genomics for medically underserved communities. Offered: S.

B H 562 Ethical Issues in Pediatrics (3) *Nancy S. Jecker, Douglas S. Diekema* Provides a survey of contemporary ethical issues that arise in the clinical and research environment when children are involved, including the role of children and adolescents in decision-making, the limits of parental decision-making authority, and issues related to genetic testing, transplantation, research, and public health. Offered: jointly with PEDS 562; A.

B H 566 Introduction to Person Centered and Interprofessional Palliative Care (1-5) Introduces fundamental concepts in narrative and person centered communication and interprofessional practice. Presents foundations for learning to apply an interdisciplinary approach to palliative care. Offered: jointly with FAMED 531/NSG 526; A.

B H 567 Advanced Topics in Person Centered and Interprofessional Palliative Care (1-5) Interprofessional course presenting advanced

concepts in narrative and person centered communication and interprofessional practice. Requires admissions into the Palliative Care Graduate Certificate Program. Prerequisite: NSG 526 Offered: jointly with FAMED 532/NSG 527; W.

B H 568 Palliative Care: Quality Metrics and System Integration (1-5) Prepares students to integrate team based palliative care into a larger system, introduces community engagement, and palliative care policy issues. Specific content includes building palliative care service, engaging leadership to support palliative care, and using quality metrics to leverage and support quality care. Requires admissions into the Palliative Care Graduate Certificate Program. Offered: jointly with FAMED 533/NSG 528; Sp.

B H 574 Justice for Healthcare (5) *N. JECKER* Examination of the ethical problem of allocating scarce medical resources. Emphasizes fundamental principles of justice that support alternative health policies. Offered: W.

B H 588 Global Perspectives in Bioethics (3) *N. Jecker* Examines problems in bioethics from diverse global standpoints, including East Asian, Sub-Saharan African and Western. Our emphasis is on developing a deeper understanding of the cultural assumptions that lie just beneath the surface of bioethics debates. Readings from contemporary philosophy, film and literature. Recommended: Prior course work in ethics, philosophy, or global health. Offered: jointly with G H 519; Sp, odd years.

B H 590 Health Ethics: Theory (4) Explores ethical theories and shows how they are interpreted and applied in clinical contexts. Examines deontological and teleological approaches, including utilitarianism, Kant's ethics, Aristotle's ethics, Rawls's ethics, and feminist ethics. Builds knowledge of ethical theories, skills of ethical argument, and practice using theories in case analysis. Credit/no-credit only. Offered: A.

B H 591 Health Ethics: Law (4) Explores legal cases, laws, statutes as well as paradigm ethics cases that inform clinical ethics consultation. Focus on ethical and legal issues that arise for ethics consultants from conception (assisted reproductive technologies) through death (withdrawing life-sustaining treatments) . Addresses equity issues inherent in our

polarized health care system. Credit/no-credit only.
Offered: W.

B H 592 Healthcare Ethics: Consultation Methods

(4) Explores the methodologies through which students can employ ethical theory in clinical contexts. Coursework investigates ethical approaches, such as Virtue Theory, Feminist Ethics, and Casuistry. Assignments build the skills of communication and ethical analysis used in the clinical setting, such as writing chart notes and facilitating case discussion. Offered: Sp.

B H 595 Ethics Practicum (1-6, max. 6) Students participate in clinical ethics rounds, case discussions, review of research protocols, or other professional activities related to bioethics. Prerequisite: permission of instructor. Credit/no-credit only.

B H 596 Master's Research Project ([1-12]-, max. 12)

Research project culminating in a scholarly paper suitable for publication in a peer-reviewed journal. Majors only. Credit/no-credit only.

B H 597 Special Topics in Medical Ethics (1-5, max. 15)

B H 600 Independent Study or Research (*-)

B H 650 Bioethics Teaching Clerkship (1-5, max. 15)

Affords graduate students a professional development opportunity to build skills that lay the groundwork for becoming an expert teacher. Direct, hands-on experience along with mentoring to develop teaching skills. Students develop lesson plans, lead small group discussions, obtain guidance and feedback by working closely with a faculty mentor to improve pedagogy methods and skills - grading, course website development/management. Prerequisite: MA Bioethics graduate student. Credit/no-credit only. Offered: AWSp.

BIOLOGICAL STRUCTURE

B STR 301 General Anatomy (4) NW Introduces the student to general human anatomy, examining both cellular and gross anatomy. The relationship between structure and function is a central focus of course content. Offered: jointly with NURS 301.

B STR 498 Undergraduate Thesis (*, max. 30)

Individual research projects under the supervision of an instructor. For senior medical students. Offered: AWSpS.

B STR 499 Undergraduate Research (*, max. 30)

Individual research projects in cellular and developmental biology, experimental immunology, reproductive biology, neurobiology, molecular structure, morphometrics, computer modeling, and related fields under the supervision of an instructor. Offered: AWSpS.

B STR 510 Seminar in Anatomy (1)

Scientific and historical basis of selected studies in biological structure, anatomy, and human development. Original literature used as basis for textbook descriptions. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

B STR 515 Biological X-Ray Structure Analysis (3)

Theory of x-ray diffraction, with emphasis on applications to biological systems. Prerequisite: permission of instructor. Instructors: Stenkamp
Offered: W.

B STR 519 Current Problems in Macromolecular Structure (2, max. 10)

Stenkamp Macromolecular structures related to specific areas of biological research. Emphasis on discussion of relevant research papers and use of computer graphics to visualize the molecular structures. Offered: AWSpS.

B STR 520 Structure Based Design of Drugs (3, max. 9)

Hol, Verlinde Research papers illustrating protein-structure- based design of new drugs. Review of methods and extensive discussion of all known mechanisms of drug resistance. Offered: W, even years.

B STR 521 Advanced Biomacromolecular

Crystallography (3, max. 9)

Hol, Merritt, Stenkamp Aspects of protein crystallography ranging from crystal growth, phase determination methods, density averaging to refinement, fiber diffraction of DNA and proteins. Offered: W, odd years.

B STR 540 Special Problems in Anatomy (1-6, max. 6)

Special projects in anatomy under sponsorship of faculty member. Prerequisite: graduate, medical, or dental student standing and permission of instructor. Offered: AWSpS.

B STR 555 Laboratory Rotation in Biological Structure (*, max. 5) Introduction to experimental design, research methods, and scientific thought in laboratories of faculty members. Provides hands-on experience, an entrance into the literature of the field, and opportunities for discussion with all members of the laboratory. First-year dental students only. Prerequisite: permission of instructor. Offered: AWSpS.

B STR 557 Biomolecular Structure Seminar (1, max. 9) Literature review of key research in biomolecular structure in the form of short presentations by participants followed by discussion. Critical evaluation of methods and results regarding properties and protein structure determination. Prerequisite: graduate standing in biological structure or biochemistry and permission of instructor. Instructors: Hol Credit/no-credit only. Offered: AWSp.

B STR 580 P-Anatomy Teaching Practicum (*, max. 8) Opportunity for medical student (or other professional student) to gain teaching experience in biological structure and human biology courses, including gross anatomy, histology, and neuroanatomy. May include lecture, laboratory, conference, depending on student interest, experience. Credit based on course credit in which student is assisting. Prerequisite: permission of course chairperson. Instructors: Clark Offered: AWSp.

B STR 584 Seminar in Neurogenesis (1, max. 16) Current research on process by which neurons are generated in the nervous system. Prerequisite: permission of instructor. Instructors: Bermingham-McDonogh, Dhaka Offered: AWSpS.

B STR 590 Electron Cryo-Microscopy of Biological Macromolecules and Complexes (3) Wang Introduces high-resolution cryo-electron microscopy (cryoEM) ; image formation and three-dimensional reconstruction theories and available software. Includes hands-on experience using the cryoEM facility for data collection and analysis; and presentations on student projects. Offered: ASp.

B STR 591 X-Ray and NMR Analysis of Macromolecular Structure (1, max. 9) Current topics in research on molecular structure, usually emphasizing techniques of x-ray crystallography.

Prerequisite: permission of instructor. Instructors: Hol Credit/no-credit only. Offered: AWSpS.

B STR 598 Reading in Biological Structure (2) Critical evaluation of research in biological structure, including current problems, methods, and future directions by reading and discussing research and review papers. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

B STR 600 Independent Study or Research (*-) Offered: AWSpS.

B STR 700 Master's Thesis (*-) Offered: AWSpS.

B STR 800 Doctoral Dissertation (*-) Offered: AWSpS.

BIOMEDICAL INFORMATICS AND MEDICAL EDUCATION

BIME 300 Transformational Technologies for Biology, Medicine, and Health (5) An introduction to Biomedical and Health Informatics through three modules focusing on current technologies: (1) Electronic Health Records (EHRs) , (2) data mining the EHR, and (3) translational bioinformatics and personalized medicine. Each module includes primary literature readings, and hands-on team projects that explore the technologies involved.

BIME 435 Informatics in Healthcare (5) Introduces information technology applied in healthcare across three modules that (1) overview the U.S. healthcare system, (2) establish an understanding of clinical information systems used in healthcare, including electronic health records, and (3) survey applications in clinical informatics, such as virtual health care and the learning health system. Offered: W.

BIME 498 Special Topics in Biomedical and Health Informatics (1-5, max. 15) Readings, lectures, and discussions pertaining to significant problems or issues in biomedical and health informatics.

BIME 499 Undergraduate Research (*, max. 12) Investigative research or directed readings in medical education and in biomedical and health informatics. Prerequisite: permission of instructor.

BIME 520 Teaching Methods in Medical Education

(2) Empirical and theoretical merits of different teaching methods as applied to medical education. Structuring and leading group discussions, using questions, organizing and delivering lectures, identifying styles of clinical supervision, providing constructive feedback, and presenting effective clinical demonstrations.

BIME 521 Evaluation of Learning in the Health

Sciences (3) Basic issues and methods for evaluation of learning: cognitive performance, psychomotor skills, and reasoning abilities in classroom, laboratory, and clinical settings. Practical applications of instruments such as multiple-choice questions, essays, oral examinations, checklists, rating scales, simulations, and patient management problems.

BIME 522 Research in Medical Education (2)

Individualized, problem-based overviews of research methods and research design pertinent to research and scholarship in medical education. Development and sequencing of research projects from conceptualization through literature review, including proposal development, project implementation, data management, analysis, and write-up. Assessment and critical reading of related literature stressed.

BIME 530 Introduction to Biomedical and Health

Informatics (3) Overview of biomedical and health informatics concepts, theories, and applications, including the historical evolution and the current and future research directions within the context of information flow in healthcare settings.

BIME 533 Public Health and Informatics (3)

Introduction to the emerging field of public health informatics. Covers general public health topics as well as key public health informatics issues and applications. Evaluates a public health information system. Prerequisite: either BIME 530 or permission of instructor. Offered: jointly with HSERV 509.

BIME 534 Biology and Informatics (3)

Provides an introduction to some of the fundamental concepts in core fields of biology; the information representation and management problems that arise from these fields; and current and potential informatics solutions to these problems.

BIME 535 Clinical Care and Informatics (3)

Explores the ways in which information technology affect healthcare delivery system design and delivery. Considers current and future research questions and trends as well as current and future application opportunities and challenges.

BIME 537 Informatics Research and Evaluation

Methods (4) Introduces the many facets of evaluation and research for biomedical and health informatics projects. Focuses on formal studies of the application of information technology in medicine, conducted while an information resource is under development and after the resource is in routine service.

BIME 539 Teaching, Learning, and Communication in Biomedical and Health Informatics (4)

Covers learning theory and teaching/communication skills specific to informatics practitioners and researchers. Reviews current learning theories applicable to undergraduate and graduate education. Helps to develop and practice effective teaching techniques.

BIME 540 Critically Appraising and Applying

Evidence in Healthcare (3) Literature appraisal skills for various articles (therapy effectiveness, diagnostic tests, literature reviews, clinical measurement, prognosis, quality of care, decision analysis, causation/etiology, guidelines, and economic evaluation) . Appraisal of clinical information from literature, strengths/weaknesses of data, analyses, study design/applicability to a current patient's problem. Prerequisite: permission of instructor. Offered: jointly with HSERV 528.

BIME 541 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3)

Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with EPI 541/HSERV 529/PHARM 529.

BIME 543 Consumer Health Informatics (3)

This course provides an introduction to consumer health informatics (CHI) including theories of health

behavior and information behavior; key concepts and terminology; and application domains. The course will cover issues such as health literacy, patient-centered communication, patient empowerment, and privacy; and application domains including personal health records, m-Health, and telehealth.

BIME 550 Knowledge Representation and Applications (3) Defines knowledge representations and explores how knowledge presentations and ontologies are used in the semantic web and why these issues are important for biomedical informatics application builders. Uses a research focus to explore foundational theoretical issues and choices facing application builders.

BIME 554 Biomedical Information Interactions and Design (4) Introduction to theoretical frameworks and research methodologies that underpin the study of human-information interactions and the design of biomedical information systems to support them. Emphasis on understanding informational needs and specifications that drive the design of health information systems.

BIME 570 Health Sciences Information Needs, Resources, and Environment (3) *S. FULLER*
Characteristics of users of health sciences information; health professionals, researchers, consumers and patients; environments (academic health sciences centers, hospitals, clinics, and public libraries) ; evaluation of information resources in health care; types and uses of health information management systems; policy issues, professional standards, education, and certification. Offered: jointly with LIS 528; Sp.

BIME 581 Telehealth Systems and Applications (4)
Introduces challenges for designers and managers of telehealth and remote healthcare networks. Develops abilities of managers, leaders, and researchers of telehealth systems through exploration into systems components. Activities range from research to implementation of system design for applications that bridge geographic distance to the development of practical applications. Offered: jointly with NSG 540; S.

BIME 590 Selected Topics in Biomedical and Health Informatics (1-3, max. 12) Computers and information technology are improving and changing

healthcare education, research, and clinical practice. Informatics faculty and researchers from the UW and affiliated institutions present their research findings as well as discuss their views of national developments in their respective disciplines. Prerequisite: permission of instructor. Credit/no-credit only.

BIME 591 Biomedical and Health Informatics Research Colloquium (1, max. 12) Provides forum for extensive interactive research discussions. Format is round table with short presentations and long facilitated discussion amongst students and core BHI faculty. Both students and faculty present. Topics primarily research focused (ongoing and proposed research.) , but also journal articles, current topics of debate, and other. Credit/no-credit only.

BIME 598 Special Topics in Biomedical and Health Informatics (1-4, max. 12) Readings, lectures, and discussions pertaining to a significant biomedical and health informatics problem or an emerging issue. Topics vary.

BIME 600 Independent Study/Research ([1-10]-)
Individual readings or study, including independent study in preparation for doctoral examinations, research, etc. Prerequisite: permission of instructor.

BIME 700 Master's Thesis ([1-15]-) Prerequisite: permission of instructor.

BIME 800 Doctoral Dissertation ([1-10]-)

COMPARATIVE MEDICINE

C MED 499 Undergraduate Laboratory Research (1-6, max. 12) *B. IRITANI, W. LADIGES, L. PRICE, M. RUDELL* Specific problems in comparative medicine. Credit/no-credit only. Offered: AWSpS.

C MED 512 Introduction to the Anatomical Analysis of Animal Disease (2, max. 10) *J. SNYDER, P. TREUTING* Use of animals in experimental study of disease; techniques of animal necropsy, characterization, interpretation of gross and microscopic lesions, correlation of lesions with altered physiological processes, differentiation between naturally occurring and experimentally induced lesions. Prerequisite: PATH 444, PATH 445,

or equivalent, and permission of instructor.
Enrollment limited: two students per quarter.
Offered: AWSpS.

C MED 514 Comparative Pathology Conference (1, max. 6) *J. SNYDER, P. TREUTING* Focus on histopathology of naturally occurring and experimentally induced lesions of primates, laboratory and domestic animals, fish, wildlife, and birds. Participants discuss the lesions and the basic pathogenetic mechanisms that underline them. Prerequisite: PATH 500 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 516 Research and Literature Review Seminar (1, max. 12) *C. HSU, B. IRITANI* Alternates between research seminars and literature review presentations. Research seminar topics relate to basic and translational animal models. Literature review seminars involve critical evaluation of recent articles on laboratory animal medicine and other scientific or medical topics. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 518 Clinical Conference and Comparative Pathology Seminar (1, max. 12) *N. REYES, P. TREUTING* Alternates between clinical veterinary medicine and comparative pathology discussions. Clinical discussions include case reports of spontaneous and induced diseases. Comparative pathology discussions cover gross and histopathology of natural occurring and experimentally induced lesions in laboratory animals and wildlife. Prerequisite: either PATH 500 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

C MED 520 Biology of Laboratory Animals (1) *T. BRABB, B. IRITANI, P. TREUTING* Fundamentals of morphological, functional, and applied aspects of anatomy, physiology, pharmacology, biochemistry, and immunology of commonly used laboratory animal species. Discusses similarities and differences within and between species, including humans. Other topics include husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: A.

C MED 521 Biology of Laboratory Animals (1) *T. BRABB, B. IRITANI, P. TREUTING* Fundamentals of the morphological, functional, and applied aspects of anatomy, physiology, pharmacology, biochemistry,

and immunology of the commonly used laboratory animal species. Similarities and differences within, and between, species, including humans are discussed. Other topics include husbandry, genetics, behavior, and nutrition. Prerequisite: permission of instructor. Offered: W.

C MED 530 Diseases of Laboratory Animals (1-) *T. BRABB, B. IRITANI, P. TREUTING* Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lagomorphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: A.

C MED 531 Diseases of Laboratory Animals (1-) *T. BRABB, B. IRITANI, P. TREUTING* Analysis of etiology, pathogenesis, pathology, and disease processes in rodents, lagomorphs, carnivores, and nonhuman primates. Prerequisite: permission of instructor. Offered: W.

C MED 540 Animal Models (2) *T. BRABB, C. HSU, B. IRITANI, P. TREUTING* Naturally occurring and experimentally induced analogs of human diseases in animals with emphasis on diseases lacking animal models, and approaches to identifying new models. Discusses animal models of categorical disease (e.g., cancer, atherosclerosis, gerontology) . Prerequisite: permission of instructor. Offered: Sp.

C MED 590 Selected Topics in Animal Medicine (1-5, max. 10) *T. BRABB, L. COLBY, C. FREVERT, B. IRITANI, P. TREUTING* Radiation biology, genetics, anesthesiology and experimental surgery, preventive medicine, and ethical aspects of use of animals in biomedical teaching and research. Specific topics vary from year to year, depending on expertise of the annual visiting professor. Prerequisite: permission of instructor. Offered: AWSpS.

C MED 592 Comparative Pathology for the Scientist (3) *C. FREVERT* Introduces the interpretation of pathological changes in animals used for biomedical research, with a focus on the mouse. Covers study design and interpretation, techniques to measure pathological changes in major organ systems, plus other topical material related to preclinical drug studies and translational research.

C MED 600 Independent Study or Research (*-)
Credit/no-credit only. Offered: AWSpS.

C MED 601 Internship Rotation - Laboratory Animal Medicine (*-) Prerequisite: DVM degree. Credit/no-credit only. Offered: AWSpS.

C MED 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

CONJOINT

CONJ 401 Human Anatomy and Physiology (4) T. *LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: BIOL 220; either CHEM 155 or CHEM 162. Offered: A.

CONJ 402 Human Anatomy and Physiology (4) T. *LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: CONJ 401. Offered: W.

CONJ 403 Human Anatomy and Physiology (4) T. *LINDER, A. MELBY* Structure and function of the human body with laboratory work in gross anatomy, histology, and physiology. Primarily for pharmacy doctoral students. Others by special permission of instructors. Prerequisite: CONJ 402. Offered: Sp.

CONJ 475 Alcoholism: A Course for Medical Students and Students in the Allied Health Sciences (2) *Kivlahan, Samson* For medical students in the allied health sciences in any year that covers an introduction to the epidemiology, diagnostic strategies, natural history, physiologic effects, and treatment of alcohol-related disorders. Offered: Sp.

CONJ 480 Neuroscience for Rehabilitation Professionals (5) *Anderson, Mulligan, Slimp* Structure and function of the central nervous system, emphasizing sensorimotor systems and higher integrative functions, coupled with clinical correlations. Required for occupational therapy, physical therapy, and prosthetic/orthotic students. Others by permission.

CONJ 504 Topics of Molecular Medicine (1.5, max. 5) Focuses on an important topic in medicine and science. Lectures introduce clinical and basic science

background, followed by a seminar/discussion with speakers. Prerequisite: Graduate standing and permission of instructor. Offered: jointly with MOLMED 504; Sp.

CONJ 505 P-Pain Clinic Preceptorship (1, max. 12) One morning a week for a total of 30 hours per quarter spent observing patient care in either inpatient or outpatient settings at UW Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: Pain Center.

CONJ 510 ISCRM Research Updates and Stem Cell Club ([0/1]-, max. 12) *Ruohola-Baker, Ware* Presents ongoing research at the Institute for Stem Cell and Regenerative Medicine. Includes diverse subject matter in regenerative medicine, with new, unpublished data, and opportunity to identify collaborations and contacts for discussion, and an understanding of the state of the art. Credit/no-credit only. Offered: jointly with BIOC 510.

CONJ 511 Genomic Dissection (1) *Marshall S. Horwitz* Uses state of the art technology to sequence the genome of a cadaver. Explores the structure of the genome, as well as genetic variants responsible for human individualization and disease. Credit/no-credit only. Offered: A.

CONJ 512 Scientific Speaking Seminar (1.5) *Biggins, Peichel* Teaches how to effectively give a scientific seminar about research. Offered: jointly with MCB 512; W.

CONJ 513 Clinical Medical and Human Genetics (4) *Byers* Rotations through medical genetics clinics for graduate students enrolled in the molecular medicine pathway. Students review clinical data, identify the molecular basis of genetic disorders, and assess how scientific studies have changed the assessment and natural history of these conditions. Limit of four students per quarter. Offered: jointly with MOLMED 513; AWSp.

CONJ 515 Introduction to Team-Based Care in Rural and Underserved Settings (1) *Toby Keys* Provides opportunities for students in health professional programs to learn about inter-professional education, practice transformation, behavioral health integration, social determinants of health, cultural humility, and current emerging healthcare

topics that concern rural and urban underserved communities. Addresses demographics, economics, community structure, culture, and professional/personal issues. Add code required. Credit/no-credit only. Offered: W.

CONJ 516 What Every Physician Should Know about Oral Health (1) *Lewis, Mouradian, Slayton* Didactic elective for students interested in understanding oral health and its relationship to systemic health. Special interest to students planning careers in primary care, public health, or who are likely to practice in rural or underserved communities. Includes weekly seminars and clinical demonstrations. Credit/no-credit only. Offered: Sp.

CONJ 518 Molecular Biology and Immunology of HIV and AIDS (1.5) *James I Mullins* Intended for a broad array of science and public health majors. Will cover history of AIDS pandemic, and methodology and current progress in AIDS pathogenesis, vaccine development and cure research. Prerequisite: BIOL 200; recommended: For basic background BIOL 180, 200, 302 (or MICROM 301) are recommended. Introduction to the biological problems can be derived from MICROM 445 or 450, IMMUN 441, 532, 537, and more advanced preparation on the topic from (GH 560, PABIO 551, 552) . Offered: Sp.

CONJ 524 Structural Basis of Signal Transduction (1.5) Focuses on the structure-function relationship of key enzymes in signal transduction (protein/lipid kinases; phosphatases etc.) and the structural consequences of protein phosphorylation. Teaches students to look into critical structural details using PC or Mac. Prerequisite: undergraduate course in biochemistry and basic cell biology, or permission of instructor. Instructors: Xu Offered: W.

CONJ 526 Introduction to Systems Biology and Quantitative Approaches to Biomedical Sciences (1.5) *Aitchison* Covers philosophy of systems biology, experimental design, and the linkages between discovery and hypothesis-driven science. Reviews quantitative systems biology tools for genomics, proteomics, modeling and data integration, and emerging technologies. Offered: W.

CONJ 529 Cell Migration (1.5) *Cooper, Moens* Explores mechanisms of cell migration in vivo and in cell culture. Discusses the cell biology of different forms of cell migration, the extracellular cues that

direct migration, and how these cues are integrated by the migrating cell. Offered: jointly with MCB 529; W.

CONJ 530 Directing Stem Cells Toward Regenerative Medicine (3) *H. Ruohola-Baker* An introduction to the rapidly developing field of human embryonic stem cells in regenerative medicine crossing all medical disciplines including ethics. Requires a strong background in biological sciences. Offered: W.

CONJ 531 Signaling Mechanisms in Excitable Cells (1.5) *W. ZAGOTTA* Mechanisms of cellular signaling, particularly in nerve and muscle. Electrical, chemical, and mechanical signaling in the cell that lead to processes such as electrical excitability, action potentials, and muscle contraction. Prerequisite: comprehensive undergraduate course in general biochemistry and molecular biology, or permission of instructor. Offered: A.

CONJ 532 Signal Transduction from the Cell Membrane to the Nucleus (2) *John D. Scott, Shao-En Ong, Rich Gardner* Intracellular signaling pathways leading from cell membrane receptors to nucleus. Pathways activated by seven transmembrane receptors and G-proteins, insulin/PI3 kinase, nitric oxide and WNTs and mechanisms of signal termination. Cytokine/Jak/Stat signaling and role of subcellular localization in signal transduction. Prerequisite: basic knowledge of biochemistry. Offered: jointly with PHCOL 502; A.

CONJ 533 The Dynamic Chromosome (1.5) The chromosome viewed as the ultimate organelle. How chromosomes are maintained and propagated. Epigenetic regulation of genes. Genetic, biochemical, and cytologic methods for understanding chromosome functions. Prerequisite: cell biology, biochemistry, and genetics. Instructors: Henikoff, Roth Offered: A.

CONJ 534 Selected Problems in Nervous System Development (1.5) Introduces students to current issues in developmental neurobiology. Topics include regionalization of the neuroectoderm, mechanisms of neurogenesis, axon patterning and plasticity, and cell death. Not intended to be comprehensive; examines the experimental basis for current views in the field of a few topical issues.

CONJ 537 Mechanism of Transcriptional Regulations (1.5) *Tsukiyama* Biochemical mechanisms of gene transcription covering a broad range of transcriptional regulation, including mechanisms of transcriptional initiation, elongation, and termination. Regulation of transcription by chromatin. Includes a special lecture regarding regulation of transcription in cell growth and differentiation. Offered: A.

CONJ 538 Genetic Instability and Cancer (1/1.5) Seminar focusing on molecular pathways that maintain genomic stability in all cells and that carry out programmed changes in genomic structure in the immune system. Special attention devoted to understanding how failure in these pathways leads to genomic instability and malignancy. Prerequisite: permission of instructor. Instructors: Maizels, Monnat

CONJ 539 Modern Approaches to Vaccines (1.5) *Fuller* Covers selected topics based on recent publications in viral and bacterial vaccine research. Emphasizes understanding the latest advanced and issues in vaccine discovery, mechanisms of action, and special topics in viral vaccines. Offered: Sp.

CONJ 540 Basic Science of Urologic Complications (3) Introduction to the multidisciplinary nature of the most common urologic complications ranging from prostate cancer to erectile dysfunction. Covers epidemiology, clinical and surgical treatments, current dogmas and approaches/models in basic study of underlying disease mechanisms, and a journal review of each complication. Prerequisite: biological science course.

CONJ 541 Molecular Biology of Cellular Processes (1.5) Translational control; cytoskeleton and molecular motors; protein targeting, sorting and secretion; apoptosis; regulation of cell function by extracellular matrix. Prerequisite: comprehensive undergraduate course in biochemistry and molecular biology or permission of instructor. Instructors: Bornstein Offered: Sp.

CONJ 542 Cell Biology of Development (3) *C. Berg, D. Raible* Molecular mechanisms of development with emphasis on cell biological processes. Prerequisite: comprehensive undergraduate courses in biology, molecular biology, or permission of instructor. Offered: A.

CONJ 544 Protein Structure, Modification and Regulation (1.5) Overview of general principles of protein structure, including forces that contribute to folding and stabilization, followed by an extended coverage of the means by which protein structure and function are modified and regulated. Examples from recent developments in protein folding, processing, and allosteric regulation. Prerequisite: introductory biochemistry and cell biology. Instructors: Stoddard, Strong

CONJ 545 Molecular Interactions and Medicine (1.5) *Verlinde* Forces governing molecular interactions in biology; with a focus on medicine. Principles of computer modeling techniques in use for predicting the molecular behavior of proteins, ligands, and their complexes. In computer ligand discovery; drug design, and the understanding at the atomic level of some genetic diseases. Two computer lab sessions. Offered: Sp.

CONJ 546 Survey of Technologies for Molecular Biology (1.5) *Bumgarner* Broad overview of modern technologies used in molecular biology with particular emphasis on DNA sequencing and gene expression. In addition to methods and applications for the technologies, examines the theoretical basis and underlying instrumentation through which these technologies are implemented. Offered: A.

CONJ 547 Molecular Evolution of Viral-Host Interactions (1.5) *Katze* Interactions between viruses and the cells they infect, with special emphasis on evolutionary battle that occurs between the invading virus and its host. Examines new technologies being used to molecularly dissect virus-host interactions. Offered: Sp.

CONJ 548 Modeling Proteins and Proteomes (1.5) *Samudrala* Hands-on experience for modeling protein structures, using the models to predict function, and applying the prediction methods to all proteins encoded by an organismal genome. Provides an overview of protein structure, how it mediates function, and its importance for understanding protein interaction networks. Technologies involved for protein structure modeling. Offered: W.

CONJ 549 Microbial Population Biology (1.5) Principles of ecology and evolution as they apply to microorganisms. Prerequisite: advanced

undergraduates with permission of instructor.
Instructors: Mlttler Offered: Sp, even years.

CONJ 550 P-Clinical Infectious Diseases (3) Lecture series by faculty members from various departments, authorities in the field of clinically important infectious diseases. Lectures, reading assignments, and handouts emphasize epidemiology, clinical manifestations, laboratory findings, diagnosis, treatment, and prevention. Oriented for second-year medical students. Credit/no-credit only.

CONJ 551 Immunity (1.5) *Strong* Provides an understanding of the central cellular and molecular players in the mammalian immune system at a level appropriate for the non-specializing graduate student. Selected topics include the molecular basis of B and T cell activation and effector functions and the mechanisms of innate immunity. Offered: Sp.

CONJ 552 Metabolic Flexibility in Biology (1.5) Small molecules and the ways that chemistry of these molecules facilitates life under changing conditions. Includes systems from microbiology to human physiology to understand aspects of cancer, aging, and animation. Explores topics including bioenergetics/metabolic flux, adaptation, and allometric scaling. Prerequisite: undergraduate organic chemistry and biochemistry.

CONJ 554 Fundamentals of Hypnosis (1) *McCann, Schneeweiss* Examines phenomena associated with hypnosis, as well as its safe use in clinical practice. Credit/no-credit only. Offered: W.

CONJ 556 Drug Addiction: Mechanisms, Prevention, and Treatment (2) *Chavkin* Key advances, insights, methods, and challenges for our understanding of drug addiction from psychological, pharmacological, psychiatric, community prevention, legal, and neurodevelopmental perspectives. Enhances familiarity with the multidisciplinary approaches required to understand addiction as a disease. Offered: A.

CONJ 557 Microbial Evolution and Ecology (2) Selected topics in microbial evolution including evolution of the main lines of descent, and bacterial and archaeal speciation and co-speciation, and evidence for early microbial life on Earth.

Prerequisite: MICROM 412 or general microbiology background. Offered: ASp.

CONJ 558 Fundamentals of Prokaryotic Biology (1.5) *Harwood, Leigh* Basic principles in prokaryotic cell structure, genomics, and metabolism. Introduction to prokaryotic physiology, bacterial pathogenesis, and microbial ecology.

CONJ 562 Advanced Topics in Bacterial Physiology (1.5) Covers cutting edge research and concepts pertaining to the complexity of the bacterial cell with an emphasis on primary literature and discussion. Offered: Sp.

CONJ 570 Introduction to the Clinical Management of Transgender Patients (1) Covers the steps and protocols providers need to know to provide culturally proficient care for trans-identified patients. Prior completion of FAMED 561 highly recommended. Prerequisite: current graduate health science student and permission of course coordinator. Credit/no-credit only.

CONJ 571 Introduction to the Clinical Management of Patients who are Transgender (1) Covers the steps and protocols providers need to know to provide culturally proficient care for trans identified patients. Credit/no-credit only.

CONJ 583 Molecular Targets in Cancer Therapy (1.5) *Maizels, Monnat* Examines how molecular targets for cancer therapies are discovered and validated. Covers disease mechanisms, need for new therapeutics, how small molecule and antibody therapeutics are identified and developed, and how preclinical studies are used to establish safety and efficacy. Offered: jointly with MOLMED 583; A.

CONJ 585 Surgical Anatomy (1-3, max. 12) Guided dissection of selected regions, supplemented by conferences. Offered conjointly by the departments of Biological Structure and Surgery. Prerequisite: permission of department. Coordinator: Department of Biological Structure. Instructors: Graney

CONJ 598 P-Chronic Care Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Chronic Care clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in

remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWPSS.

CONJ 605 P-Introduction to Palliative Care - Consultation (4) Introduction to palliative care in the consultation setting. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care. Prerequisite: Successful completion of required Medicine and/or Family Medicine Clerkships Offered: AWPSS.

CONJ 606 P-Advanced Palliative Care - Inpatient Hospice Track (8) Intensive four week experience in palliative care in the inpatient hospice setting. Students work in interdisciplinary teams to assess and manage symptoms for patients near the end of life under appropriate supervision. Prerequisite: Required Family Medicine and/or Internal Medicine Clerkship(s) Offered: AWPSS.

CONJ 607 P-Advanced Palliative Care (8) Intensive four week experience in palliative care in inpatient and outpatient settings. Students work in interdisciplinary teams to treat and communicate with seriously ill patients and their families to make decisions regarding care. Includes exposure to hospice care. Prerequisite: Required Family Medicine and/or Internal Medicine Clerkship(s) Offered: AWPSS.

CONJ 608 P-Introduction to Palliative Care, Consult Track - ANMC (4) Introduction to palliative care in the consultation setting in Anchorage, AK. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care.

CONJ 609 P-Introduction to Palliative Care, Consult Track - Bellingham, WA (4) Introduction to palliative care in the consultation setting in Bellingham, WA. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with

serious illness and their families to make decisions regarding care.

CONJ 610 P-Introduction to Palliative Care, Consult Track - Olympia, WA (4) Introduction to palliative care in the consultation setting in Olympia, WA. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care.

CONJ 611 P-Introduction to Palliative Care, Consult Track - Billings, MT (4) Introduction to palliative care in the consultation setting in Olympia, WA. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care.

CONJ 612 P-Introduction to Palliative Care Consultation- Bozeman, MT (4) Introduction to palliative care in the consultation setting in Bozeman, MT. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care.

CONJ 613 P-Introduction to Palliative Care Consultation- Boise, ID (4) Introduction to palliative care in the consultation setting in Boise, ID. Students are integrated into palliative care teams and participate in interdisciplinary rounds, patient meetings, and symptom assessment. Special focus on communication and assisting patients with serious illness and their families to make decisions regarding care.

CONJ 614 P-Correction and Addiction Medicine - Gray's Harbor County, WA (4-8) Clinical elective primarily at Greys Harbor County Jail. Covers a variety of acute and chronic diseases common outpatient procedures in jail and addiction treatment settings. In-depth experience working with incarcerated and known addicted individuals. Offered: AWPSS.

CONJ 615 P-Advanced Correction and Addiction Medicine - Gray's Harbor County, WA (8) Advanced clinical elective primarily at Greys Harbor County Jail. Covers variety of acute and chronic diseases common outpatient procedures in jail and addiction treatment settings. In-depth experience working with incarcerated and known addicted individuals. Prerequisite: Required Family Medicine and/or Internal Medicine Clerkship(s) Offered: AWSpS.

CONJ 616 P-Prison/Corrections Medicine Clerkship - Washington (*, max. 16) Covers a wide variety of diseases in a variety of outpatient settings, including urgent care, a chronic care clinic, and a long-term care facility for elderly and medically frail inmates in a men's prison setting. Also includes the option to learn common procedures including suturing, joint injections, skin biopsies, and toenail removals. Prerequisite: completion of the medicine and family medicine required clerkships. Offered: AWSpS.

CONJ 617 P-Subinternship in Neurocritical Care Medicine (8) As sub-interns on the Neurocritical Care Service, students learn about critical illness, focusing on neurosurgical critical illness. Through direct patient care responsibilities, students gain experience managing traumatic brain injury, acute spinal cord injury, acute cerebral hemorrhage, and other common critical-care issues. Offered: AWSpS.

CONJ 618 P-Sleep Medicine (4) Exposure to sleep disorders including sleep apnea, narcolepsy, hypoventilation, parasomnias and circadian rhythm disorders. Students primarily see outpatients in the UW Medicine Sleep center at Harborview with various sleep faculty. Appropriate for students interested in internal medicine, family medicine, otolaryngology, neurology, psychiatry, anesthesiology and/or a career in sleep medicine.

CONJ 619 Advanced Palliative Care (8) Intensive four week experience in palliative care in inpatient and outpatient settings. Students work in interdisciplinary teams to treat and communicate with seriously ill patients and their families to make decisions regarding care. Includes exposure to hospice care. Prerequisite: Completion of Family Medicine and/or Internal Medicine clerkship Offered: AWSpS.

CONJ 620 Opioid Use Disorder (8) An intensive experience in the clinical care of patients with opioid

use disorder in both the inpatient and outpatient settings. Students will evaluate inpatients with opioid use disorder as part of the addiction medicine consult service at HMC, providing treatment recommendations and linkage to outpatient services. They will work with patients in outpatient settings including primary care-based treatment programs and opioid treatment programs Prerequisite: Successful completion of required Medicine and Psychiatry clerkships. Offered: AWSpS.

CONJ 621 Advanced Palliative Care-Spokane (8) This APC clerkship is an intensive experience in palliative care. This is an inpatient palliative care experience; under supervision of board certified palliative care physicians, students will see inpatient consultations and provide follow-up inpatient care. The palliative care team provides consults across disciplines in the hospital including pediatric acute care and adult acute care (medical, oncology, surgical and intensive care) . Prerequisite: Successful completion of the third year medicine and/or family medicine clerkships Offered: AWSpS.

CONJ 622 Advanced Palliative Care-Boise, ID (8) This APC clerkship is an intensive experience in palliative care. This advanced palliative care rotation is primarily inpatient focused, with approximately 80% of the student's time spent in direct patient care in the hospital setting. Students work in interdisciplinary teams to treat and communicate with seriously ill patients and their families to make decisions regarding care. Includes exposure to hospice care. Prerequisite: Successful completion of the third year medicine and/or family medicine clerkships. Offered: AWSpS.

CONJ 623 Adult and Pediatric Hospital Medicine (8) Advanced combined rotation in adult and pediatric hospital medicine. Students work with teaching physicians on a busy inpatient service with the opportunity to evaluate and admit patients from the emergency department, attend deliveries, perform consultations and manage assigned inpatients, and may have some opportunity for additional exposure to specialty care and procedures if desired. Focuses on continuity of care where possible. Prerequisite: successful completion of Patient Care Phase clinical curriculum. Offered: AWSpS.

CONJ 625 Global Health Clinical Elective (*, max. 24) Provides a better understanding of the challenges of

providing medical care in international resource-limited settings. Students spend a minimum of five weeks at a developing county medical center, with the goal of learning more about the local burden of disease and strategies for diagnosis and treatment. Prerequisite: fourth year medical students. Instructors: S. McClelland Offered: WSp.

CONJ 626 Global HIV Medicine Elective (10-20, max. 20) *Chung* Prepares health profession students for work in developing countries. Includes experience treating HIV-positive patients in resources-poor settings, analyzing the relationship between poverty and health, recognizing tropical diseases that are common in Sub-Saharan Africa or Southeast Asia, and understanding the epidemiology of HIV in Sub-Saharan Africa or Southeast Asia. Offered: AWSpS.

CONJ 627 Intro to End of Life Home Care (4)
Prerequisite: Successful completion of Foundation Years curriculum. Offered: AWSpS.

CONJ 628 Advanced Palliative Care-Alaska (8) This APC clerkship is an intensive experience in palliative care. This is an inpatient palliative care experience; under supervision of board certified palliative care physicians, students will see inpatient consultations and provide follow-up inpatient care. The palliative care team provides consults across disciplines in the hospital including pediatric acute care and adult acute care (medical, oncology, surgical and intensive care). Prerequisite: Successful completion of the third year medicine and/or family medicine clerkship. Offered: AWSpS.

CONJ 629 Clinical Pediatric Dermatology (8) This is a full-time rotation in Pediatric Dermatology at Seattle Children's Hospital, which is a referral hospital for all of the Pacific Northwest. Pediatric disorders such as eczema are seen commonly, unusual and complicated patients are also commonplace in these clinics. Inpatient consults are also a significant portion of this rotation. This is ideal for students with an interest in pediatrics, family medicine, or medical genetics. Prerequisite: Successful completion of required medicine and pediatrics clerkships. Offered: AWSpS.

CONJ 630 P-Write Chronic Care Clerkship (8) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: approved by the WRITE committee.

CONJ 631 Introduction to Hospice and Palliative Home Care (4) Students will become integrated into a home care team which practices both palliative and hospice care in patient's homes. The team consists of an attending physician, nurses, social workers, and spiritual counselors. Students will participate in symptom assessment and management, discussions of goals of care and will also experience spiritual assessment and grief counseling. Prerequisite: Successful completion of Foundations curriculum. Offered: AWSpS.

CONJ 632 Introduction to Palliative Care-Consultation (4) The student will work with the interdisciplinary palliative care team, which sees patients in 2 distinct clinic settings; within Montana Cancer Center, providing palliative care to patients with cancer, and in a standalone palliative care clinic doing general consultations for patients with serious illness. Students work with inpatient palliative care consultation team actively managing patients along with primary teams at St. Patrick Hospital. Prerequisite: Successful completion of Foundations curriculum. Offered: AWSpS.

CONJ 633 Intro to Palliative Care - South Puget Sound (4) Inpatient setting. Students work on a palliative care team under direction of an attending physician, with special focus on communication and assisting patients with serious illness and their families with difficult decisions regarding care. Participation in interdisciplinary rounds, meetings with patients, symptom assessment, and interactions with other teams. Prerequisite: successful completion of UWSOM Foundation Phase curriculum. Offered: AWSpS.

CONJ 655 P-Chronic Care - Olympia (8) Exposure to rehabilitation. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 656 P-Chronic Care/Palliative Care - Cheyenne, WY (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 658 P-Chronic Care/Palliative Care - Providence Spokane (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 659 P-Chronic Care/Geriatrics - Missoula VHC (8) Exposure to rehabilitation, palliative care, pain management, and geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 660 P-Chronic Care/Palliative Care - Group Health Everett (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 661 P-Chronic Care/Palliative Care - Coeur d'Alene (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 663 P-Chronic Care/Alaska - Providence Palliative Care (8) Exposure to the areas of rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation of the first day, and patient case presentations during didactics on last day.

CONJ 664 P-Chronic Care/Palliative Care - Kline Galland Home (8) Exposure to rehabilitation. Students assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 665 P-Chronic Care/Palliative Care - PHOS (8) Exposure to rehabilitation, palliative care, and pain

management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 666 P-Chronic Care/Spokane - VAMC Geriatrics Unit (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 667 P-Chronic Care/Palliative Care - Evergreen Hospice (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 668 P-Chronic Care/Spokane - St. Luke's Rehab, Pain Management (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 669 P-Chronic Care/Spokane - Deaconess Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Students are assigned to a preceptor and clinical site to concentrate clinical activities.

CONJ 670 P-Chronic Care/Billings - St. Vincent Healthcare (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 671 P-Chronic Care/Boise - Saint Alphonsus Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 672 P-Chronic Care/Boise - St. Luke's Palliative Care (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Includes didactic orientation on the first day, and patient case presentations during didactics on last day.

CONJ 673 P-Chronic Care/Boise - VAMC (8) Exposure to rehabilitation, geriatrics, palliative care, and pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities.

CONJ 674 P-Chronic Care/Alaska - Anchorage APCA (8) Exposure to rehabilitation, geriatrics, and pain management. Students are assigned to a preceptor and clinical site to concentrate their clinical activities.

CONJ 675 P-Chronic Care/Palliative Care - GHHH Tacoma (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 677 P-Clinical Allergy and Immunology (*, max. 12) Clinic and office experience in diagnosing and managing allergic disease. Clinical conferences, hospital rounds on clinical immunology and allergy. Student may elect a flexible program, emphasizing adult or pediatric allergy. (Four weeks, full-time) . Prerequisite: MED 665 or basic clerkships in departments of Family Medicine or Pediatrics. Instructors: (Boise Veterans' Affairs Hospital) , (University of Washington Medical Center)

CONJ 679 P-Chronic Care/Palliative Care - PRMC (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical studies. Includes didactic orientation on the first day and patient case presentations during didactics on last day.

CONJ 680 P-Detoxification and Rehabilitation Program for Alcoholism and Drug Abuse (*, max. 16) J. REOUX Supervised introduction to alcoholic detoxification and rehabilitation and drug abuse. Supervised clinical experience in a variety of alcoholism and drug abuse treatment programs;

accompanied by a core series of lectures and discussions. For medical students only. Prerequisite: Completion of 3rd year psychiatry clerkship.

CONJ 681 P-Chronic Care/Palliative Care - Children's (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 682 P-Chronic Care/Palliative Care - HMC (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 683 P-Chronic Care/Palliative Care - UWMC PC Consult (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 684 P-Chronic Care/Palliative Care - Multicare Hospice (8) Exposure to palliative care. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 685 P-Chronic Care/Palliative Care - Providence Everett (8) Exposure to rehabilitation, palliative care, and pain management. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 686 P-Chronic Care/Rehab - Children's (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 687 P-Chronic Care/Rehab - HMC (8) Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to

concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 688 P-Chronic Care/Rehab - VA RMS (8)

Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 689 P-Chronic Care/Rehab - VA SCI (8)

Exposure to rehabilitation. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 690 P-Chronic Care/Rehab - UWMC (8)

Exposure to rehabilitation. Students are assigned to a preceptor and clinical site to concentrate their clinical activities. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 691 P-Clerkship in Chronic Care - Boise PMR (8) Required clerkship for fourth year medical students, concentrating on geriatrics, palliative care, and rehab medicine using lectures, group discussions, standardized patients, and case scenarios.

CONJ 692 P-Chronic Care Clerkship - Spokane, St. Luke's Rehab (8) Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 693 P-Chronic Care/Geriatrics - HMC (8)

Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 694 P-Chronic Care/Geriatrics - VA (8)

Exposure to geriatrics. Students focus on one area and are assigned to a preceptor and clinical site to concentrate their clinical activities in that content area. Includes didactic orientation on the first day and patient case presentations during didactic on the last day.

CONJ 696 P-WRITE Clinical Electives (*, max. 24)

Clinical electives for WRITE program. Offered: AWSpS.

CONJ 697 International Exchange Clerkship (12)

Hunt Participation in healthcare delivery systems in developing countries; observation of relationship of host country's traditional medicine with Western medicine. Students live in cross-cultural setting to better understand their own assumptions about healthcare and life styles. Offered: Sp.

CONJ 698 P-Foreign Medical Student Clerkship (*, max. 24) A limited number of students from foreign medical schools are accepted for individually designed clinical clerkships at available sites after all UWMC students are accommodated. Prerequisite: permission of Associate Dean for Academic Affairs, School of Medicine.

CONJ 699 P-Clinical Clerkships (*, max. 32)

EMERGENCY MEDICINE

MED EM 501 P-Emergency Medicine Preceptorship (1, max. 12) Provides opportunities for first- and second-year medical students to gain experience working in an emergency setting. Students shadow faculty in emergency medicine during their shifts. Includes learning about common conditions seen in the emergency department and the opportunity to work on history taking and physical exam skills. Prerequisite: permission of instructor. Credit/no-credit only.

MED EM 550 P-Introduction to Emergency Medicine (1) Presentation of common medical and surgical emergencies and their urgent management, especially within the framework of rapid patient assessment and stabilization. Lecture topics include chest pain and myocardial infarction, basic arrhythmia management, and burn and wound care. Credit/no-credit only.

MED EM 598 P-Emergency Medicine Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Emergency Medicine clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission Offered: AWSpS.

MED EM 600 Independent Study/Research (*)

Provides medical students the opportunity to participate in research as part of their medical education. Must obtain permission through submission of a proposal to department and securing a faculty sponsor.

MED EM 605 P-Emergency Medicine - UWMC (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 606 P-Emergency Medicine - HMC/UWMC (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PBSCI, PEDS; and SURG required clerkships.

MED EM 607 P-Emergency Medicine - Madigan (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 608 P-Emergency Medicine - Swedish Cherry Hill (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PBSCI; PEDS; and SURG required clerkships.

MED EM 609 Emergency Medicine - Seattle Children's (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 615 Emergency Medicine - VA (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 616 Emergency Medicine-Wenatchee, WA (8, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 617 P-Emergency Medicine - Olympia (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 618 P-Emergency Medicine - Olympia, WA (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 619 Emergency Medicine - Tacoma, WA (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 624 P-Emergency Medicine - Shelton (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 625 P-Emergency Medicine - Spokane (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 626 P-Emergency Medicine - Spokane Deaconess (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 627 Emergency Medicine - Spokane Valley (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 645 P-Emergency Medicine - Boise, St. Lukes (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely

injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 646 P-Emergency Medicine - Boise, Saint Alphonsus (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 647 P-Emergency Medicine - Pocatello, ID (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 648 P-Emergency Medicine - Idaho Falls, ID (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 656 P-Emergency Medicine - Juneau, AK (8) Clerkship emphasized the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 657 P-Emergency Medicine - Fairbanks (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 658 P-Emergency Medicine - Anchorage (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 662 P-Emergency Medicine - Bozeman, MT (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 663 P-Emergency Medicine - Billings, MT (8) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 664 P-Emergency Medicine - Great Falls, MT (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 665 Emergency Medicine - Missoula, MT (8, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 668 P-Emergency Medicine - Casper (*, max. 16) Clerkship emphasizes the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 669 P-Emergency Medicine - Cheyenne, WY (8) Clerkship emphasized the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: MED; OB/GYN; PEDS; PBSCI; and SURG required clerkships.

MED EM 671 P-Emergency Medicine Subinternship - Cheyenne, WY (*, max. 16) Elective clerkship emphasizing the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: All 3rd year required clerkships + required 4th year EM clerkship; permission of department.

MED EM 681 P-Emergency Medicine Advanced Clinical Elective - Seattle, WA (*, max. 16) Elective clerkship emphasizing the management of ambulatory emergencies, severely injured, and critically ill patients. Prerequisite: all third year required clerkships plus required fourth year EM clerkship; permission of department.

MED EM 683 Emergency Medicine Point-of-Care Ultrasound (4) Introduction to point-of-care ultrasound in an emergency department setting. Students become comfortable with using bedside ultrasound by teaching ultrasound machine operation, image acquisition, and providing hands-on training in both simulated and patient care settings. Incorporates classroom didactics, procedure simulation and clinical application. Offered: WSp.

MED EM 697 P-Emergency Medicine Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship, externship, or research opportunities at times made available at institutions other than University of Washington. Faculty advise students of opportunities. Students obtain from Dean's office a special assignment form at least one month before preregistration. (Two, four, six, or twelve weeks) . Prerequisite: required EM clerkship; permission of instructor at away site and department. Offered: AWSpS.

MED EM 699 P-WWAMI Emergency Medicine Special Elective (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington, within the WWAMI region. Prerequisite: permission of department and away site.

FAMILY MEDICINE

FAMILY MEDICINE

FAMED 499 Undergraduate Research (*, max. 35) *W. PHILLIPS* Research activities arranged with University or community-based physicians in diverse areas relating to family medicine. Prerequisite: permission of course coordinator. Offered: AWSpS.

FAMED 501 P-Introduction to Family Medicine: Preceptorship (2, max. 12) *Jeanne Cawse-Lucas* Medical students spend one morning per week for one or more quarters working with a practicing community family physician. Prerequisite: first- and second-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 502 P-Preclinical Continuity Preceptorship in Family Medicine (1-8, max. 12) *Jeanne Cawse-Lucas* Introduces medical students to continuity of care in family medical settings, especially regarding what it means to be someone's doctor and what it is like to work with individuals to help them achieve optimal health for a minimum of two quarters. Prerequisite: first- and second-year medical students; permission of course coordinator. Offered: AWSpS.

FAMED 516 Team Based Care in Rural/Underserved Settings (1) An interdisciplinary, non-clinical elective for all health profession students. Fulfills part of the

didactic requirements for the AHEC Scholars Program. Prerequisite: CONJ 515. Offered: A.

FAMED 525 African American Health and Health Care Disparity (1) *F. OVERSTREET* Examines the most pressing health issues facing African Americans. Provides a forum to examine the root causes of health disparity in African descendants. Explores strategies to remedy problems in public health and healthcare delivery systems. Prerequisite: current graduate health science student; permission of course coordinator. Credit/no-credit only. Offered: A.

FAMED 526 Community-Focused Urban Health: Determinants, Disparities, and Equity (1) *B. Brown, R. Keys, A. Kost* Determinants, disparities, and approaches to health equity for medically underserved urban communities. Credit/no-credit only. Offered: W.

FAMED 527 Community-Focused Urban Health: Inter-Professional Care of Urban Under-Resourced Patients (1) *B. Brown, R. Keys, A. Kost* Interprofessional approaches to improving health for medically underserved urban communities. Credit/no-credit only. Offered: A.

FAMED 528 Strategies and Skills for Academic Success (1) *Edwin G Lindo, Amanda Kost, Toby Keys, Genya N Shimkin* Equips students with the skills needed to thrive in the Foundational medical school curriculum. Prepares students for medical licensure examination. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

FAMED 530 Primary Care (1) *W. PHILLIPS* Introduces primary care, the foundation of medical care and cornerstone of healthcare reform. Addresses history, clinical content, practitioner workforce, delivery models, research methods, and policy issues. Explores the role of primary care in personal and population health. Includes lectures, discussions, student presentations, and practice observation. Prerequisite: permission of course coordinator. Offered: W.

FAMED 531 Introduction to Person Centered and Interprofessional Palliative Care (1-5) Introduces fundamental concepts in narrative and person centered communication and interprofessional practice. Presents foundations for learning to apply

an interdisciplinary approach to palliative care. Offered: jointly with B H 566/NSG 526; A.

FAMED 532 Advanced Topics in Person Centered and Interprofessional Palliative Care (1-5)

Interprofessional course presenting advanced concepts in narrative and person centered communication and interprofessional practice. Requires admissions into the Palliative Care Graduate Certificate Program. Prerequisite: NSG 526 Offered: jointly with B H 567/NSG 527; W.

FAMED 533 Palliative Care: Quality Metrics and System Integration (1-5) Prepares students to integrate team based palliative care into a larger system, introduces community engagement, and palliative care policy issues. Specific content includes building palliative care service, engaging leadership to support palliative care, and using quality metrics to leverage and support quality care. Requires admissions into the Palliative Care Graduate Certificate Program. Offered: jointly with B H 568/NSG 528; Sp.

FAMED 534 Primary Care Clinical Skills and Procedures Workshop (1) Explore and hone common diagnostic and therapeutic clinical skills/procedures. Workshops delivered by a local Family Medicine residency program. Hands-on learning in small groups. Examples: EKG, suturing, casting/splinting, OB ultrasound, osteopathic manipulation, musculoskeletal, IUD and miscarriage management.

FAMED 535 Medical Chinese Terminology (1) F. *Heidrich, L. Zhu* For healthcare professions students interested in expanding cultural understanding and improving communication with patients whose primary language is Mandarin Chinese. Includes common Mandarin Chinese medical terminology used during medical visits; Chinese culture and beliefs toward health and sickness; and cross cultural comparison of healthcare delivery in China and the United States. Recommended: Some conversational level Chinese will be helpful and basic training in medical history taking. Credit/no-credit only. Offered: Sp.

FAMED 540 Topics in Health and Human Services in Rural Communities (1) Explores topics important to rural clinical practice. Includes rural health research, rural health policy, cultural competency, models of

rural health practice, and others. Includes panel discussions, a case study, and a required field trip to a rural community. Prerequisite: permission of course coordinator. Instructors: Shin Offered: W.

FAMED 541 Targeted Rural Underserved Track: Intersession 1 (3) First of four TRUST intersessions. Students will spend a week at their TRUST Continuity Community site to gain clinical experience, address rural health topics, and discuss iii-3 and community engagement. Credit/no-credit only. Offered: A.

FAMED 542 Targeted Rural Underserved Track: Intersession 2 (3) Second of four TRUST intersessions. Students will spend a week at their TRUST Continuity Community site to gain clinical experience, address rural health topics, and discuss iii-3 and community engagement. Credit/no-credit only. Offered: W.

FAMED 543 Targeted Rural Underserved Track: Intersession 3 (4) Third of four TRUST intersessions. Students will spend four days and three nights together at a retreat center training to be leaders in their future practice communities. Students will discuss rural practice, leadership skills and other related topics. Regional clinical deans and other rural health leaders facilitate the retreat. Credit/no-credit only. Offered: Sp.

FAMED 544 Targeted Rural Underserved Track: Intersession 4 (3) Fourth of four TRUST intersessions. Students will spend a week at their TRUST Continuity Community site to gain clinical experience, address rural health topics, and discuss iii-3 and community engagement. Credit/no-credit only. Offered: A.

FAMED 547 Spirituality in Healthcare (2) Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with B H 518/SOC W 587; Sp.

FAMED 550 Critical Race Theory and Medicine (1) *Edwin G Lindo* Understanding race and racism, their applicability to medicine, and their effects on marginalized communities. Explores the necessities of critiquing and bettering medicine through a Critical Race Theory lens in order to eliminate bias and decrease health disparities within marginalized communities. Offered: Sp.

FAMED 556 Spanish for Health Professionals (1)

Instruction in interviewing/history taking Spanish-speaking patient. Prerequisite: Spanish fluency at intermediate level; current graduate health science student; permission of course coordinator. Credit/no-credit only. Offered: Sp.

FAMED 561 LGBTQ Health and Health Disparities (1)

Covers the history and health status of the Lesbian, Gay, Bisexual, Transgendered, Queer, and Intersex (LGBTQ) community in the United States; effective strategies and skills for working with the LGBTQ community; designed to help the learner understand and respond better to healthcare needs of the LGBTQ community. Prerequisite: permission of course coordinator. Offered: W.

FAMED 598 P-Family Medicine Independent Study and Remediation (*, max. 8)

Designed for medical students required to complete additional study related to the required Family Medicine clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWSpS.

FAMED 630 P-WRITE Family Medicine Clinical Clerkship (*, max. 24)

Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: permission of course coordinator.

FAMED 631 P-LIC Family Medicine Clinical Clerkship - Olympia, WA (1-24, max. 25)

Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: permission of course coordinator.

FAMED 632 P-Clinical Clerkship in Family Medicine - Bozeman (1-24, max. 25)

Ambulatory primary care with emphasis on comprehensive, continuity, integrated care to patients of both genders and all ages in a culturally responsive manner. Student functions as clerk in community or residency site, and participates in care of assigned patients in a variety of settings: office, hospital, home, community resources. Prerequisite: third- or fourth-year medical students. Offered: AWSpS.

FAMED 633 P-Clinical Clerkship in Family Medicine - Leavenworth (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 634 P-Clinical Clerkship in Family Medicine - Sitka (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 635 P-Clinical Clerkship in Family Medicine - Cheyenne (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 636 P-Clinical Clerkship in Family Medicine - Wenatchee (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 637 P-Clinical Clerkship in Family Medicine - Spokane GHC (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 638 P-Clinical Clerkship in Family Medicine - Othello (12)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 639 P-Clinical Clerkship in Family Medicine - Douglas WY (1-24, max. 25)

Ambulatory primary care with emphasis on comprehensive, continuity, integrated care to patients of both genders and all ages in a culturally responsive manner. Student functions as clerk in community or residency site, and participates in care of assigned patients in a variety of settings: office, hospital, home, community resources. Offered: AWSpS.

FAMED 640 P-Clinical Clerkship in Family Medicine - Boise (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 641 P-Clinical Clerkship in Family Medicine - Spokane (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 642 P-Clinical Clerkship in Family Medicine - Madigan (1-24, max. 25)

For description and prerequisite, see FAMED 636. Offered: AWSpS.

FAMED 643 P-Clinical Clerkship in Family Medicine - Tacoma (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 644 P-Clinical Clerkship in Family Medicine - University of Washington Medical Center (1-24, max. 25)

For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 645 P-Clinical Clerkship in Family Medicine - Kaiser Permanente Seattle (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 646 P-Clinical Clerkship in Family Medicine - Swedish First Hill (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 647 P-Clinical Clerkship in Family Medicine - Swedish Cherry Hill (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 648 P-Clinical Clerkship in Family Medicine - Renton Valley (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 649 P-Clinical Clerkship in Family Medicine - Olympia (1-24, max. 25) For description and prerequisites, see FAMED 636. Offered: AWSpS.

FAMED 650 P-Clinical Clerkship in Family Medicine - Anacortes (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 651 P-Clinical Clerkship in Family Medicine - Omak (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 653 P-Clinical Clerkship in Family Medicine - Anchorage (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 656 P-Clinical Clerkship in Family Medicine - Whitefish (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 657 P-Clinical Clerkship in Family Medicine - Pocatello (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 658 P-Clinical Clerkship in Family Medicine - Sea Mar Clinic (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 659 P-Clinical Clerkship in Family Medicine - Country Doctor (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 660 P-Clinical Clerkship in Family Medicine - Yakima (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 661 P-Clinical Clerkship in Family Medicine - Bremerton (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 662 P-Clinical Clerkship in Family Medicine - Buffalo (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 663 P-Clinical Clerkship in Family Medicine - Petersburg (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 664 P-Clinical Clerkship in Family Medicine - Billings (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 665 P-Clinical Clerkship in Family Medicine - Missoula (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 666 P-Clinical Clerkship in Family Medicine - Torrington (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 667 P-Clinical Clerkship in Family Medicine - Harrison - Bremerton (1-24, max. 25) Ambulatory primary care with emphasis on comprehensive, continuity, integrated care to patients of both genders and all ages in a culturally responsive manner. Student functions as clerk in community or residency site, and participates in care of assigned patients in a variety of settings: office, hospital, home, community resources. Offered: AWSpS.

FAMED 669 P-Clinical Clerkship in Family Medicine (1-24, max. 25) For description and prerequisite, see FAMED 632.

FAMED 670 P-Advanced Underserved Clerkship (*, max. 24) Students gain experience, knowledge, and skills needed to care for rural, specific ethnic, or underserved populations. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 671 P-Social and Structural Determinates of Health (8) Students increase awareness of and begin

to address the social and structural determinants of health impacting underserved populations. Time divided between community engagement and advocacy activities and advanced clinical clerkship in an underserved primary care setting. Credit/no-credit only.

FAMED 672 P-Advanced Preceptorship International (*, max. 24) For medical students desiring primary care experience abroad. Special project deals with influences of social, cultural, educational, and economic forces on healthcare delivery. Prerequisite: late third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 673 P-Clinical Clerkship in Family Medicine - Spokane Sacred Heart (1-12, max. 12) Ambulatory primary care with emphasis on comprehensive, continuity, integrated care to patients of both genders and all ages in a culturally responsive manner. Student functions as clerk in community or residency site, and participates in care of assigned patients in a variety of settings: office, hospital, home, community resources. Prerequisite: third- or fourth-year medical students. Offered: AWSpS.

FAMED 674 P-Advanced Interviewing in Primary Care (8) L. MAUKSCH Emphasizes developing competency in patient-centered interviewing, interview organization, and time management. Introduces primary care counseling skills and methods of health behavior change. Prerequisite: permission of course faculty.

FAMED 676 P-Clinical Clerkship in Family Medicine - Libby (12) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 677 P-Clinical Clerkship in Family Medicine - Grand Coulee (1-24, max. 25) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 678 P-Clinical Clerkship in Family Medicine - Port Angeles (12) For description and prerequisites, see FAMED 632. Offered: AWSpS.

FAMED 679 P-Clinical Clerkship in Family Medicine - Ferndale (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 680 P-Traditional Indian Medicine Clerkship in Primary Care Setting (*, max. 16) Broadens students' knowledge about the traditional Indian perception of health and illness, and expands their experience and skills with Traditional Indian Medicine (TIM) by interacting with a TIM practitioner, Native physician, patients and their families, and the local Native community. Prerequisite: either UCONJ 530, Indian Health Pathway declaration, or permission of course coordinator. Offered: AWSpS.

FAMED 682 P-Clinical Clerkship in Family Medicine - Ellensburg (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 683 P-Clinical Clerkship in Family Medicine - Lewiston (12) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 684 P-Clinical Clerkship in Family Medicine - Butte, MT (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 685 P-Clinical Clerkship in Family Medicine - Valley - Juneau, AK (1-24, max. 25) For description and prerequisite, see FAMED 632. Offered: AWSpS.

FAMED 686 P-Clinical Clerkship in Family Medicine - Port Townsend (12) For description and prerequisite, see FAMED 632.

FAMED 687 P-Clinical Clerkship in Family Medicine - While Salmon (1-24, max. 25) For description and prerequisite, see FAMED 632.

FAMED 688 P-Family Medicine Subinternship (*, max. 24) Students serve as interns for family medicine services associated with residency programs under the supervision of family medicine residents and attending physicians. Schedules mix inpatient and ambulatory experiences as determined by the site and the fourth-year student may have the same call as R-1 on service. Prerequisite: permission of course coordinator. Offered: AWSpS.

FAMED 689 P-Sports Medicine in Family Medicine - Spokane (4-8) Introduces medical students to treatment of sports related injuries in the non-operative, family medicine setting. Includes routine sports physicals, advanced musculoskeletal

examination, and assessment of acutely injured athletes. Offered: AWSpS.

FAMED 690 One Health Clinical Elective (4-8) P. *Rabinowitz* "One Health" recognizes the intricate links between the health of humans, animals and the environment. This elective provides an academic conceptual framework and clinical exposure through which to explore the multitude of applications of the "One Health" paradigm in a multidisciplinary context. Students will gain experience working with interdisciplinary teams including veterinarians and physicians on species-spanning approaches to health. Prerequisite: Permission of Course Instructor. Offered: AWSpS.

FAMED 697 P-Family Medicine Special Electives (*, max. 24) Supplemental experience in rural/urban practice or a family medicine department in a setting not already established through the UW SOM family medicine curriculum. Prerequisite: third- or fourth-year medical students, permission of course coordinator. Offered: AWSpS.

FAMED 699 P-WWAMI Family Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of course coordinator. Offered: AWSpS.

FAMED 701 WRITE Advanced Outpatient Clerkship (8) L. Kirven This 4-week clinical outpatient experience takes place in WWAMI Rural Integrated Training Experience (WRITE) sites, where students function at the level of a beginning intern, taking primary responsibility for outpatient care, with appropriate supervision, to refine core clinical skills, expand medical knowledge, improve clinical reasoning, and work as an integral part of the clinical team. Prerequisite: Completion of core WWAMI Rural Integrated Training Experience (WRITE). Non-WRITE students may take this course if they have completed all of their Patient Care Phase Clerkships; recommended: None Offered: WS.

FAMED 702 Advanced Family Medicine Outpatient Clerkship (8-24, max. 24) Lawrence Kirven, Kim Kardonsky This 4-week clinical outpatient experience takes place in WWAMI Family Medicine sites, where students may function at the level of a beginning

intern, taking primary responsibility for outpatient care, with appropriate supervision, to refine core clinical skills, expand medical knowledge, improve clinical reasoning, and work as an integral part of the clinical team. Prerequisite: Students must have completed all of their Patient Care Phase Clerkships. Offered: AWSpS.

FAMED 703 Advanced LGBTQ Primary Care Clerkship (8) T. Sairenji This 4 week clinical outpatient clerkship addresses health disparities and the unique health concerns that face the LGBTQ community. Students learn to be effective, multi-disciplinary advocates who provide non-judgmental, effective, and compassionate medical care for LGBTQ patients. Prerequisite: FAMED 561 and UCONJ 570 ; recommended: UCONJ 624 Offered: AWSpS.

FAMED 704 Family Medicine Advanced Inpatient Clerkship (8, max. 24) T. Sairenji During this four-week clinical inpatient experience, students may function at the level of a beginning intern, taking primary responsibility mostly in the inpatient setting with appropriate supervision. Goals are to refine core clinical skills, expand medical knowledge, improve clinical reasoning, and work as an integral part of the clinical team. Prerequisite: Completion of Phase 2: Patient Care clerkships. Offered: AWSpS.

MEDEX

MEDEX 401 Introduction to Paramedicine (8) Introduces the history of paramedicine and role of the paramedic, as well as medical concepts and technical skills relevant to its practice. Prerequisite: Seattle/King County paramedic students only. Offered: A.

MEDEX 402 Airway Management (3) Teaches cognitive and psychomotor skills critical to basic and advanced airway management. Includes enhanced techniques of rapid sequence intubation. Prerequisite: MEDEX 401 which may be taken concurrently. Offered: A.

MEDEX 403 Patient Assessment (4) Teaches patient assessment and total patient care management. Provides didactic and laboratory exposure necessary to perform complete and thorough patient exams.

Prerequisite: MEDEX 401 which may be taken concurrently. Offered: A.

MEDEX 404 Medical Emergencies I (5) Studies the pathophysiology and treatment of medical emergencies encountered in cardiopulmonary, neurovascular, endocrine, renal, and obstetric patients. Introduces the pharmacology of neurovascular and cardiopulmonary medications. Prerequisite: MEDEX 403. Offered: W.

MEDEX 405 Trauma Emergencies (5) Emphasizes advanced pre-hospital management of the critical trauma patient. Teaches the pathophysiology and treatment of burns and trauma to the head, chest, and abdomen. Includes advanced techniques in surgical airway. Prerequisite: MEDEX 403 which may be taken concurrently. Offered: W.

MEDEX 406 Medical Emergencies II (3) Studies the pathophysiology and treatment of alcoholism, environmental disorders, infections and communicable diseases, hematology, toxicology, and psychiatric emergencies. Prerequisite: MEDEX 405. Offered: Sp.

MEDEX 407 Special Considerations for Paramedicine (4) Emphasizes the care and treatment of pediatric, geriatric, and bariatric patients. Reviews special considerations encountered in scenarios such as multiple casualty, confined space, and extrication incidents. Prerequisite: MEDEX 406 which may be taken concurrently. Offered: Sp.

MEDEX 408 Advanced Certifications (5) Instruction in PEPP, PALS, ACLS, ATLS, and National Registry curricula and certifications. Prerequisite: MEDEX 407. Credit/no-credit only. Offered: S.

MEDEX 414 Paramedic Clinical Practicum I (3) Participation in all aspects of patient care in the HMC-ER and OR with a primary focus on patient assessment and examination, as well as proficiency in IV cannulation and airway management. Prerequisite: MEDEX 401 which may be taken concurrently; Seattle/King County paramedic students only. Credit/no-credit only. Offered: A.

MEDEX 415 Paramedic Field Practicum I (6) Consists of regularly scheduled ride time with Seattle Medic One in which the student is closely mentored and

evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes aspects of scene management and total patient care competence. Prerequisite: MEDEX 401 which may be taken concurrently. Credit/no-credit only. Offered: A.

MEDEX 424 Paramedic Clinical Practicum II (3) Participation in patient care in the HMC-ER with a focus on patient assessment, examination, IV cannulation, and airway management. Emphasizes the critical care of patients in the cardiovascular intensive care unit. Prerequisite: MEDEX 414. Credit/no-credit only. Offered: W.

MEDEX 425 Paramedic Field Practicum II (7) Consists of regularly scheduled ride time with Seattle Medic One in which the student is closely mentored and evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes scene management and total patient care competence. Prerequisite: MEDEX 415. Credit/no-credit only. Offered: W.

MEDEX 434 Paramedic Clinical Practicum III (4) Participation in patient care in the CHRMC-ER and OR with a focus on pediatric patient assessment, examination, and proficiency in IV cannulation and airway management. Emphasizes the care of expectant mother and newborn through rotations in the UW Labor and Delivery department. Prerequisite: MEDEX 424. Credit/no-credit only. Offered: Sp.

MEDEX 435 Paramedic Field Practicum III (8) Consists of regularly scheduled ride time with Seattle Medic One. The student assumes graduated responsibility for patient care and scene management while being closely evaluated by Seattle Fire Department paramedics as the student begins actively participating in patient care. Emphasizes the field care of the pediatric patient and expectant mother. Prerequisite: MEDEX 425. Credit/no-credit only. Offered: Sp.

MEDEX 444 Paramedic Clinical Practicum IV (3) Participation in patient care in the HMC Emergency Department, Neurology Clinic, Pulmonary Clinic, and Cardiology Clinic. Focuses on trauma management, extrication, MCI, and search/rescue. Includes observation of a minimum of three autopsies with

the medical examiner. Prerequisite: MEDEX 434. Credit/no-credit only. Offered: S.

MEDEX 445 Paramedic Field Practicum IV (11)
Consists of regularly scheduled ride time with Seattle Medic One paramedics. The student assumes all responsibilities for scene management and patient care. Evaluations determine completion of the program. Prerequisite: MEDEX 435. Credit/no-credit only. Offered: S.

MEDEX 450 Basic Science in Clinical Medicine (6)
Review of important basic science concepts that include relevant topics for a healthcare clinician. Prerequisite: permission of the MEDEX program. Offered: WS.

MEDEX 451 Anatomy and Physiology in Clinical Medicine (6) Uses an organ system approach to human anatomy and physiology relevant for a healthcare clinician. Offered: AS.

MEDEX 452 Pathophysiology for Primary Care (6)
Basic pathological and pathophysiological concepts of diseases commonly encountered in primary-care practice. Pathophysiology studied per organ system. Offered: A.

MEDEX 453 Basic Clinical Skills (5) Provides the student with mastery of a screening history and physical examination and thoroughness in data-collection skills. Offered: ASp.

MEDEX 454 Adult Medicine I (7) Problem-oriented approach to the diagnosis and management of common primary care conditions. Introduction to relevant laboratory and radiological procedures. Organ system approach. Offered: W.

MEDEX 456 Maternal and Child Health for the MEDEX Practitioner I (3) Designed to acquaint students with principles of prenatal care and primary-care pediatrics. Offered: W.

MEDEX 457 Behavioral Medicine I (2) Develops and demonstrates skills needed for assessment, diagnosis, and management of common emotional problems in a clinical setting. Offered: A.

MEDEX 458 Behavioral Medicine (2) Develops and demonstrates skills needed for assessment,

diagnosis, and management of common emotional problems in a clinical setting. Offered: W.

MEDEX 459 Behavioral Medicine (2) Develops and demonstrates skills needed for assessment, diagnosis, and management of common emotional problems in a clinical setting. Offered: Sp.

MEDEX 460 Principles of Patient Management (3)
Provides systematic approach to pharmacological therapies including drug choice, risk factor identification and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion strategies. Offered: W.

MEDEX 461 Principles of Patient Management (3)
Provides systematic approach to pharmacological therapies including drug choice, risk factor identification and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion strategies. Offered: Sp.

MEDEX 462 Maternal and Child Health for the MEDEX Practitioner II (3) Continuation of MEDEX 456. Emphasis on diagnosis and treatment of common pediatric problems. Offered: Sp.

MEDEX 463 Clinical Clerkships I (7-19, max. 19) Full-time clinical clerkship spent in institution-based or specialty practice settings with the supervision of licensed health care providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 465 Clinical Clerkships II (5-19, max. 19)
Continuation of clinical clerkships spent in institution-based or specialty practice settings with supervision of licensed healthcare providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 466 Family Practice Clerkship for the MEDEX Practitioner I (7-19, max. 19) *Ballweg* Family practice under the supervision of physicians throughout the Pacific Northwest. Common primary-care problems. Students and preceptors are educated in the utilization and management of the physician assistant in practice. Students keep computerized records of patient encounters and complete a variety of written assignments. Credit/no-credit only. Offered: AWSpS.

MEDEX 467 Family Practice Clerkship for the MEDEX Practitioner II (5-19, max. 19) Ballweg
Further experience in primary-care practice with emphasis on independent patient management by the student supervised by family practitioners. Credit/no-credit only. Offered: AWSpS.

MEDEX 468 Emergency Medicine I for the MEDEX Practitioner (2) Approach to the diagnosis and management of common emergency conditions for primary-care physician assistants. Organ system approach. Offered: W.

MEDEX 469 Emergency Medicine II for the MEDEX Practitioner (2) Continuation of MEDEX 468. Approach to diagnosis and management of common emergency conditions for primary-care physician assistant. Organ system approach. Offered: Sp.

MEDEX 470 Professional Role Development (1)
Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: A.

MEDEX 471 Professional Role Development (1)
Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: W.

MEDEX 472 Professional Role Development (1)
Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: Sp.

MEDEX 473 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: A.

MEDEX 474 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: W.

MEDEX 475 Technical Skills (1) Introduces clinical skills and procedures through hands-on experiences. Offered: Sp.

MEDEX 499 Special Field Projects/Independent Study (1-19, max. 19) Clinical clerkships and

independent study activities. Credit/no-credit only. Offered: AWSpS.

MEDEX 510 Healthcare for Rural and Medically Underserved Populations (5) Overview of the nature and severity of disparities in healthcare access and delivery to rural and urban underserved populations for practicing clinicians. Prerequisite: EMCHS students only. Offered: S.

MEDEX 511 Healthcare Administration and Public Health (5) Applies the basic principles of healthcare administration and public health to specific communities and practices. Prerequisite: EMCHS students only. Offered: S.

MEDEX 512 Academic Medicine and Specialty Practice for Practicing Clinicians (5) Overview for practicing clinicians of primary care as well as medical and surgical specialty practice within the academic medicine environment. Prerequisite: admission to the program. Offered: S.

MEDEX 513 Global Health for Practicing Clinicians (5) Overview of global health concerns and solutions including disease processes, health systems, cultural competency, and the impacts of health policies on local populations. Prerequisite: admission to the program. Offered: S.

MEDEX 521 Capstone Project I (3) Includes capstone project introduction, literature review, critical reading, research design and proposals, ethics, IRB, research writing, and results presentation. (Two weeks on the Seattle campus, six weeks online). Prerequisite: EMCHS students only. Credit/no-credit only. Offered: S.

MEDEX 522 Capstone Project II (3) Details students' choice of capstone project and preparation of a detailed proposal including the timeline for completion. Prerequisite: MEDEX 521. Credit/no-credit only. Offered: A.

MEDEX 523 Capstone Project III (3) Students work on capstone projects. Prerequisite: MEDEX 522. Credit/no-credit only. Offered: W.

MEDEX 524 Capstone Project IV (3) Continuation of work on the capstone project. Prerequisite: MEDEX 523. Credit/no-credit only. Offered: Sp.

MEDEX 525 Capstone Project V (5) Completion of the capstone project, preparation of final drafts, submission of finished project to faculty mentors, and presentation of project. Prerequisite: MEDEX 524. Credit/no-credit only. Offered: S.

MEDEX 528 Investigative Skills for Practicing Clinicians (5) Overview of the principles, research methods, and biostatistical and epidemiological techniques necessary to understand and conduct academic and clinical research. Applications critically appraise the public health and biomedical literatures drawing examples from current scientific literature and existing data. Prerequisite: admission to EMCHS program. Offered: S.

MEDEX 531 Clinical Residencies I (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 532 Clinical Residencies II (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 533 Clinical Residencies III (3) Clinical residencies spent in community-based or institution-based practice settings with the supervision of licensed healthcare providers. Prerequisite: EMCHS students only. Credit/no-credit only. Offered: AWSpS.

MEDEX 536 Health Policy for Practicing Clinicians (4) Overview of United States health policy issues including payment structures, quality, disparities, workforce and legislative impact. Prerequisite: EMCHS students only. Offered: W.

MEDEX 537 Leadership for Practicing Clinicians (4) Leadership skills for clinical practice, community, the profession, and organizations. Prerequisite: EMCHS students only. Offered: A.

MEDEX 538 The Physician Assistant Profession (4) Overview of the physician assistant profession, focusing on the history of the profession, education, economics, legal, political, and professional aspects

of the physician assistant profession, current and future physician assistant roles, and hot topics. Prerequisite: EMCHS students only. Offered: Sp.

MEDEX 540 Healthcare for Rural and Underserved Populations (5) Overview of the nature and severity of disparities in healthcare access and delivery to rural and urban underserved populations. Offered: S.

MEDEX 541 Healthcare Administration and Public Health (5) Application of the basic principles of healthcare administration and public health to specific communities and practices. Offered: S.

MEDEX 542 Academic Medicine and Specialty Practice (5) Overview of primary care as well as medical and surgical specialty practice within the academic medicine environment. Offered: S.

MEDEX 543 Global Health (5) Overview of global health concerns and solutions including disease processes, health systems, cultural competency, and the impacts of health policies on local populations. Offered: S.

MEDEX 550 Basic Science in Clinical Medicine (6) Intensive review of important basic scientific concepts relevant to clinical medicine. Prerequisite: MEDEX Northwest students only. Offered: S.

MEDEX 551 Anatomy and Physiology (6) Overview and review of human anatomy and physiology by organ system. Prerequisite: MEDEX students only. Offered: S.

MEDEX 552 Pathophysiology for Primary Care (6) Examines pathological and pathophysiological concepts of diseases commonly encountered in primary-care practice. Studies pathophysiology per organ system. Offered: A.

MEDEX 553 Basic Clinical Skills (5) Provides the student with mastery of history-taking and physical examination skills, thoroughness in data collection, medical record-keeping, and verbal presentation skills. Offered: A.

MEDEX 554 Adult Medicine I (7) Problem-oriented, organ-system approach to the diagnosis and management of common primary-care conditions. Offered: W.

MEDEX 555 Adults Medicine II (7) Problem-oriented, organ-system approach to the diagnosis and management of common primary-care conditions. Offered: Sp.

MEDEX 556 Maternal Child Health I (3) Examines the principles of prenatal care and primary-care pediatrics. Offered: W.

MEDEX 557 Behavioral Medicine I (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: A.

MEDEX 558 Behavioral Medicine II (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: W.

MEDEX 559 Behavioral Medicine III (2) Helps to develop and demonstrate skills needed for assessment, diagnosis, and management of common behavioral and emotional problems in a clinical setting. Offered: Sp.

MEDEX 560 Principles of Patient Management I (3) Provides systematic approach to pharmacological therapies including drug choice, risk factor identification, and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion. Offered: W.

MEDEX 561 Principles of Patient Management II (3) Provides systematic approach to pharmacological therapies including drug choice, risk factor identification, and administration. Includes non-pharmacological therapies and emphasizes health education and health promotion. Offered: Sp.

MEDEX 562 Maternal Child Health II (3) Emphasizes the diagnosis and treatment of common pediatric problems. Prerequisite: MEDEX 556. Offered: Sp.

MEDEX 563 Clinical Clerkships I (7-19, max. 19) Full-time clerkships spent in institution-based or specialty practice setting with the supervision of licensed healthcare providers. Credit/no-credit only. Offered: AWSpS.

MEDEX 565 Clinical Clerkships II (5-19, max. 19) Full-time clerkships spent in institution-based or specialty practice setting with the supervision of licensed healthcare providers. Prerequisite: MEDEX 563. Credit/no-credit only. Offered: AWSpS.

MEDEX 566 Family Practice Clerkship I (7-19, max. 19) Family practice under the supervision of physicians throughout the Pacific Northwest. Common primary-care problems. Students and preceptors are educated in the utilization and management of the physician assistant in practice. Students keep computerized records of encounters and complete a variety of written assignments. Credit/no-credit only. Offered: AWSpS.

MEDEX 567 Family Practice Clerkship II (5-19, max. 19) Further experience in primary-care practice with an emphasis on independent patient management by the student supervised by family practitioners. Prerequisite: MEDEX 566. Credit/no-credit only. Offered: AWSpS.

MEDEX 568 Emergency Medicine I (2) Diagnosis and management of common emergency conditions for primary-care practitioners. Organ system approach. Offered: W.

MEDEX 569 Emergency Medicine II (2) Diagnosis and management of common emergency conditions for primary-care practitioners. Organ system approach. Offered: Sp.

MEDEX 570 Professional Role Development I (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: A.

MEDEX 571 Professional Role Development II (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: W.

MEDEX 572 Professional Role Development III (1) Explores professional role development, health access issues, licensing issues, healthcare quality, interdisciplinary relationships, diverse populations, and the healthcare environment. Offered: Sp.

MEDEX 573 Technical Skills I (1) Introduces clinical skills and procedures through hands-on experiences. Offered: A.

MEDEX 574 Technical Skills II (1) Introduces clinical skills and procedures through hands-on experiences. Offered: W.

MEDEX 575 Technical Skills III (1) Introduces clinical skills and procedures through hands-on experiences. Offered: Sp.

MEDEX 580 Homelessness in Seattle (2) Multi-disciplinary course developing knowledge and skills in the area of acute and chronic homeless health problems, understanding the history and social constructs as well as the services and disparities facing this population.

MEDEX 588 Investigative Skills for Entry-Level Clinicians (5) Overview of the principles, research methods, and biostatistical and epidemiological techniques necessary to understand and conduct academic and clinical research. Application appraise the public health and biomedical literatures drawing on examples from current scientific literature and existing data. Offered: S.

MEDEX 599 Independent Study (1-19, max. 19) Supervised clinical clerkship or independent study activities to meet specific needs. Prerequisite: permission of the MEDEX program. Credit/no-credit only. Offered: AWSpS.

GENOME SCIENCES

GENOME 151 Human Genetics: The Individual and Society (4) NW Principles of Mendelian inheritance as illustrated by human traits and diseases; chromosomes and sex determination; distribution of genes in populations; natural selection and evolution; counseling and genetic engineering; ethical issues. For non-science majors only. Offered: Sp.

GENOME 261 Genomes and Society (4) NW Explores current technological advances in genome research and how these advances are impacting society. Topics include sequencing of the human genome, stem cell research, cloning, genetically modified

foods, immunizations/public health, and genetic therapy. Appropriate for non-science majors.

GENOME 361 Fundamentals of Genetics and Genomics (3) NW Introduces fundamental concepts in genetics and genomics including patterns of inheritance, genetic variation, and the relationship between genotype and phenotype. Cannot be taken for credit if credit received for GENOME 371. May not be repeated. Prerequisite: minimum grade of 1.5 in BIOL 200 or BIOL 240 Offered: WSpS.

GENOME 371 Introductory Genetics (5) NW Covers gene transmission, including chromosome mapping, genetic pathways; mutational analysis of biological processes emphasizing mutations affecting chromosome transmission. Introduction to genomics - cloning and sequence analysis of whole genomes. Emphasizes formal genetic mechanisms, molecular techniques. For biological sciences majors. May not be repeated. Prerequisite: either a minimum grade of 2.0 in BIOL 180 and a minimum grade of 2.0 in BIOL 200, or a minimum grade of 2.0 in BIOL 240. Offered: A.

GENOME 372 Genomics and Proteomics (5) NW Covers emerging fields of genomics and proteomics. Discusses key technologies and their applications to the study of human and model organism genomes.

GENOME 373 Genomic Informatics (4) NW Focuses on methods for analyzing large genetic data sets and their application to biological problems, including sequence alignment and search methods, gene prediction, phylogenetic trees, and microarray analysis.

GENOME 414 Molecular Evolution (5) NW Survey of empirical approaches to the study of molecular evolution and ecology, drawing on examples from a variety of taxa and the recent literature. Topics include DNA sequencing and systematics, fingerprinting approaches in behavioral ecology, and adaptive evolution at the molecular level. Prerequisite: BIOL 354. Offered: jointly with BIOL 414.

GENOME 453 Genetics of the Evolutionary Process (3) NW Contributions of genetics to the understanding of evolution. Processes of mutation, selection, and random genetic events as they affect the genetic architecture of natural populations and

the process of speciation. Emphasis on experimental data and observation, rather than mathematical theory. Prerequisite: either GENOME 361 or GENOME 371.

GENOME 454 The Origins of Genetics (4) NW

Discovery and eventual triumph of Mendelism in the early twentieth century. Concepts of heredity from ancient times to the nineteenth century. Mendel's work and its rediscovery. Evidence contributing to cornerstone of classical genetics - the chromosome theory of heredity. Prerequisite: either GENOME 351, GENOME 371, or GENOME 372. Offered: A.

GENOME 463 Hands-On Science for Elementary School Teachers (5) Offers prospective and practicing teachers an opportunity to learn science through the hands-on teaching methods recommended for teaching science at the elementary level.

GENOME 465 Advanced Human Genetics (4) NW

Explores genetic analysis of naturally occurring variation in humans; origins and consequences of mutation, as mediated by selection, migration, population structure and drift; approaches to finding human disease genes and characterizing them at the molecular level; relevance of other species to analysis of human genes. Prerequisite: either GENOME 361 or GENOME 371. Instructors: Eichler, King Offered: W.

GENOME 466 Cancer Genetics (3) NW Focuses on three types of cancer-related genetics. DNA repair, mitotic recombination, chromosome loss and imbalance, and other aspects of genomic instability. Metastatic cancer as an example of natural selection and evolution. Yeast and nematodes as models for the study of cancer genetics. Prerequisite: either GENOME 361, GENOME 371, or GENOME 372.

GENOME 475 Debates in Genetics (3) NW Utilizes the original scientific literature as the basis for discussion of a range of genetic issues that impact society. Discussions are student-led; evaluations are based both on participation in class and on a research paper. Prerequisite: BIOL 200; either BIOL 355, BIOL 401, BIOL 402, GENOME 361, or GENOME 371.

GENOME 490 Undergraduate Seminar (2, max. 6) NW Seminar for advanced undergraduate students

engaged in individual research projects or those who wish to gain an understanding of genetic research by analysis of the primary literature. Assignments emphasize the rationale for research projects and the presentation and interpretation of research findings. Offered: AWSp.

GENOME 496 Peer Teaching Assistants in Genome Sciences (1-5, max. 5)

Direct experience in the classroom teaching a discussion section for non-majors in genome sciences courses. Peer teaching assistants attend lectures and weekly preparation meetings and gain in-depth background on the subject material. In addition, peer TAs are given training in teaching techniques and course preparation. Prerequisite: GENOME 371. Credit/no-credit only.

GENOME 499 Undergraduate Research (*, max. 30) Credit/no-credit only. Offered: AWSpS.

GENOME 501 Introduction to Research Materials (1-10, max. 10)

The student undertakes a research project in one of the research groups within the department for a quarter at a time. Prerequisite: graduate standing in the Department of Genome Sciences or permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSpS.

GENOME 503 An Inquiry Approach to Teaching Genetics at the Introductory High School Level (2, max. 6) Provides advanced science content on topics in genetics and bioethics that are taught in secondary biology classrooms, as well as pedagogical strategies for conveying concepts to pre-college students. Workshop participation required.

GENOME 504 StarNet: Research Experiences for Students and Teachers (3, max. 9) Explores the scientific knowledge, technical skills, and pedagogical strategies related to teaching DNA sequencing and bioethics in a high school classroom. Workshop participation required.

GENOME 505 StarNet: Teacher Research Experience (9) Participating teachers carry out an independent research project in a University of Washington laboratory. Teachers, scientists, and StarNet staff meet weekly for an informal research talk.

GENOME 506 The Science Education Partnership (5, max. 15) Provides secondary school teachers

training in molecular biology, genetics, and biotechnology, as well as resources and ongoing support designed to enhance biology instruction. Workshop participation required. Credit/no-credit only.

GENOME 520 Seminar (1, max. 30) Prerequisite: graduate standing in the Department of Genome Sciences or permission of Graduate Program Coordinator. Credit/no-credit only. Offered: AWSp.

GENOME 522 Journal Club (1, max. 30) Presentation and discussion of current scientific literature. For Genome Sciences graduate students only. Credit/no-credit only. Offered: AWSp.

GENOME 523 Research Reports (1, max. 30) *Thomas* Presentation and discussion of current student research. For Genome Sciences graduate students only. Credit/no-credit only. Offered: AWSp.

GENOME 525 Current Literature in Human Genetics (1) Topics from current literature in human genetics. Students and faculty each present one topic per quarter. Prerequisite: graduate or postdoctoral status. Credit/no-credit only. Offered: AWSp.

GENOME 531 Genetics of Human Disease (3) Covers modern approaches to the identification of human disease genes permitted by their isolation. Reviews how functional conservation of proteins throughout eukaryotic evolution is modeled in systems such as somatic cell culture, transgenic mice, nematodes, *Drosophila*, and yeast. Credit/no-credit only.

GENOME 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis (4) Algorithmic and probabilistic methods for analysis of DNA and protein analysis. Students must be able to write computer programs for data analysis. Prior coursework in biology and probability highly desirable. Prerequisite: permission of instructor. Offered: W.

GENOME 541 Introduction to Computational Molecular Biology: Molecular Evolution (4) Computational methods for studying molecular evolution. Students must be able to write computer programs for data analysis. Prior coursework in biology and probability highly desirable. Offered: Sp.

GENOME 545 Biostatistical Methods for Big Omics Data (3) This "hands-on" course introduces statistical methods for high-dimensional omics data, as well as the R programming language and the Bioconductor project as tools to extract, query, integrate, visualize, and analyze real world omics data sets. Prerequisite: BIOST 512, 514, or 517. Offered: jointly with BIOST 545/PHG 545.

GENOME 547 Scientific Writing (1.5) For graduate students principally in their second and third year. Focuses on the preparation of research manuscripts for publication. Also considers other scientific writing such as thesis proposals and fellowship and grant applications. Credit/no-credit only.

GENOME 550 Methods and Logic in Genetics (3) Critical reading and detailed discussion of genetics-related scientific research papers. Material emphasizes methodological and logical themes of importance in modern genetics, for example: origin of mutants, genetic epistasis, pulse labeling, and in vivo gene function. Prerequisite: first-year genetics graduate students only. Offered: A.

GENOME 551 Principles of Gene Regulation (1.5) A detailed examination of the mechanisms of transcription and translation as determined by experimental genetics, molecular biology, and biochemistry.

GENOME 552 Technologies for Genome Analysis (1.5) Discussion of current and newly-emerging technologies in genome analysis with regard to applications in biology and medicine and to potential advantages and limitations. Prerequisite: permission of instructor. Offered: A.

GENOME 553 Advanced Genetic Analysis (1.5) Classical genetic analysis is a powerful approach to dissect complex biological processes. Selective removal, addition, or alteration of specific proteins to identify and order genes in a pathway, define protein function, determine tissue and temporal requirements for gene function, and distinguish among competing hypotheses to explain biological phenomena.

GENOME 554 Genomic Informatics (1.5) Many complete genome sequences are known. Each of these encodes the instructions for making an entire organism, but how can we hope to decipher the

code? Focuses on methods for analyzing genome sequences, ranging from large-scale organizational pattern to gene prediction and detailed local alignment methods.

GENOME 555 Protein Technology (1.5) Focuses on current and emerging technologies and approaches in protein analysis, and considers applications of these technologies in biology, biotechnology, and medicine.

GENOME 559 Introduction to Statistical and Computational Genomics (3) Rudiments of statistical and computational genomics. Emphasis on basic probability and statistics, introduction to computer programming, and relevant web databases.

GENOME 561 Molecular Population Genetics and Evolution (1.5) Surveys recent literature to gain an understanding of the basic principles of molecular population genetics and evolution as applied to analysis of genome data. Requires some computer analysis of genome data.

GENOME 562 Population Genetics (4) *M. Kuhner* Mathematical and experimental approaches to the genetics of natural populations, especially as they relate to evolution. Emphasis on theoretical population genetics. Prerequisite: permission of instructor. Offered: W, odd years.

GENOME 565 Advanced Human Genetics (4) Explores genetic analysis of naturally occurring variation in humans; origins and consequences of mutation, as mediated by selection, migration, population structure, and drift; approaches to finding human disease genes and characterizing them at the molecular level; relevance of other species to analysis of human genes. Prerequisite: either GENOME 361 or GENOME 371. Instructors: Eichler, King Offered: W.

GENOME 569 Bioinformatics Workflows for High-Throughput Sequencing Experiments (1.5) Programming skills and software tools for building automated bioinformatics pipelines and computational biology analyses. Emphasis on UNIX tools and R libraries for distilling raw sequencing data into interpretable results. For students familiar with UNIX and with some programming experience in Python, R, or C/C++.

GENOME 570 Phylogenetic Inference (3) Methods for inferring phylogenies (evolutionary trees) - biological assumptions, statistical foundations, and computational methods. A comprehensive introduction for graduate students in the biological sciences to phylogenetic methods using data from molecular sequences, continuous and discrete characters, and gene frequencies. Prerequisite: introductory courses in evolution and in statistics. Instructors: Felsenstein Offered: W, even years.

GENOME 573 Human Genomics: Science, Ethics, and Society (3) Explores the ethical and social implications of human molecular genetics and genomics investigation. Recent research is critically evaluated for its potential impact on scientific practice, research participation, and societal understandings. Prerequisite: LAW H 504/B H 514/PHG 512 or permission of instructor. Instructors: Fullerton Offered: jointly with B H 551; A.

GENOME 576 Genetic and Genomic Analysis of Bacteria (1.5) In-depth coverage of genetic and genomic strategies used to analyze complex biological processes in bacteria. Focuses on general approaches, with examples drawn from studies of pathogenic organisms where possible. A combination of lectures and seminar-style discussions of primary literature.

GENOME 580 Ethics in Biomedical Research and Teaching (1) Explores ethical issues in research and teaching and discusses avenues of responsible conduct. Credit/no-credit only.

GENOME 581 Seminar in Drosophila Genetics (1) *Berg* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of *Drosophila* development. Credit/no-credit only. Offered: AWSp.

GENOME 582 Seminar in Mouse Genetics (1) *Braun* Discussion of contemporary research in and novel methods for genetic, cell biological, and molecular analysis of mammalian development, with utilization of transgenic techniques. Credit/no-credit only.

GENOME 584 Seminar in DNA Replication (1) *Brewer, Fangman* Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of budding yeast, with emphasis on the mechanisms

and control of DNA replication. Credit/no-credit only. Offered: AWSp.

GENOME 585 Seminar in Bacterial Genetics (1)

Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of bacterial assembly mechanisms, with emphasis on the topogenesis of membrane proteins. Credit/no-credit only.

GENOME 586 Seminar in Mammalian Genetics (1)

Sibley Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of mammalian genetics, with emphasis on lymphoblast development. Credit/no-credit only.

GENOME 587 Seminar in Nematode Genetics (1)

Thomas Discussions of contemporary research in and novel methods for genetic, cell biological, and molecular biological analysis of nematode development, with emphasis on neurogenesis and other developmental processes. Credit/no-credit only.

GENOME 590 Population Genetics Seminar (1)

Weekly presentation by participants of current literature and ongoing research in evolution, molecular evolution, evolutionary genetics of natural populations, human population genetics, and quantitative genetics applied to animal and plant breeding. Prerequisite: GENOME 562 or permission of instructor. Instructors: Felsenstein Credit/no-credit only.

GENOME 599 Special Topics in Molecular Biotechnology (*, max. 12) Prerequisite: permission of instructor. Offered: AWSp.

GENOME 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

GENOME 650 Genome Sciences Teaching Clerkship (1-6, max. 15) Direct experience teaching undergraduate Genome Sciences classes. Emphasis on pedagogy of educational experience, includes weekly meetings with instructors for training in teaching techniques, classroom management. Students develop as science educators under mentorship of course instructors. Involves attending class lectures, holding office hours, leading study sections, developing homework/quizzes, grading

exams, management of course website. Prerequisite: PhD student standing. Credit/no-credit only. Offered: AWSpS.

GENOME 700 Master's Thesis (*-) Offered: AWSpS.

GENOME 800 Doctoral Dissertation (*-) Offered: AWSpS.

HEALTH METRICS SCIENCES

HMS 510 Principles of Health Metrics (3)

Christopher Murray Introduces methodological approaches and metrics to comprehensively measure health at the population level. Addresses the question, "What is health?", and provides an overview of the rationale, conceptual, and historical basis of population health measurement and health metrics sciences. Offered: A.

HMS 511 Problems in Global Health ([0-4]-, max. 4)

Steve Gloyd Explores social, political, economic, and environmental determinants of health and societal responses to health problems globally. Covers impact of colonialism, equity strategies, Primary Health Care, neoliberalism, war, international agencies, the climate crisis, water, sanitation, and traditional health systems. Student groups develop proposals to improve health systems or address social determinants of health in a specific low-income country. Offered: jointly with G H 511; A.

HMS 520 Introduction to Programming, Version Control, and Data Wrangling for Health Metrics Sciences (3)

Peng Zheng Covers basics of programming, including communicating with machines, writing clean code, and collaborative programming. Students learn to build code base to deal with a series of tasks focused on data manipulation. Offered: A.

HMS 530 Global Burden of Disease: Methods and Results (3)

Emmanuela Gakidou, Stein Emil Vollset Covers (1) the history and importance of the Global Burden of Disease Study (GBD), (2) the quantitative methods used by the GBD to develop estimates of mortality, morbidity, and risk factors from often sparse data, (3) major findings from the GBD, including leading causes of disease burden and the pattern and variability in burden globally, (4)

implications and uses of GBD findings for global health policy. Offered: W.

HMS 535 Advanced Methods for Global Health I (4)

Bryan Weiner Focuses on the advanced concepts, theories, and methods of implementation science in global health, with a specific focus on fidelity, adaptation, strategy selection, de-implementation, sustainability, scale-up, advanced trials designs, qualitative methods, and mixed methods. Assumes prior knowledge of the fundamentals of implementation science. Prerequisite: G H 541 or permission of instructor. Offered: jointly with G H 535; A.

HMS 536 Advanced Methods for Global Health II (4)

Presents applications of the cluster-randomized trial design to estimate the impact of interventions for a global health and implementation science audience. Covers trial design and implementation, reviews methods commonly used for analysis. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BIOST 528/EPI 553/G H 536; W.

HMS 537 Advanced Methods for Global Health III

(4) *Brad Wagenaar* Focuses on applying advanced non-randomized methods to quantitatively evaluate global health implementation science questions, including a specific focus on applying difference-in-differences, interrupted time-series, and regression discontinuity designs. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BIOST 525/EPI 556/G H 537; Sp.

HMS 539 Methods, Tools, and Data in Global Health

(2) *Emmanuela Gakidou* Familiarizes students with current global health issues and their analytical challenges. Introduces analytical methodologies, quantitative concepts, statistical packages applied to global health challenges, and software used in health metrics and evaluations research. (Two weeks) .

Credit/no-credit only. Offered: jointly with G H 530; A.

HMS 541 Fundamentals of Implementation Science in Global Health (4/5)

Judith N. Wasserheit, Kenneth Sherr Provides an introduction to the emerging field of implementation research by outlining various methods that are applied to improving implementation (including applied engineering, management tools, health systems, and policy research) , and using experiential case studies from global health leaders. Addresses barriers to effective replication and scale-up in local settings. Offered: jointly with G H 541; Sp.

HMS 580 Global Health Doctoral Seminar (1/2, max. 4)

Bernardo Hernandez Prado, Kenneth Sherr Examines the most critical issues in global health and currently available solutions. Introduces complementary perspectives of metrics and implementation science to build a multidisciplinary understanding of these issues, including effective and appropriate strategies for their control. Credit/no-credit only. Offered: jointly with G H 580; AWSp.

HMS 590 Measures and Metrics of Malnutrition: Results from the Global Burden of Disease Study (2)

Ashkan Afshin Provides an overview of various method of assessing nutrition at the population level; reviews epidemiologic methods used to assess the causal relationship of each form of malnutrition and disease endpoints; evaluates the epidemiologic evidence on health effects of each form of malnutrition. Introduces the process of estimating the global burden of disease attributable to each form of malnutrition at the population level. Credit/no-credit only.

HMS 591 Measuring the Global Burden of Disease of Tuberculosis and HIV/AIDS (2)

Hmwe Hmwe Kyu Introduces students to the measurement and estimation of trends in the global burden of disease of tuberculosis and HIV/AIDS as well as the burden due to co-infection. Students will learn about primary data sources to estimate the epidemiological burden of these diseases, limitations of data sources, and current modeling approaches. Online visualization tool will be used to analyze results from the Global Burden of Disease Study. Credit/no-credit only.

HMS 592 Health Metrics Sciences Seminar (1, max. 6) Designed to strengthen ability to critically assess, examine, and interpret research articles. Seeks to broaden understanding and knowledge about health metrics science. Three rotating topics: Health Metrics, Health Systems, and Global Institutions and Goal Setting. Credit/no-credit only. Offered: AWSp.

HMS 593 Didactic Teaching for Health Metrics Sciences (2/3) Students work with instructor to identify responsibilities in accordance with learning outcomes, providing opportunities to implement teaching ideas and techniques, and reflect on this experience. Develop portfolio of accomplishments, demonstrating achievement of learning outcomes. Prerequisite: PhD student standing; and permission of instructor. Offered: AW.

HMS 600 Independent Study or Research (0-10, max. 50) Independent study or research on Health Metrics Sciences topics conducted under the direction of one or more instructors. Prerequisite: permission of instructor. Offered: AWSpS.

HMS 800 Doctoral Dissertation (*-) Prerequisite: permission of Dissertation committee chair. Credit/no-credit only. Offered: AWSpS.

HUMAN BIOLOGY

HUMAN BIOLOGY

HUBIO 500 P-Medical Practice Preceptorship at WWAMI Sites (1, max. 3) Personal experience with, and insight into, medical practice situations. Student is stationed with carefully selected clinical faculty members in their offices in accordance with the student's preference of discipline at the WWAMI sites. Registration limited to first-year medical students at WWAMI sites. Offered: AWSpS.

HUBIO 501 P-Human Biology Special Projects (*) Designed for medical students electing a special study project related to the Introduction to Clinical Medicine or other human biology courses, which are offered during the first and second years in the School of Medicine. Primarily intended for students in remedial or extended programs. Prerequisite: permission of assistant dean for curriculum. Offered: AWSpS.

HUBIO 505 P-WWAMI Preceptorship (*, max. 6) Opportunity for first-year medical students at WWAMI sites to gain personal experience with medical practice situations by being assigned to selected clinical faculty members in their offices. Offered: ASp.

HUBIO 510 P-Microscopic Anatomy: Histology (6) *Birmingham-McDonogh* Lectures and laboratories in microscopic anatomy designed to provide the principles and concepts of histology, to define the morphological characteristics of the cells, tissues, and organs of the human body, and to relate this information to functional processes studied in concurrent and subsequent courses. Offered: A.

HUBIO 511 P-Human Anatomy and Embryology (8/13) *Clark* Structural organization of human body at the macroscopic level to provide a foundation for physical examination and functional assessment of the human organism. Integrates embryological development with study of the cadaver and examination of the normal living body. Concentrates on exploration of the body cavities and the viscera they contain. Offered: A.

HUBIO 512 P-Mechanisms in Cell Physiology (5) *Detwiler* Physiology of the cell membrane, including ionic and electrical potential gradients; active transport, excitability, and action potentials; biophysics of sensory receptors; neuromuscular transmission; muscle energetics and contractility; spinal reflexes and central synaptic transmission; autonomic nervous system; energy metabolism and temperature regulation; epithelial transport; gastrointestinal motility and secretions. Offered: A.

HUBIO 513 P-Introduction to Clinical Medicine (3-) *Issac, Maestas* Instruction in communication skills and interview techniques to form the basis for the doctor-patient relationship and for the skills of communicating with patients. The patient profile is obtained. Attention to developing comfort in the physician role. Offered: A.

HUBIO 514 P-Biochemistry I-A (4-) *Maizels* Explores molecular biology of the genome. Examines how the genome serves as a source of information, how molecular understanding of gene function identifies new therapeutic targets and provides new therapeutic and diagnostic tools. Assumes familiarity

with fundamental principles, at the level tested in the MCATs. Offered: A.

HUBIO 516 P-Systems of Human Behavior (5)

Harrington Effects of behavioral factors in major management problems faced in medical practice relating to cultural background, social role, sexual identity, and belief systems. Acquisition of skills in analyzing behavior, defining objectives, and designing precise treatment strategies. Offered: A.

HUBIO 522 P-Introduction to Clinical Medicine (-4-)

Isaac, Maestas Medical history is introduced and instruction in data collection is begun. Experience in conducting medical interviews with patients to obtain the medical history and patient profile. Special problems related to interviewing are addressed. Offered: W.

HUBIO 523 P-Introduction to Immunology (2) *Gale*

Topics covered include: basic concepts such as antigens; antibodies; complement; B- and T-lymphocyte function, including interactions with each other and with accessory cells; immunological tolerance; major histocompatibility complex and role of these basic concepts in immunopathology (immunodeficiencies, hypersensitivities, autoimmunity, blood transfusion, and transplantation).

HUBIO 524 P-Biochemistry I-B (-4) *Maizels*

Metabolism as integrated in the organs and tissue of the human body for the purpose of generating energy from food and converting small molecules to essential building block of our cells. Discusses principles of nutrition in the context of human health and disease. Assumes familiarity with fundamental principles, at the level tested in the MCATs. Offered: W.

HUBIO 530 P-Clinical Epidemiology and Evidence-Based Medicine (2) *Kestenbaum*

Community health and disease, including assessment of disease risk and mechanisms of epidemic detection, spread, and control; interpretation of research design, data analysis, bias source; and clinical epidemiology, including evaluation and application of diagnostic tests, natural history of disease, and quantitative aids for clinical decision making. Offered: W.

HUBIO 531 P-Head, Neck, Ear, Nose, and Throat (5)**HUBIO 532 P-Nervous System (8)** *Dacey, Mulligan*

An integrated approach to the normal structure and function of the nervous system, including the eye. Presents neuropathological examples as well as clinical manifestations of neurological disease.

HUBIO 534 P-Microbiology and Infectious Disease

(9) *Moseley* An introduction to medical microbiology and infectious diseases. Emphasizes the biology of microbial pathogens and the mechanisms of pathogenesis. Covers clinical manifestations, epidemiology, general principles of diagnosis, therapy, and prevention of infectious disease. Offered: Sp.

HUBIO 535 P-Introduction to Clinical Medicine (-4)

Isaac, Maestas Adult screening physical examination is taught through the use of lecture, audiovisual aids, and small-group tutorial, where students in supervised setting practice the physical examination on one other. Further practice in the performance and recording of the patient profile and medical history. Offered: Sp.

HUBIO 540 P-Cardiovascular System (6) *Feigl*

Interdisciplinary approach to cardiovascular medicine, including anatomy, physiology, radiology, pathology, medicine, and surgery. Function of the cardiovascular system in health and disease. Offered: A.

HUBIO 541 P-Respiratory System (4) *Culver, Luks*

Interdisciplinary approach to the respiratory system, including anatomy of thorax and lungs, ventilation mechanics, blood-gas transport, gas exchange, acid-base balance, and the physiology and pathology of obstructive, restrictive, and pulmonary-vascular diseases. Offered: A.

HUBIO 542 P-Introduction to Clinical Medicine (4-)

McDonough Advanced instruction in interview technique, history taking, and physical examination, with emphasis on detection of abnormalities. Offered: A.

HUBIO 543 P-Principles of Pharmacology I (5)

McKnight Includes general principles of pharmacology and the specific pharmacology of major drugs acting on the autonomic and cardiovascular systems. Offered: A.

HUBIO 547 P- Pathology IIA (5) Patterns of cell and tissue response to injury. Mechanisms of cell injury, inflammatory process, thrombosis, normal and abnormal growth, neoplasia, clinicopathological correlation. Major pathologic changes associated with specific diseases in the different organ systems. Multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory.

HUBIO 548 P-Cases in Clinical Ethics (1) Provides exposure to key issues in clinical ethics as well as the tools for ethical reasoning and critical thinking that support the student's current and future work. Prerequisite: second-year medical students. Instructors: Edwards, Timberlake

HUBIO 550 P-Introduction to Clinical Medicine (-4-) *McDonough* Advanced instruction in interview technique, history taking, and physical examination, with emphasis on identification of problems and correlation of findings with pathophysiological mechanisms. Offered: W.

HUBIO 551 P-Gastro-Intestinal System (4) *Silverstein* Anatomy of the gastrointestinal system; physiology and pathology of digestion and hepatic function; and physical and laboratory examination. Offered: W.

HUBIO 552 P-Hematology (3) *Richard* Familiarizes students with the basic pathophysiologic mechanisms leading to disturbances of red cell, white cell, and platelet production, as well as abnormalities of hemostasis presenting clinical problems. Pathophysiology, rather than minute details of individual disease, is stressed. Offered: W.

HUBIO 553 P-Musculoskeletal System (4) *Schmale* Gross, surface, applied, and radiographic anatomy. Clinical manifestations in the musculoskeletal system and pathophysiology of trauma, aging, infection, and inflammation, as well as congenital and metabolic disorders. Dissections, physical examinations, and problem- based learning. Offered: W.

HUBIO 554 P-Genetics (2) Review of basic genetic principles and their applications in clinical medicine. Includes human chromosomal disorders; patterns of inheritance, genetic counseling, amniocentesis; pathogenesis of hereditary diseases, monogenic and multifactorial; role of genetics in common diseases; behavioral genetics; drug-gene interactions; and

prevention and treatment of genetic diseases, including prenatal diagnosis and population screening. Offered: A.

HUBIO 555 P-Medicine, Health, and Society (3) *Chen, Masuda* Interdisciplinary introduction to health services designed for future healthcare practitioners. Examines the history, organization, and effectiveness of the U.S. healthcare system. Stresses the student's ability to adopt a broad perspective across healthcare disciplines and traditional boundaries. Offered: W.

HUBIO 556 P-Hormones and Nutrients (4) *DeSantis* Introduction to principles of human endocrinology, metabolism, and nutrition; the physiology and pathophysiology of endocrine systems, glucose and lipid metabolism, and fluid and salt balance; and the importance of proper nutrition in certain disease states.

HUBIO 557 P-Pathology IIB (2-) Patterns of cell and tissue response to injury. Mechanisms of cell injury, inflammatory process, thrombosis, normal and abnormal growth, neoplasia, clinicopathological correlation. Major pathologic changes associated with specific diseases in the different organ systems. Multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory.

HUBIO 558 P-Rheumatology (1) An intensive immersion course in rheumatology for second year students. Lectures and small group patient demonstrations link concepts of immunology, pathology and pharmacology with inflammatory and autoimmune disease, teach differential diagnosis of symptoms seen in rheumatic disease and use if diagnostic to demonstrate features of common childhood and adult rheumatic diseases and their management.

HUBIO 559 P-Problem Based Learning (3) *Scott* Teaches students to methodically solve medical problems by gathering, sorting, and interpreting data. Students learn life-long self-education and self-evaluation skills. Provides practice working as a healthcare team by including medical, nursing, and physician assistant students in each group. Offered: W.

HUBIO 560 P-Introduction to Clinical Medicine (-5)

McDonough Introduction to clinical and laboratory diagnosis. Offered: Sp.

HUBIO 562 P-Urinary System (4)

Jefferson Anatomy, physiology, and pathology of the kidney, ureter, bladder, and prostate; pathophysiology and treatment of common fluid and electrolyte problems; renal pharmacology; major clinical urinary system syndromes, with current diagnostic approaches and therapy. Offered: Sp.

HUBIO 565 P-Reproduction (4)

Steiner Normal development of the human reproductive system. Sexual differentiation, puberty, endocrine control of testicular and ovarian function, gamete biology, fertilization, implantation, immunology and endocrinology of pregnancy, labor and delivery, pathology of the male and female reproductive organs, contraception, prolactin and lactation, aging and infertility. Offered: Sp.

HUBIO 566 P-Pathology IIC (-3)

Patterns of cell and tissue response to injury. Mechanisms of cell injury, inflammatory process, thrombosis, normal and abnormal growth, neoplasia, clinicopathological correlation. Major pathologic changes associated with specific diseases in the different organ systems. Multidisciplinary approach to some diseases which effect more than one organ system including cardiovascular, renal, and respiratory.

HUBIO 567 P-Skin System (2)

Colven Gross and microscopic anatomy. Physiology, protection, temperature control, pigmentation, and photosensitivity. Pathology and genetics of skin abnormalities, including tumors. Introduction to clinical evaluation, including physical examination and illustrating examples of inflammatory, vascular, immunological (including drug hypersensitivity) , and neoplastic diseases. Offered: A.

HUBIO 569 P-Mind, Brain, and Behavior (6)

O. PASCUALY Defines and describes major psychiatric disorders and presents a systematic approach to differential diagnosis. Discusses conceptual development, pathogenesis, epidemiology, nomenclature, and the terminology used in psychiatry; along with physiological and biochemical mechanisms, and therapeutic and adverse effects. Offered: Sp.

HUBIO 590 P-Medical Information for Decision Making (1)

Introduction to methods for: a) identifying and retrieving high quality, relevant documents for clinical decision making, b) applying rigorous criteria when reading primary research studies, reviews of primary studies, or other medical information sources that report on the effectiveness of therapeutic or preventive interventions. Prerequisite: first-year medical students. Instructors: Tarczy-Hornoch Offered: W.

HUBIO 591 P-WWAMI Non-clinical Selectives -

Pullman (*, max. 30) Courses offered at WWAMI university site in Pullman designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 592 P-WWAMI Non-clinical Selectives -

Spokane (*, max. 30) Courses offered at WWAMI university site in Spokane designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 593 P-WWAMI Non-clinical Selectives -

Laramie (*, max. 30) Courses offered at WWAMI university site in Laramie, WY designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 594 P-WWAMI Non-clinical Selectives -

Anchorage (*, max. 30) Courses offered at WWAMI university site in Anchorage, designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 595 P-Independent Investigative Inquiry,

GHIP (8) *S. GRAHAM* With faculty mentorship, students investigate a global health issue, work on a community health project, and create an academic poster. Prerequisite: GHIP students only. Offered: S.

HUBIO 596 P-WWAMI Non-Clinical Selectives -

Bozeman (*, max. 30) Courses offered at WWAMI university site in Bozeman, designed to satisfy the non-clinical selective graduation requirements for medical students. Offered: AWSp.

HUBIO 598 P-WWAMI Non-Clinical Selectives -

Moscow (*, max. 30) Courses offered at WWAMI university site in Moscow, ID, designed to satisfy the non-clinical selective graduation requirement for medical students. Offered: AWSp.

HUBIO 599 P-Independent Study in Medical Science

(6) Independent research with faculty sponsor and completion of paper as partial fulfillment of non-clinical selective graduation requirement. Offered: Sp.

HUBIO 600 P-Capstone Course: Preparation for Residency (2, max. 4)

A combination of large group lectures and small group discussions and workshops reviewing clinical skills in history-taking and physical examinations, imaging studies, common and emergency drugs, ACLS, infectious disease control, common clinical problems, and other topics that are encountered in residency training. Offered: Sp.

MEDICAL SCIENCE

MEDSCI 500 Research Methods (1) *Bryan*

Kestenbaum Community health and disease, including assessment of disease risk and mechanisms of epidemic detection, spread, and control; interpretation of research design, data analysis, bias source; and clinical epidemiology, including evaluation and application of diagnostic tests, natural history of disease, and quantitative aids for clinical decision making. Offered: AWSpS.

MEDSCI 501 P-Independent Investigative Inquiry (6-)

) Independent research with faculty sponsor and completion of paper in fulfillment of the independent investigative inquiry graduation requirement. Offered: AWSpS.

MEDSCI 502 Foundations of Clinical Medicine (3-)

Intro to continuity of care by working with practicing physicians and coinciding with instruction in communication skills, interviewing techniques, physical examinations, documentation, and clinical reasoning. Includes hospital-based patient encounters with an introduction to the development of the physician role. Topics covered in primary and preventative care, geriatrics, rehabilitation, palliative care, behavioral health, and pain management. Offered: AWSp.

MEDSCI 503 Independent Investigative Inquiry Final Project (-1) *Shobha W Stack*

Students will engage in a project with an in-depth focus on a health-related, thereby giving additional context to their training and career as a physician. In the process they will develop the skills to acquire and critically evaluate

new information under the guidance of faculty mentorship. This will culminate in dissemination of their scholarly work through a poster presentation or a final paper depending on the type of scholarship chosen. Offered: AWSpS.

MEDSCI 504 Foundations of Clinical Medicine (-4) *J. CAWSE-LUCAS*

Intro to continuity of care by working with practicing physicians and coinciding with instruction in communication skills, interviewing techniques, physical examinations, documentation, and clinical reasoning. Includes hospital-based patient encounters with an introduction to the development of the physician role. Topics covered in primary and preventative care, geriatrics, rehabilitation, palliative care, behavioral health, and pain management. Offered: W.

MEDSCI 505 Introduction to Telemedicine (6) *John F. McCarthy, Toby Keys*

Gain knowledge of telemedicine and telemedicine technologies, and their practical applications to improve the health of rural and underserved populations. Offered: AWSpS.

MEDSCI 506 Foundations of Clinical Medicine (-4) *J. CAWSE-LUCAS*

Intro to continuity of care by working with practicing physicians and coinciding with instruction in communication skills, interviewing techniques, physical examinations, documentation, and clinical reasoning. Includes hospital-based patient encounters with an introduction to the development of the physician role. Topics covered in primary and preventative care, geriatrics, rehabilitation, palliative care, behavioral health, and pain management. Recommended: Offered: W.

MEDSCI 508 Foundations of Clinical Medicine (4)

Intro to continuity of care by working with practicing physicians and coinciding with instruction in communication skills, interviewing techniques, physical examinations, documentation, and clinical reasoning. Includes hospital-based patient encounters with an introduction to the development of the physician role. Topics covered in primary and preventative care, geriatrics, rehabilitation, palliative care, behavioral health, and pain management. Offered: A.

MEDSCI 510 P-Molecular and Cellular Basis of Disease (11) *T. Chestnut, P. Fuerst, B. Wisse*

Introduces cell physiology and cell biology; genetics and genetic diseases; and genes. Topics includes

membrane physiology; sensory receptors; muscle energetics and contractibility; autonomic nervous system; tissue response to disease; pharmacodynamics and pharmacokinetics; genetic disorders; and pharmacogenetics. Incorporates relevant fundamental principles in anatomy, pathology, and pharmacology. Pass/Fail only. Offered: A.

MEDSCI 511 Independent Study Molecular Cellular Basis of Disease Remediation (1-24, max. 24)

Designed for medical students required to complete additional study related to the required Molecular and Cellular Basis of Diseases block offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission. Offered: AWSpS.

MEDSCI 515 Themes in Medicine- Foundations 1 (1-)

Suzanne M. Allen Integrates School of Medicine thematic content with an emphasis on core concepts for clinical practice in the changing healthcare environment. Students explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, and determinants of health. Pass/Fail only. Offered: AWSpS.

MEDSCI 520 P-Invaders and Defenders (10) *Lynch, Pottinger, Torgerson, Voyich* Covers the immune system; microbial biology; infectious diseases; inflammation and repair; and skin and connective tissue. Topics include the pathogenesis and immunity of infectious disease, immunodeficiencies, hypersensitivity, autoimmunity, and the basis of immunologic diagnostics. Includes relevant fundamental scientific principles in anatomy, pathology, and pharmacology. Pass/Fail only. Offered: A.

MEDSCI 521 Independent Study Invaders and Defenders Remediation (1-24, max. 24) Designed for medical students required to complete additional study related to the required Invaders and Defenders block offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund knowledge. Prerequisite: Department permission Offered: AWSpS.

MEDSCI 525 Themes in Medicine- Foundations 2 (-1-) *Suzanne M. Allen* Integrates School of Medicine thematic content with an emphasis on core concepts for clinical practice in the changing healthcare environment. Students explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, and determinants of health. Pass/Fail only. Offered: W.

MEDSCI 530 P-Circulatory Systems (16)

Interdisciplinary approach to cardiovascular, respiratory, and renal-urinary medicine, including anatomy, physiology, radiology, pathology, medicine, and surgery. Includes cardiac electrophysiology and cardiac muscle mechanics; myocardial infarction and cardiac repair; thoracic and pulmonary anatomy; ventilation mechanics; obstructive, restrictive, and pulmonary-vascular diseases; renal function; and common kidney diseases. Pass/Fail only. Offered: W.

MEDSCI 531 Independent Study Circulatory Remediation (1-24, max. 24)

Designed for medical students required to complete additional study related to the required Circulatory block offered during the preclinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 535 Ecology of Health and Medicine- Foundations 3 (-1)

This course applies School of Medicine thematic content with an emphasis on core concepts needed for clinical practice in the changing healthcare environment. Students will explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, professionalism, and determinants of health. Pass/Fail only. Offered: AWSpS.

MEDSCI 540 Blood, Cancer & Musculoskeletal (8)

Familiarizes students with basic pathophysiologic mechanisms leading to disturbances of red cell, white cell, and platelet production, as well as abnormalities of hemostasis presenting clinical problems. The Musculoskeletal content will focus on clinical manifestations in the musculoskeletal system and pathophysiology of trauma, aging, infection, and inflammation. Pass/Fail only. Offered: W.

MEDSCI 541 Independent Study Blood, Cancer, and Musculoskeletal Remediation (1-24, max. 24)

Designed for medical students required to complete additional study related to the required Blood, Cancer, and musculoskeletal block offered during the preclinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 542 Blood and Cancer (5) *Sioban Keel*

Comprehensive introduction and overview of hematology, and oncology content for medical students to gain knowledge on basic pathophysiologic mechanisms leading to disturbances of red cell, white cell, and platelet production, as well as abnormalities of hemostasis presenting clinical problems. Offered: AWSpS.

MEDSCI 543 Independent Study Blood and Cancer Remediation (2-24, max. 24) *Sioban Keel*

Designed for medical students required to complete additional study related to the required Blood and Cancer block offered during the preclinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Offered: AWSpS.

MEDSCI 545 Ecology of Health and Medicine-Foundations 4 (1)

This course applies School of Medicine thematic content with an emphasis on core concepts needed for clinical practice in the changing healthcare environment. Students will explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, professionalism, and determinants of health. Pass/Fail only. Offered: AWSp.

MEDSCI 550 P-Energetics and Homeostasis (10)

DeSantis, Silverstein Covers metabolism, nutrition, obesity, diabetes, gastrointestinal/liver physiology, and endocrinology. Topics include physiology and pathology of digestion and hepatic function; principles and practice of clinical nutrition; the endocrine integration of metabolism; and clinically important endocrine pathophysiology. Includes anatomy, pathology, and pharmacology of the endocrine and GI systems. Pass/Fail only. Offered: Sp.

MEDSCI 551 Independent Study Energetics Remediation (1-24, max. 24)

Designed for medical students required to complete additional study related to the required Energetics block offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 555 Ecology of Health and Medicine-Patient Care 1 (1)

This Patient Care course applies School of Medicine thematic content with an emphasis on core concepts needed for clinical practice in the changing healthcare environment. Students will explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, professionalism, and determinants of health. Pass/Fail only. Offered: AWSp.

MEDSCI 560 P-Mind, Brain, and Behavior (14)

Explains the foundational principles of the organization and function of the head, neck, and central nervous system with a focus on clinical application of this knowledge to systematically approach the differential diagnosis and management of major neurologic, psychiatric, and behavioral disorders. Covers current therapeutic approaches to disease including pharmacological, behavioral, surgical, and other therapies. Pass/Fail only. Offered: A.

MEDSCI 561 Independent Study Mind, Brain and Behavior Remediation (1-24, max. 24)

Designed for medical students required to complete additional study related to the required Mind, Brain and Behavior block offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 565 Ecology of Health and Medicine-Patient Care 2 (1)

Heidi L. Combs, Mike Spinelli, Amanda Kost Core concepts needed for clinical practice in the changing healthcare environment. Students explore areas related to humanism in medicine including the themes of diversity, health equity, ethics, professionalism, and determinants of health. Pass/Fail only. Offered: AWSpS.

MEDSCI 570 P-Lifecycle (8) Covers normal and abnormal human development reproductive functions including formation and maturation of ova and sperm, menstruation, normal pregnancy, and labor and delivery. Provides information concerning infertility, family planning techniques, urinary disorders, and reproductive aging and demography of human population. Includes relevant fundamental scientific principles in pelvic anatomy, pathology, histology, imaging, and pharmacology. Offered: A.

MEDSCI 571 Independent Study Lifecycle Remediation (1-24, max. 24) Designed for medical students required to complete additional study related to the required Lifecycle block offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 575 Ecology of Health and Medicine-Explore and Focus (1) This Explore & Focus Phase course provides students with a deep understanding of systems that constitute health care are fundamental to becoming a successful physician. The course encourages reflections from clinical clerkships experiences and requires the completion of a capstone project. Pass/Fail only. Offered: AWSp.

MEDSCI 579 Comprehensive Basic Sciences Review (8) *Meghan M Kiefer* Involves review of basic science previously covered in the Foundations curriculum, as well as multi-system processes and disorders. Provides enhanced academic support to review foundational biomedical knowledge and develop study strategies in anticipation of Step 1 and transition to clinical phase. Pass/Fail only. Offered: WSp.

MEDSCI 580 P-Consolidation and Transition (11) Reinforces content in the UWSOM foundations phase. Learning experiences will address key content areas which need further review identified throughout terms 1 and 2, with specific sessions developed as indicated; faculty/staff and peer educators will provide sessions for this basic science review as well as preparation for clerkships. Offered: W.

MEDSCI 581 P-Foundations Capstone (4) *Meghan M Kiefer* Reinforces content in the UWSOM

Foundations phase. Large-group activities address general principles in biomedical sciences and organ systems. Pass/Fail only. Offered: WSp.

MEDSCI 582 P-Consolidation (10, max. 20) *Meghan M Kiefer* Focused course to prepare students for the USMLE Step 1. Will include large group review of study strategies and approach to integration of foundational knowledge with clinical reasoning, as well as mentored self-assessment and formation of an individualized study plan for the USMLE Step 1. Pass/Fail only. Offered: WSp.

MEDSCI 583 P-Transition to Clerkships (2) *Meghan M Kiefer* Reinforces clinical content in the UWSOM Foundations phase. Lectures and small-group activities address clinical skills and resources for clerkships, and peer educators provide strategies for success clerkships. Pass/Fail only. Offered: WSp.

MEDSCI 584 Independent Study Foundations of Clinical Medicine Remediation (1-24, max. 24) Designed for medical students required to complete additional study related to the required Foundations of Clinical Medicine offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master knowledge & skills. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 585 Independent Study Research Methods (1-24, max. 24) Designed for medical students required to complete additional study related to the required Research Methods Course offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 586 Independent Study Consolidation and Transition Remediation (1-24, max. 24) *M. Kiefer* Designed for medical students required to complete additional study related to the required Consolidation and Transition course offered between the foundation and patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes

terms to identify which quarter the course is being offered. Pass/Fail only Offered: AWSpS.

MEDSCI 587 Independent Study Themes in Medicine (1-7, max. 7) *Suzanne M. Allen* Designed for medical students required to complete additional study related to the required Themes in Medicine offered throughout the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Offered: AWSpS.

MEDSCI 588 Independent Study Human Form and Function Term 1 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Human Form & Function Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 589 Independent Study Human Form and Function Term 2 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Human Form & Function Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 590 Independent Study Human Form and Function Term 3 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Human Form & Function Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 591 Independent Study Pathology Term 1 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pathology & Histology Thread offered

during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 592 Independent Study Pathology Term 2 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pathology & Histology Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 593 Independent Study Pathology Term 3 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pathology & Histology Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. The course title includes terms to identify which quarter the course is being offered. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: Department Permission Offered: AWSpS.

MEDSCI 594 Independent Study Pharmacology Term 1 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pharmacology Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Offered: AWSpS.

MEDSCI 595 Independent Study Pharmacology Term 2 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pharmacology Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being

offered. Prerequisite: Department Permission
Offered: AWSpS.

MEDSCI 596 Independent Study Pharmacology Term 3 (1-24, max. 24) Designed for medical students required to complete additional study related to the required Pharmacology Thread offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission
Offered: AWSpS.

MEDSCI 597 Indep Study USMLE Step 1 (1-24, max. 24) Designed for medical students required to complete additional study related to the required USMLE Step 1 licencing examination offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission
Offered: AWSpS.

MEDSCI 598 Indep Study USMLE Step 2 (1-24, max. 24) Designed for medical students required to complete additional study related to the required USMLE Step 2 licencing examination offered during the pre-clinical foundation phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. The course title includes terms to identify which quarter the course is being offered. Prerequisite: Department Permission
Offered: AWSpS.

MEDSCI 599 Indep Study or Research (1-24, max. 24) Designed for medical students who elect a special or research related to the required foundation phase pre-clinical courses. This course can also be used for a student who fails a thread remediation course. Prerequisite: Department Permission
Offered: AWSpS.

MEDSCI 600 Transition to Residency (4) G.
Pagalilauan The Transition to Residency course will:
1. Prepare graduating 4th year medical students in the knowledge and skills necessary to perform expected intern duties in the first 3 months of

residency. 2. Provide a forum for the academic, research and service accomplishments of the graduating students. 3. Incorporate sessions that create community and give students a platform to celebrate their experiences in medical school.
Offered: Sp.

MEDSCI 602 Adolescent Health in Low-Resource Settings (1) Highlights issues for adolescents in resource limited settings with an initial focus on what makes adolescents unique. Topic-based seminars, readings, discussions, and cases will include: adolescent development; physical and psychological trauma; nutrition; illicit activities; adolescent-focused research; adolescent-friendly health services; and reproductive and sexual health.

MEDSCI 603 Introductory Hands-On Cardiac Ultrasound (1) Acquire cardiac ultrasound images at three acoustic windows, identify cardiac anatomy in standard views, and recognize key pathologies: left and right ventricular dysfunction and dilatation and pericardial effusion. Following a course introduction, students will work self-paced, alone or in pairs, on a mannequin-based simulator.

MEDSCI 604 Introduction to Chronic Pain (1) Medical students will be paired with a pain specialist for three morning sessions in an outpatient chronic pain clinic. Students will be exposed to musculoskeletal, neuropathic, and visceral pain conditions while learning about various management options. A 1-2 page reflection on a patient or pain topic will be required. Offered: SpS.

MEDSCI 605 From Electrons to the Emergency Department: The Cell Biology of Poisons (1) This course will describe how various poisons (naturally occurring or following overdose) interrupt molecular pathways to produce toxicity. Concepts will be introduced in a base-based manner before describing in depth the metabolic pathway affected. Examples include electron transport chain poisons, sodium channel poisons, and free poisons (iron) .

MEDSCI 606 Emergency Medicine Point-of-Care Ultrasound (1) A. ADEDIPE, B. BACKLUND, M. VRABLIK Introduction to point-of-care ultrasound. This elective will help students become comfortable with using bedside ultrasound by teaching ultrasound machine operation, image acquisition, and providing hands-on training in both simulated

and patient care settings. The elective is designed to be interactive and will incorporate classroom didactic, procedure simulation and clinical application. Offered: WSp.

MEDSCI 607 Science and Practice of Empathy and Compassion Cultivation in Medicine (1) This course will aim at helping students develop the ability to face suffering and pain with empathy, kindness, and compassion. Emphasis will be on cultivating a non-judgmental and curious attitude, self-compassion, appreciation of common humanity and acknowledging that suffering is universal to the human condition, and the practice of compassion. Offered: AS.

MEDSCI 608 Ethical Issues in Solid Organ Transplantation and Allocation (1) *A. WIGHTMAN* Explore the ethical issues that underlie some of the major controversies in transplantation through brief readings (including selections from the press, canonic texts, and academic articles) and case-based discussion. Students will be evaluated based on participation and a written response to a case. Offered: W.

MEDSCI 609 Ethics in emergency Medicine Workshop (1) Learn how to consider and evaluate the ethical issues surrounding various real-life, frequently encountered medical situations. Discuss various approaches to ethical reasoning and decision-making, then implement in case evaluation. Students will be encouraged to both participate in and lead discussions of each case.

MEDSCI 610 Food, Health, and the Environment (1) A multi-modal session comprised of interactive presentations, documentaries, guest speakers, and small group discussions covering major nutrition topics, such as: nutrition and effects on health, the American food industry and the environment, changing eating behaviors on individual, community, and national levels, as well as food insecurities and health disparities.

MEDSCI 611 Intersection of Genetics with Patient Care (2) Create hypothesis-driven clinical inquiry in an interactive learning environment. Employ peer-review sessions and team-based analysis of genetics case scenarios. Apply your science and clinical knowledge towards solving your patient's specific

healthcare need. A team experienced clinicians and researchers will give support and feedback.

MEDSCI 612 Introduction to Humanitarian Emergencies (1) The course provides an introduction to health related issues faced by acutely displaced populations, including refugees and internally displaced persons, in developing countries, in the setting of humanitarian emergencies. Challenges in planning, implementing, and evaluating health programs for these populations will be discussed through case studies of recent humanitarian emergencies.

MEDSCI 613 Mind Body Medicine: Mind Body Skills for Medical Students (2) *L. ERLANGER, C. SCOTT* This seminar course will provide scientific background and foundational self-care skills for stress management through mindfulness and mutual support. Students will be encouraged to develop self-care and related pt care philosophy statement. Includes highly interactive, short didactic sessions, practice with experiential activities, and sharing reflections with group members.

MEDSCI 614 Theoretical and Clinical Aspects of Pain (1) The course will introduce pain and pain neurobiology with a close look into nociceptive, neuropathic and visceral pain and treatments to pain and addiction. The course will be a combination of articles, lecture, videos of real patients with chronic pain, and discussion.

MEDSCI 615 Community Engagement and the School of Medicine Pathways (1) The interactive and engaging Pathways intersession will cover the following topic area: determinants of health, the built environment, health equity and advocacy, structural competency, narrative medicine and additional topics related to working effectively with underserved, vulnerable and marginalized communities. Open to all WWAMI medical students.

MEDSCI 616 The Physician Online: Mindful Use of Digital Media (1) *A. BROWN, A. CHIPMAN, M. JACKSON, J. JAUREGUI, J. RIDDELL* This course explores the use of social media in medicine by exploring online identity, interactions, consumption and creation of content, and reflection. The goal is to equip students to use digital media mindfully while leveraging it to collaborate intelligently, teach more efficiently, and learn for a lifetime.

MEDSCI 617 Prison/Jail Health Care, Part 1 (1) M. STERN, L. STRICK This 2-day course serves as an introduction to correctional healthcare. The instructors will provide a short overview of the US correctional system and why and how health care is delivered in jails and prisons. The class will tour a busy county jail on Day 1 and a state prison on Day 2. Offered: AW.

MEDSCI 618 Prison/Jail Health Care, Part 2 (1) M. STERN, L. STRICK This course will explore the unique ethical challenges of correctional medicine through case-based discussions. There will be an opportunity to better understand some of those challenges first hand through a guided visit to a prison caring for the state's most seriously mentally ill. Offered: S.

MEDSCI 619 Refugee and Immigrant Health (1) This is a weeklong UWSOM intercession course familiarizing students with various aspects of immigrant and refugee health care. There will be an emphasis on the social context of clinical care and the importance of effective teamwork and collaboration.

MEDSCI 620 Rheumatology Foundations (1) H. EMERY, K. HAYWARD, M. THAPA, T. TORGERSON This course reviews pathology, clinical presentation, initial evaluation and management of patients with musculoskeletal complaints and common rheumatologic disorders. The in-class sessions include interactive lectures, case-based small groups and a volunteer patient panel that allow students to synthesize knowledge from earlier Foundations blocks and prepare for transition into clinical clerkships. Offered: Sp.

MEDSCI 621 Basic Skills in Emergency Resuscitation (1) Impart the critical skills needed to evaluate and manage common emergencies that medical students will encounter during their clinical clerkships and internship.

MEDSCI 622 Topics in Global Infectious Diseases (1) This course will combine didactic sessions presented by local topic experts on global infectious diseases with interactive case-based learning. Small groups will tackle cases that explore epidemiology, diagnosis and management of significant global infections. The course will conclude with a career panel of speakers highlighting various global health career paths.

MEDSCI 623 Introduction to Toxicology: The Intersection of Natural Toxins and Human Physiology (1) This is a didactic-based course illustrating the pathophysiology of natural toxins. Toxins from multiple organ systems including central nervous system, hepatic, hematologic, immunologic, and renal toxins will be covered. Specific examples include: shellfish poisonings, plant and mushroom poisonings, and envenomations from jellyfish, snakes, scorpions, and spiders.

MEDSCI 624 Medical Students as Advocates: Practical Skills for Effective Advocacy (1) Students will develop tangible, hands on skills for moving beyond witnessing health disparities to upstream action that is rooted in effective and community-centered advocacy. Through a cycle of interactive learning, research, action and reflection, this course both explores and develops the role of medical students and future physicians as advocates. Credit/no-credit only.

MEDSCI 625 Building a Framework for Effective Service-Learning, Health Equity, and Leadership (1) This course hones student leadership skills for: cultivating strong teams, assessing community strengths and needs, building community partnerships, sustaining projects, transitioning leadership, and facilitating reflective practices rooted in an analysis of systemic inequalities and cultural humility. Students will emerge with renewed confidence and refined skills for developing or strengthening projects. Credit/no-credit only.

MEDSCI 626 Foundations of Scholarship: Discovery (1) Investigate different types of scholarship of discovery within medicine. Apply the concepts of clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique to while preparing a scholarly project. Offered: AW.

MEDSCI 627 Foundations of Scholarship: Integration (1) Investigate different types of scholarship of integration within medicine. Apply the concepts of clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique to while preparing a scholarly project. Offered: AWSp.

MEDSCI 628 Foundations of Scholarship: Engagement (1) Investigate different types of

scholarship of integration within medicine. Apply the concepts of clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique to while preparing a scholarly project. Offered: AWSp.

MEDSCI 629 Foundations of Scholarship: Teaching (1) Investigate different types of scholarship of integration within medicine. Apply the concepts of clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique to while preparing a scholarly project. Offered: AWSp.

MEDSCI 630 Procedures and Advanced Skills for Clinical Practice (1) Explore common diagnostic and therapeutic clinical procedures through a hands-on approach. Experience more advanced skills needed for clinical practice in a mentored environment. Credit/no-credit only. Offered: AWSp.

MEDSCI 631 Skills and Strategies for Personal and Professional Development (1) Teach skills and strategies required to sustain lifelong personal and professional growth. Equip students with resources and strategies that will improve their studying and learning skills. Topics will include time management, stress management, adult learning and organizational skills. Guest presenters will include professionals in the fields of health and education. Offered: W.

MEDSCI 632 Clinical Global Health and Social Medicine (1) *P. DRAIN* Applying clinical global health and social medicine principles are critical to providing excellent medical care. In this intersession, students will learn and discuss elements of clinical global health and social medicine through interactive case-based lectures, group discussions, and independent reading. Students will be graded (pass/fail) on participation and an essay. Offered: W.

MEDSCI 699 Clinical Independent Study or Research (1-24, max. 24) *Michael J. Ryan* Independent study course designed for medical students electing to complete a project or research related to clinical medicine or other clinical courses during the medical school Patient Care or Explore and Focus Phases. Offered: AWSpS.

IMMUNOLOGY

IMMUN 441 Introduction to Immunology (4) NW General properties of immune responses; cells and tissues of immune system; lymphocyte activation and specificity; effector mechanisms; immunity to microbes; immunodeficiency and AIDS; autoimmune diseases; transplantation. Prerequisite: BIOL 220; may not be repeated. Offered: A.

IMMUN 499 Undergraduate Research (*, max. 24) Investigative work on a variety of topics, including mechanisms of antigen recognition, T-cell development and differentiation, immunogenetics, lymphocyte activation, MHC gene structure and function, retrovirology, and the pathogenesis of autoimmune diseases, among others. Prerequisite: permission of instructor. Offered: AWSpS.

IMMUN 532 Intersection of Innate and Adaptive Immunity in Disease (4) Examines the molecular and cellular basis of immune function. Topics include: hematopoiesis, innate immunity, antigen receptor structure, lymphocyte development, antigen presentation, effector T-cell functions, and immune-mediated diseases. Prerequisite: coursework in molecular genetics; graduate standing in immunology; other graduate students with permission of instructor. Offered: W.

IMMUN 534 Central Issues in Immunology (3) Presentations by participants of topics relating to the broad study of immunology. Prerequisite: graduate standing in immunology. Offered: Sp.

IMMUN 537 Immunological Methods (1.5) *Fink, Weinmann* Introduces whole animal, cellular, biochemical, and molecular techniques used in immunological research. Discusses strengths and limitations of each technique and emphasizes caveats in interpreting the resulting data. Offered: A.

IMMUN 538 Immunological Based Diseases and Treatments (2) *E. BETTELLI, R. SAVAN* Addresses the mechanisms leading to the development of immunologically based diseases. In particular, covers immunological basis and treatment of infection, autoimmunity, and cancer. Offered: Sp.

IMMUN 540 Immunology Teaching Clerkship (2) The pedagogical requirement addressed by this

course is direct experience in teaching undergraduate Introduction to Immunology classes under the direct oversight and mentorship of regular course instructors. By the end of this course, the graduate student will have developed skills, abilities and insights as a science educator and communicator through the sustained support and guidance of the instructor of record. Prerequisite: PhD student standing and permission of instructor; recommended: advanced Immunology course or equivalent. Credit/no-credit only. Offered: A.

IMMUN 550 Selected Topics in Immunology (1, max. 30) Formal seminar-discussion course for advanced students focused on recent developments in the field and consisting of literature research and intensive in-depth study of important and timely topics. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSp.

IMMUN 551 Research Conference in Regulation of T Cell-Dependent B Cell Maturation (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Clark Credit/no-credit only. Offered: AWSpS.

IMMUN 552 Research Conference in Principles of Antiviral Immunity (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Prerequisite: immunology graduate student; permission of instructor. Instructors: Stetson Offered: AWSpS.

IMMUN 553 Research Conference in Recombination and Repair in B Cell Development (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Maizels Credit/no-credit only. Offered: AWSpS.

IMMUN 554 Research Conference in Immunogenetic Aspects of Human Autoimmunity (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter.

Prerequisite: graduate standing in immunology. Instructors: Nepom Credit/no-credit only. Offered: AWSpS.

IMMUN 555 Research Conference in Model of Autoimmune Disease and Their Regulation (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Gorman Credit/no-credit only. Offered: AWSpS.

IMMUN 556 Research in Conference in Regulation of Autoimmunity and Allergic Inflammation (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Ziegler Credit/no-credit only. Offered: AWSpS.

IMMUN 557 Research Conference in the Mechanisms and Consequences of Programmed Cell Death (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology or permission of instructor. Instructors: Oberst Credit/no-credit only. Offered: AWSpS.

IMMUN 558 Research Conference in Apoptosis and Autoimmunity (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Elkon Credit/no-credit only. Offered: AWSpS.

IMMUN 559 Research Conference in T Cell Responses during Mycobacterium tuberculosis (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Student may register for more than one conference each quarter. Prerequisite: immunology graduate student; permission of instructor. Instructors: Urdahl Credit/no-credit only. Offered: AWSpS.

IMMUN 560 Research Conference in Progress in T Cell Research (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Bevan, Fink, Goverman, Greenberg, Pepper, Stetson Credit/no-credit only. Offered: AWSpS.

IMMUN 561 Research Conference in Mechanisms of Peripheral Tolerance (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Fink Credit/no-credit only. Offered: AWSpS.

IMMUN 562 Research Conference in Structural Molecular Immunology and Vaccinology (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Student may register for more than one conference each quarter. Prerequisite: immunology graduate students; permission of instructor. Instructors: Strong Credit/no-credit only. Offered: AWSpS.

IMMUN 563 Research Conference in Macrophage Biology: Signaling and Phagocytosis (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Aderem Credit/no-credit only. Offered: AWSpS.

IMMUN 564 Research Conference in Cellular/Molecular Regulation of T Cell Responses (1, max. 30) Weekly group conferences concerning ongoing graduate student and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Greenberg Credit/no-credit only. Offered: AWSpS.

IMMUN 565 Research Conference in Innate Immune Defenses against Virus Infection (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology, with a major focus on understanding

virus and host regulation of innate immune processes. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Gale Credit/no-credit only. Offered: AWSpS.

IMMUN 566 Research Conference in the Studies of Lymphocyte Memory (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Instructors: Pepper Credit/no-credit only. Offered: AWSpS.

IMMUN 567 Research Conference in the Role of miRNAs in Modulating the Immune System (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor Instructors: Savan Credit/no-credit only. Offered: AWSpS.

IMMUN 568 Research Conference in Regulation of the Inflammatory Response of Myeloid Cells (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology, with a major focus placed on understanding the regulation of the inflammatory response of myeloid cells. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Hamerman Credit/no-credit only. Offered: AWSpS.

IMMUN 569 Research Conference in T cells in autoimmunity (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor Instructors: Bettelli Credit/no-credit only. Offered: AWSpS.

IMMUN 570 Research Conference in Mucosal Immunity (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and

permission of instructor. Instructors: Oukka
Credit/no-credit only. Offered: AWSpS.

IMMUN 571 Research Conference in Development and Activation of B Cells (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Rawlings Credit/no-credit only.

IMMUN 572 Research Conference in Signal Transduction in B-Cells (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Scharenberg Credit/no-credit only.

IMMUN 573 Immunology Seminar Series (1, max. 30) Weekly discussion in which original research results are presented and discussed. Emphasis is on new and original contributions to field of immunology and related areas; occasional seminars are concerned with review of important topics. Prerequisite: graduate standing in immunology; other graduate students with firm background in immunology and permission of instructor. Credit/no-credit only.

IMMUN 574 Research Conference in Kaposi's Sarcoma-Associated Herpes Virus: Interactions with B-Cells and Endothelial Cells (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Lagunoff Credit/no-credit only.

IMMUN 575 Research Conference in Infection and Immunity (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Bevan Credit/no-credit only.

IMMUN 576 Research Conference in Innate Immune Mechanisms of Response and Regulation

(1, max. 30) A. LACY-HULBERT Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than once conference each quarter. Prerequisite: graduate standing in immunology; permission of instructor. Credit/no-credit only. Offered: AWSpS.

IMMUN 577 Research Conference in Lymphocyte Homing and Function (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Campbell Credit/no-credit only. Offered: AWSpS.

IMMUN 578 Research Conference in Immunology and the Pathogenesis of Tuberculosis (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research in immunology. Students may register for more than one conference each quarter. Prerequisite: graduate standing in immunology. Instructors: Ramakrishnan Credit/no-credit only. Offered: AWSpS.

IMMUN 579 Research Conference in Liver Immunology (1, max. 30) Weekly group conferences concerning ongoing graduate students and postdoctoral research immunology. Students may register for more than one conference each quarter. Prerequisite: immunology graduate student and permission of instructor. Instructors: Crispe Credit/no-credit only. Offered: AWSpS.

IMMUN 580 Research Conference in Immune Imaging and Structure-Function Biology (1, max. 30) *M. GERNER* Weekly group conferences concerning ongoing graduate students and postdoctoral research in Immunology. Students may register for more than one conference each quarter. Credit/no-credit only. Offered: AWSpS.

IMMUN 581 Research Conference on the Initiation of Type 2 Immune Responses by Parasitic Worms and Allergens (1) *J. VON MOLTKE* Weekly group conferences concerning ongoing graduate students and postdoctoral research in Immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 599 Introduction to Immunology Research (1-10, max. 40) Current problems in immunological

research. Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 600 Independent Study or Research (*-)

Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 700 Master's Thesis (*-)

Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

IMMUN 800 Doctoral Dissertation (*-)

Prerequisite: graduate standing in immunology. Credit/no-credit only. Offered: AWSpS.

LABORATORY MEDICINE AND PATHOLOGY

LABORATORY MEDICINE

LAB M 201 Medical Laboratory Science (2) Explores the field of Medical Laboratory Science covering the concepts and practices of this profession. Provides an overview of Laboratory Medicine disciplines and an examination of the impact of Medical Laboratory Science on patient care. Medical Microbiology, Forensics, Hematology, Genetics, Clinical Chemistry, and Immunohematology will be discussed. Prerequisite: CHEM 152. Offered: A.

LAB M 301 Introduction to Medical Laboratory Science (4) Explores Medical Laboratory Science covering concepts and practices through lecture and laboratory practice. Provides an overview of Laboratory Medicine disciplines and an examination of the impact of Medical Laboratory Science on patient care. Medical Microbiology, Forensics, Hematology, Genetics, Clinical Chemistry, and Immunohematology will be discussed. Recommended: MLS Student Offered: A.

LAB M 302 Introduction to Medical Laboratory Science Laboratory (2) Laboratory coverage of the theories, concepts, and practices defining medical laboratory science as a profession. Instructional areas comprise the pre-analytical, analytical, and post-analytical components of laboratory services. Subjects include quality management, safety, regulatory and compliance, and overview laboratory techniques. Prerequisite: LAB M 201 and admission to the MLS major Offered: A.

LAB M 418 Introductory Clinical Chemistry (6)

Introduces the fundamentals of instrumentation and methodology in the clinical chemistry laboratory. Limited to medical laboratory science students. Offered: Sp.

LAB M 419 Clinical Coagulation (4) Lecture and laboratory coverage of the theory of the hemostatic system, to include tests used in the diagnosis/monitoring of patients with abnormal bleeding and/or thrombosis. Instrumentation as appropriate for testing included. Quality control and quality assurance discussed. Limited to medical laboratory science students. Offered: S.

LAB M 420 Laboratory Analysis of Urine and Body Fluids (3) Lecture and laboratory covering urinalysis testing procedures and associated disease entities.

Analysis of other body fluids. Methods of microscopic examination by use of bright-field, phase, and polarizing microscopy. Limited to medical laboratory science students. Offered: S.

LAB M 421 Medical Microbiology (1/6, max. 6)

Lecture and laboratory coverage of human infections and diagnostic procedures used for isolation, identification, and antimicrobial susceptibility testing of the microorganisms associated with disease. Limited to medical laboratory science students. Offered: S.

LAB M 423 Clinical Chemistry (*-, max. 24)

Clinical testing using automated and manual methods. Measurement of pancreatic function and intestinal absorption, renal and liver function, enzymes, electrolytes, blood gases, lipids, toxicology, urinalysis, endocrinology, and immunology. Limited to medical laboratory science students. Offered: AWSp.

LAB M 424 Clinical Microbiology (*-, max. 24)

Techniques used in the diagnostic microbiology laboratory, including quality control, specimen evaluation, identification of pathogenic microorganisms, and antimicrobial susceptibility testing. Limited to medical laboratory science students. Offered: AWSp.

LAB M 425 Clinical Hematology (*-, max. 24)

Clinical study of techniques used in the diagnostic evaluation of blood cells, including production, proliferation, survival, morphologic, and functional features.

Assessment of proteins and cells important in hemostasis included. Quality control and quality assurance issues considered. Biomolecular techniques appropriate for evaluation of the hematologic and hemostatic systems discussed. Limited to medical laboratory science students. Offered: AWSp.

LAB M 426 Clinical Immunoematology ([1-7]-, max. 7) Lecture and laboratory covering theory of transfusion medicine and serological procedures used in the evaluation of cellular antigen systems. Principles of immunology and genetics included as appropriate for the techniques performed; screening of donor units to provide a safe product discussed. Quality control and quality assurance issues considered. Limited to medical laboratory science students. Offered: A.

LAB M 427 Selected Studies in Laboratory Medicine (*-, max. 24) Selected clinical study in the major scientific disciplines of laboratory medicine, to include molecular diagnostics, or pursuance of a clinical research study. Limited to medical laboratory science students. Credit/no-credit only. Offered: AWSpS.

LAB M 430 Medical Laboratory Science: Intro Clinical Hematology (5) Lecture and laboratory coverage of theoretical and practical aspects important in the evaluation of blood cells, to include their production, morphology, function, and associated pathology. Instrumentation used in testing included, as well as quality control and quality assurance issues. Limited to medical laboratory science students. Prerequisite: either LAB M 201, or LAB M 301 and LAB M 302. Offered: W.

LAB M 431 Clinical Immunoematology Rotation (7-) Practicum emphasizing application of knowledge and skills to perform a wide variety of basic testing routinely performed in contemporary blood laboratory and further develop discipline-specific competencies. Limited to medical laboratory science students. Offered: AWSp.

LAB M 433 Enrichment Rotation (-9) Selected practical experience emphasizing application of knowledge and skills to perform a wide variety of testing in a clinical setting and further develop discipline-specific competency in the major scientific disciplines of laboratory medicine, including

hematology, clinical chemistry, microbiology, and immunoematology or pursuance of a clinical research study. Limited to medical laboratory science students. Offered: AWSp.

LAB M 435 Molecular Diagnostics for Medical Laboratory Science (3) Provides a comprehensive overview of the fundamental principles of molecular diagnostics and explores its use in the diagnosis of disease. Topics include: nucleic acid structure and function, genetics, DNA chemistry, nucleic acid isolation, amplification techniques, components of a molecular laboratory, and evaluation of controls to validate results obtained. Limited to medical laboratory science students. Offered: W.

LAB M 436 Molecular Diagnostics Clinical Rotation (2) Provides technical expertise, proficient clinical judgment, and a broad cognitive understanding of current molecular diagnostic practices equivalent to that expected of a career entry-level medical laboratory scientist. Prerequisite: LAB M 435; recommended: Be admitted to the MLS major and take all didactic lecture and lab courses required for the major, but specifically LAB M 435. Offered: AWSp.

LAB M 499 Undergraduate Research (*, max. 35) Specific project in clinical laboratory investigation. Offered: AWSpS.

LAB M 502 Laboratory Medicine Grand Rounds (1, max. 6) Grand rounds are concerned with current topics in the field of laboratory medicine. Credit/no-credit only. Offered: AWSp.

LAB M 510 Laboratory Medicine Research Conference (1, max. 6) Presentation and discussion of ongoing research and development projects by faculty, residents, fellows, and graduate students. Open to graduate students in laboratory medicine and other medical sciences. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSp.

LAB M 520 Seminar in Organization and Management in Laboratory Medicine (3) Core course for the Master of Science degree in laboratory medicine. Prerequisite: graduate student standing in Laboratory Medicine or permission of instructor. Offered: Sp, odd years.

LAB M 521 Advanced Laboratory Hematology (1, max. 6) Lectures on diagnostic clinical hematology with emphasis on clinicopathological correlation. For laboratory medicine graduate students with special interest in diagnostic clinical hematology. Prerequisite: graduate standing and permission of instructor. Offered: AWSp.

LAB M 549 Global Laboratory Systems (1) *Olusegun O. Soge, Lucy A. Perrone* Provides an overview of the role of clinical and public health laboratories in a national public health system, both in US and globally. Covers the functional components of a laboratory system and the importance of quality laboratory information on public health policy making. Topics include disease diagnosis, surveillance, outbreak response, law and regulation and how laboratory information contributes to health policy development. Offered: jointly with G H 549; Sp.

LAB M 555 Critical Thinking and Research Design in Laboratory Medicine (2) Develops critical thinking skills. Offered: W.

LAB M 590 P-Research Projects in Laboratory Medicine (*) Opportunity for laboratory experience on a research problem related to laboratory medicine. Students investigate areas of potential clinical importance. Projects selected from areas such as chemistry, coagulation, hematology, immunology, microbiology, virology, molecular diagnostics, and computer applications. Research goals established by instructor in discussion with student. Prerequisite: permission of instructor. Offered: AWSpS.

LAB M 600 Independent Study or Research (*-) Prerequisite: graduate standing in laboratory medicine. Credit/no-credit only. Offered: AWSpS.

LAB M 601 Internship (3-9, max. 9) Prerequisite: graduate standing in laboratory medicine. Credit/no-credit only. Offered: AWSpS.

LAB M 680 P-Clinical Laboratory Testing: Methods and Interpretation (*, max. 30) Provides the third- and fourth-year medical student with the opportunity to evaluate clinical laboratory data in the clinical laboratory setting. One-on-one teaching using case material and actual clinical samples. Prerequisite: completion of Internal Medicine and

Surgery Patient Care phase clerkships. Offered: AWSpS.

LAB M 685 P-Laboratory Case Studies for Clinical Diagnosis (4) Clinical case presentations and discussions aimed at test selection, disease-induced alterations, efficient algorithms, factors confounding interpretation, testing economics. (Four weeks half-time) . Prerequisite: completion of required clerkships. Offered: W.

LAB M 699 P-WWAMI Laboratory Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

LAB M 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

PATHOLOGY

PATH 498 Undergraduate Thesis (*, max. 35) Elective.

PATH 499 Undergraduate Research (*, max. 35) Elective.

PATH 501 Pathology Proseminars (1, max. 9) Small group discussions and presentations by students based on critical reading of original papers, or on concurrent seminars, in many areas of experimental pathology and medicine. Topic varies by quarter. Prerequisite: permission of instructor. Offered: AWSpS.

PATH 502 Inflammation and Repair (2) Lecture-seminar; a seminar course dealing with an in-depth examination of the processes involved in inflammation and repair. Prerequisite: permission of instructor. Credit/no-credit only. Offered: even years.

PATH 507 Introduction to Pathology Research (2) Current developments and approaches to investigation of the molecular and cellular basis of disease. Members of the Pathology faculty present and discuss their own research projects. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

PATH 510 Introduction to Pathology Methods (3)

Laboratory course designed to introduce graduate students to the fundamentals of image analysis, histology, histopathology, post mortem evaluation, surgical pathology, and other methods used to investigate disease etiology, progression, and manifestation in humans and in animal models. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

PATH 511 Topics in Experimental Pathology (1-2, max. 10)

Focus on areas of research relevant to experimental pathology. Prerequisite: permission of instructor. Offered: AWSpS.

PATH 512 Molecular Basis of Disease: Death and Repair (1.5)

First in a series designed to introduce students to medically important diseases and physiologic processes and experimental approaches to elucidating the cellular processes underlying these diseases. Covers basic cell/tissue processes that underlie normal homeostasis and most disease and, including apoptosis, necrosis, stem cells, inflammation, granulation tissue, tissue regeneration, repair and fibrosis.

PATH 513 Mechanisms of Neurodegeneration (1.5)

Introduction to the cellular and molecular mechanisms that underlie neurodegenerative diseases, including introduction to the normal development and anatomy of the central nervous system, a review of epidemiologic, genetic, and clinical research tools used in the investigation of these diseases, and a systematic review of the major neurodegenerative diseases.

PATH 516 Molecular Basis of Human Genetic Disease (3)

Introduces the underlying mechanisms in human genetic disorders, ranging from the single nucleotide, through genomic instability, and chromosomal rearrangements. Includes tissue and organ specific examples of the manner in which these disorders provide insights into human biology. Offered: Sp.

PATH 517 The Biology and Pathology of Aging (3/4)

Matt Kaeberlein Surveys the biology and pathologies of the aging phenomena in multiple species and at multiple organismal levels from whole animals to molecules. Prerequisite: coursework in biology, biochemistry, molecular biology, and genetics. Offered: Sp.

PATH 518 Emerging Topics in Cancer (2)

Eleanor Y Chen, Rosana Risques, Shreeram Akilesh Science and translational advances in cancer and therapeutics, related to recent major technological progress in cancer research. Explores how knowledge of cancer genetics as well as new molecular discoveries are translated to clinical management and treatment options. Prerequisite: undergraduates by permission of instructor. ; recommended: introductory biology and/or genetics. Offered: W, odd years.

PATH 520 Experimental Pathology Seminar (1)

Review of current research in various areas of experimental pathology by members of the department and visiting scientists. Credit/no-credit only. Offered: AWSp.

PATH 521 Anatomy and Autopsy (1)

Students view an autopsy, and learn how autopsy can diagnose disease, determine cause of death, and improve patient care. Requirements include orientation session, autopsy, and a clinical-autopsy conference. Participants must be free at least one morning per week to attend an autopsy at UWMC. Prerequisite: UW medical students only. Instructors: Fligner Offered: WSp.

PATH 530 Human Cytogenetics (*, max. 4)

Sources and methods of preparation and identification of human chromosomes. Molecular structure and mapping of chromosomes. Human cytogenetic pathology: karyotype-phenotype interactions, chromosome breakage, and cancer cytogenetics. Prerequisite: permission of instructor. Instructors: Disteche Offered: Sp.

PATH 535 Innate Immunity and Immunopathology (1.5)

Ian N. Crispe, Kelly Smith Explores the relationship between the innate immune system and disease processes, using a student-led seminar format. Students analyze, present, and critique primary research literature, and use the knowledge gained to develop a sophisticated insight into the mechanisms of immunopathology. Offered: Sp.

PATH 540 Translational Research Topics (1)

Horwitz First and second year students in the M.D./Ph.D. program present and discuss current papers from the biomedical literature in journal club format, and describe their own research in seminar format. Credit/no-credit only. Offered: AWSp.

PATH 544 General and Systemic Pathology ([2-3]-, max. 5) *Bill Mahoney* Basic pathologic processes that underlie disease, including cell alterations, genetic and developmental pathology, environmental pathology, neoplasia, immunopathology, inflammation, infection, and systemic diseases. Correlates gross, functional, and biochemical alterations. For first-year dental students and graduate students. Requires reasonable grounding in biological and chemical sciences. Prerequisite: for nondental students: permission of instructor.

PATH 550 Mechanisms of Disease (3) *Conrad-Liles, Rendi* Examines the mechanisms of inflammation, cell injury, death, repair, immunity, and neoplasia as well as diseases of various organ systems. Systems covered include the cardiovascular, pulmonary, gastrointestinal, neurologic, endocrine, and genitourinary/renal systems. Topics presented through lecture, primary literature, and small-group discussion. Offered: A.

PATH 551 Experimental and Molecular Pathology (2-5, max. 20) Introduction to experimental pathology. A tutorial course designed to introduce a graduate student (medical, dental) or senior undergraduate to selected methods and problems through literature surveys and/or laboratory experience. Exploration of causes at the cellular and molecular levels in the study of disease is emphasized. Prerequisite: Pathology PhD student; permission of instructor Credit/no-credit only. Offered: AWSp.

PATH 555 Environmental Pathology (3) Modern morphologic, cell biological, and molecular approaches to environmental disease associated with exposure/predisposition. Lectures, seminar discussion, and student presentations. Prerequisite: PATH 410 or PATH 444 or HUBIO 520. Instructors: Monnat Offered: Sp, even years.

PATH 558 Integrative Omics (1.5) *Jessica E Young, Jennifer L. Davis* Explores how to integrate genomic, transcriptomic, and proteomic approaches with state-of-the-art genetic engineering strategies to uncover a systems-level understanding of pathway interactions that regulate disease pathogenesis and complex phenotypes. Recommended: undergraduate biology or cellular and molecular biology. Offered: jointly with MOLMED 558; Sp.

PATH 560 Molecular Analysis of Human Disease (*, max. 10) Review and discussion of contemporary research on molecular basis of human disease. Focus on mutational mechanisms, genetic instability, AIDS, and cancer. Students participate in weekly group discussion and work with faculty to select, develop, and present discussion topic. Prerequisite: medical, graduate, or professional standing and permission of instructor. Credit/no-credit only. Offered: AWSp.

PATH 580 Mitochondria and Metabolism in the Pathogenesis of Human Disease (1.5) *Hawkins, Tian* Explores the fundamentals of mitochondrial biology, bioenergetics, and cellular metabolism. Includes topical lectures and literature reviews introducing students to advanced metabolic concepts within the context of human disease. Offered: W, even years.

PATH 590 Patient-Centered Translational Research (1) *Horwitz* MSTP students preparing to return to clerkships are partnered with a senior MD/PhD medical student or house officer, preview the medical or surgical ward team environment, select a patient-focused translation research topic based on their clinical experience, and prepare a plan for refreshing introductory clinical skills. Offered: WSp.

PATH 600 Independent Study or Research (*-) Prerequisite: Pathology PhD student. Credit/no-credit only. Offered: AWSpS.

PATH 667 P-Renal Pathology Laboratory (*, max. 6) Laboratory elective for third- and fourth-year medical students. Read current literature, review various renal biopsies and urine sediments, and read standard texts prior to a weekly topic-oriented conference. All students earn 1 credit for one-hour seminar per week. May be taken concurrently with MED 693. Prerequisite: permission of instructor.

PATH 675 P-Diagnostic Pathology Clerkship - Missoula (4, max. 24) Medical student participation in microscopic examination, laboratory specimen processing and on occasion aid surgeons, endoscopists or radiologists with immediate evaluation of specimens.

PATH 676 P-Diagnostic Pathology Clerkship - Spokane (*, max. 24) Medical student participation in dissection and study of autopsy and surgical pathology cases at Sacred Heart Medical Center in Spokane. Can be taken for either two or four weeks.

PATH 677 P-Neuropathology Clerkship - HMC (*, max. 16) Includes participation in dissection and study of neuropathology cases. Students work up cases under senior staff including dissection, microscopic examination, and literature review.

PATH 678 P-Diagnostic Pathology Clerkship - Medical Examiner's Office, Alaska (*, max. 24) Medical student participation in dissection and study of autopsy and forensic pathology cases at the Anchorage Medical Examiner's Office.

PATH 680 P-Diagnostic Pathology Clerkship - University of Washington Medical Center (*, max. 24) Medical student participation in dissection and study of autopsy and surgical pathology cases. Cases worked up under senior staff, including dissection, microscopic examination, and literature review. Attendance at pathology conferences and seminars expected. Prerequisite: third- or fourth-year medical student standing. Instructors: Swanson

PATH 681 P-Diagnostic Pathology Clerkship - Harborview Medical Center (*, max. 24)

PATH 682 P-Diagnostic Pathology Clerkship - Veterans' Administration Hospital (*, max. 24)

PATH 683 P-Forensic Pathology Clerkship - Medical Examiner's Office (*, max. 24)

PATH 686 P-Diagnostic Pathology Clerkship (4/8)
Lisa K Koch Provides medical students an opportunity to improve on gross and microscopic diagnosis, and to experience what it is like to be a pathology resident at the University of Washington. Participants pair with a trainee and faculty mentors to serve as a source of information and guidance. Students attend resident didactics, tumor boards, daily signouts, discussion groups, and personalized slide sessions Prerequisite: completion of the UW School of Medicine foundations and patient care phases. Offered: AWSpS.

PATH 688 P-Diagnostic Pathology Clerkship - Madigan Army Medical Center (*, max. 24)

PATH 697 P-Pathology Special Electives (*, max. 24) By specific arrangement, students have clerkships, externships, or research opportunities at institutions other than the University of Washington.

Prospective students obtain special assignment forms from the dean's office at least one month before advance registration. Prerequisite: permission of instructor.

PATH 699 P-WWAMI Pathology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

PATH 700 Master's Thesis (*-)

PATH 800 Doctoral Dissertation (*-) Prerequisite: Pathology PhD student. Offered: AWSpS.

MEDICINE

MEDICINE

MED 498 Undergraduate Thesis (*)

MED 499 Undergraduate Research (1-10, max. 25) Laboratory research within the Department of Medicine. Available to undergraduate students. Must be supervised directly by UW faculty within UW PI lab, no remote labs. Offered: AWSpS.

MED 503 Cardiac Ultrasound (1) *Florence H Sheehan* Instruction will be given in how to 1) acquire cardiac ultrasound images at three acoustic windows, 2) identify cardiac anatomy in standard views, and 3) recognize key pathologies: left and right ventricular dysfunction and dilatation and pericardial effusion. Following a course introduction, students will work self-paced, alone or in pairs, on a mannequin-based simulator. Prerequisite: MED C standing or Undergraduate premedicine students with Senior status. Credit/no-credit only. Offered: AWSpS.

MED 505 P-Preceptorship in Medicine (1, max. 12) To provide opportunity for first- and second-year medical students to gain personal experience with medical practice situations by being stationed with carefully selected clinical faculty members in their offices. Prerequisite: permission of department. Credit/no-credit only. Offered: AWSpS.

MED 507 HIV in Latinos (1-, max. 12) Students shadow an attending physician, and participate in

routine and acute visits for a primarily Spanish-speaking patient population. Includes Spanish-language health education and rapid HIV testing sessions, and encourages attendance at a community event targeting the Latino HIV community. Prerequisite: permission of instructor; conversational Spanish proficiency or FAMED 556. Credit/no-credit only.

MED 510 Health Issues of Sexual Minorities (1)

Introduction to the special healthcare issues and barriers confronting persons identified as bisexual, gay, lesbian, or transgendered. Includes lectures, panels, and case presentations by faculty and community experts.

MED 515 Medicine as Culture (1) Examines the ways that medical practice, the medical profession, and ideas about sickness and health are embedded in society and culture, as a way of contextualizing biological phenomena and medical knowledge. Credit/no-credit only.

MED 522 Introduction to Human and Medical Genetics (2, max. 12) *Fuki Marie Hisama* Provides in-depth examination of current topics in human and medical genetics with an emphasis on clinical and molecular diagnosis of genetic conditions, approaches to therapy, research, and molecular genetic technology. Credit/no-credit only. Offered: AWSp.

MED 525 Introduction to Gerontology and Geriatric Medicine (1) Introduces gerontology and geriatric medicine. Explores topics in geriatric medicine including: multidisciplinary care, dementia and delirium, falls, polypharmacy, urinary incontinence, fragility, and end-of-life care. Employs a combination of lectures, time spent interviewing and observing patients in hospital-based clinics, private homes, long term care and continuing retirement communities, and bedside teaching with a healthcare provider. Credit/no-credit only.

MED 530 AIDS: A Multidisciplinary Approach (2) *Carey Farquhar* Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare; and prospects for prevention and

control. Credit/no-credit only. Offered: jointly with EPI 530/G H 562.

MED 531 P-Human Genetics (*) Weekly seminar dealing with a variety of topics in medical genetics given by faculty of the Division of Medical Genetics and related departments and divisions. Open to medical students with a good foundation in genetics.

MED 533 P-Clinical Endocrinology (2) Includes brief lectures followed by instructor-led interviews with patients to illustrate the clinical presentation, diagnosis, and treatment of the major endocrinopathies. Students gain a greater appreciation of the impact these disorders have on patients' lives. Prerequisite: second year medical students.

MED 534 Wilderness Medicine (1) Provides training in medical emergencies and clinical situations unique to wilderness settings where access to medical care is limited. Students gain experience in patient assessment, extrication, and the management of common wilderness situations including altitude illness, burns, trauma, diving injuries, hypo- and hyperthermia, and toxin exposures. Offered: Sp.

MED 536 Introduction to Critical Care Medicine (1) Uses a combination of didactics, time spent observing rounds and physicians on-call in the ICU as well as dedicated bedside teaching by a critical care attending physician to teach about core topics in pediatric and adult critical care medicine including shock, respiratory failure, sepsis, mechanical ventilation, and palliative care. Offered: W.

MED 540 Preventing Healthcare Associated Infections (1) Multidisciplinary approach to understanding, measuring, and developing policy to prevent healthcare associated infections. Credit/no-credit only. Offered: jointly with EPI 505.

MED 546 Clinical Applications of Gene Therapy (2) Overview of the current status of gene therapy. Discusses its role in the future practice of medicine. Lecture and literature reviews.

MED 547 Quantitative Methods in Medical Genetics (2) Computational methods of use for medical genetics. Review of problem sets. Topics range from basic probability to linkage analysis. Prerequisite: genetics and permission of instructor.

MED 549 Clinical Medical Genetics (1, max. 6)

Review of current clinical advances in medical genetics. Includes lectures and discussion of cases from medical genetics clinic. Prerequisite: genetics or human genetics and permission of instructor.

MED 555 P-Mind, Body, and Pen: Writing and the Art of Becoming a Physician (1)

Provides forum for medical students to write about issues in medicine and medical education. Focuses on writing as a process for giving voice to the conflicting demands and dilemmas of becoming a physician. Explores personal narratives, dreams and disappointments, chronic illness and death, empathy and revulsion, authenticity and power. Offered: W.

MED 556 Visual Thinking and Medical Diagnosis (1)

Uses visual thinking strategies to look at art and enhance diagnostic acumen. Expands observational and critical thinking skills, and encourages open-ended discussion. Skills applied in assessing patients. Combination of slide sessions and observation of original objects at Seattle museums. Credit/no-credit only. Offered: A.

MED 557 Hispanic Health and Healthcare

Disparities (1) *Acosta* Covers Hispanic culture and language, history of Hispanics in the United States, Hispanic health status issues, and effective strategies for working across cultures and linguistic barriers. Designed to help the learner understand and respond better to the healthcare needs of the Hispanic community. Credit/no-credit only.

MED 560 P-Advanced Global Health (2)

Prepares health profession students for work in developing countries. Includes healthcare delivery systems, political, social, and economic determinants of health, major global health issues, and personal well-being while abroad. Lecture and seminar format with guest speakers, student presentations, and discussion. Offered: jointly with G H 505.

MED 566 Clinical Arts: Building Habits of Mind for Clinical Practice (1)

Builds observation and communication skills while developing awareness of habits of mind and comfort with ambiguity. Builds skills through discussion-based observation of artworks and objects in the Anchorage Museum collection as well as reflective writing and art making.

MED 569 Addiction Medicine (1) *Jared Klein*

Themes relevant to treatment of substance-using patients. Designed to build curiosity and increase familiarity with individual and societal factors that impact such patients, including various forms of bias and discrimination. Students develop and practice skills in order to become competent future providers for drug-using patients. Prerequisite: enrollment in graduate health science programs. Credit/no-credit only. Offered: A.

MED 598 P-Medicine Independent Study and Remediation (*, max. 8)

Designed for medical students required to complete additional study related to the required Internal Medicine clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWSpS.

MED 599 P-Transfusion Machine (3)

Group discussions and didactic sessions cover broad category of transfusion medicine. Hands-on laboratory experience in red cell serology/compatibility, coagulation, and histocompatibility with emphasis on diagnosis and management of clinical problems. Based at Puget Sound Blood Center. Prerequisite: fourth-year medical student standing; third-year student standing with permission of instructor.

MED 600 Independent Study or Research (*)

Prerequisite: permission of instructor. Offered: AWSpS.

ELECTIVE CLERKSHIPS

MEDECK 601 P-Ward Medicine Subinternship -

Seattle (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 602 P-Primary Care - Seattle (8/12)

Four-week, full-time ambulatory care block in primary care internal medicine. Students participate in several clinics at University of Washington Roosevelt Clinic following a panel of patients in medicine,

rheumatology, and virology clinics. Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 603 P-Clinical Cardiology and Electrocardiography - Seattle (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 604 P-Clinical Dermatology - Seattle (8) Participation in dermatology clinics and inpatient consultations. Journal club and clinical conferences each week with entire staff. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 605 P-Clinical Endocrinology and Metabolism - Seattle (*, max. 12) Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals. Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 606 P-Clinical Gastroenterology - Seattle (8) Participation in consulting ward rounds, procedures, conferences, and selected clinics with full-time divisional staff, plus directed tutorial work. Students are scheduled at one of three sites: UWMC, Harborview Medical Center, and Veterans' Administration hospitals. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 607 P-Clinical Hematology/Oncology - Seattle (8) Outpatient and inpatient experience with hematologic/oncologic disorders. The elective includes teaching rounds, conferences, and evaluation of laboratory work. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 608 P-Clinical Infectious Diseases - Seattle (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 609 P-Nephrology and Fluid Balance - Seattle (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults with renal fellow and attending, and work up patients in renal clinics, participate in seminars with clerks from all three hospitals. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 610 P-Clinical Respiratory Disease (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 611 Advanced Inpatient Geriatrics (8) This is a unique intensive experience in geriatric and consultative medicine. The "Medicine G" service is a special inpatient service for elderly adults at a major trauma center with active geriatrics presence (outpatient, inpatient, and post-acute) ; the service provides consultative care with the goal of preventing and managing complications for elderly and often frail and/or medically complex patients. Prerequisite: Successful completion of the third year medicine clerkship Offered: AWSpS.

MEDECK 612 P-Clinical HIV Care - Seattle (8) Full-time outpatient and inpatient elective in HIV care for senior medical students. Students see patients for routine care and acute medical problems that do not require hospitalization, as well as provide inpatient consults. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 613 Women's Primary Care (8) For students with strong interest in women's health care in the ambulatory setting. Educates students on the diagnosis, management, and treatment of medical and outpatient gynecological issues of adult women of all ages and life stages. Working alongside internal medicine trained women's health care specialists, students manage a panel of patients, working independently and taking on more responsibility when possible. Prerequisite: completion of Patient Care Phase Medicine Clerkship. Offered: AWSpS.

MEDECK 614 P-Oncology Subinternship (8) Students participate in the oncology service in the inpatient

oncology consult service at UWMC hospital, obtaining exposure to the management of patients with cancer, oncological complications and emergencies, oncological drug mechanisms of action, side effects, and interactions. Obtain basic understanding of principles of oncology care. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 615 P-Rheumatology - Seattle (8) Full-time inpatient-outpatient clerkship in rheumatology. Includes diagnosis and treatment of rheumatic diseases, utilizing outpatient clinics and hospitalized patients at the UW Medical Center, Harborview Medical Center, or VAMC. Emphasis on concepts in pathophysiology, diagnosis, and treatment of these diseases. In addition to patient contact, reading, seminars, and preceptorial sessions are the methods of instruction. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 616 P-Advanced Dermatology Clinic - Seattle (8) Advanced clinical dermatology clerkship at various sites including HMC, UWMC, VA Seattle, and Children's Hospital. Students choose from four tracks within the rotation: dermatopathology, pediatric dermatology, dermatologic surgery, and advanced medical dermatology. (Four weeks) . Prerequisite: third-year required Medicine clerkship.; MEDECK 604. Offered: AWSpS.

MEDECK 617 P-Harborview Evening Clinic - Seattle (2) A longitudinal elective for senior medical students who assume primary responsibility for a panel of medical patients in an outpatient clinic. Direct care of patients is supplemented by didactic sessions dealing with issues in ambulatory care. Students must apply to this program, and are expected to participate for the full academic year. Prerequisite: third-year required Medicine clerkship.

MEDECK 618 P-Medical Consultation - Seattle (8) Full-time outpatient and inpatient elective in peri-operative medical consultation for senior medical students. Students see patients in the medical consultation clinic, then follow them daily when they come in for surgery. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 619 P-Management of Sexually Transmitted Diseases - Seattle (2, max. 12)

Instruction and clinical experience in diagnosis, treatment, management, and patient counseling of sexually transmitted diseases. Instruction in genitourinary physical examination skills; relevant laboratory techniques and management of patients with STDs. Prior to the elective, each student must review a packet of didactic materials. (Two weeks) . Prerequisite: third-year required Medicine, OB/GYN, and Surgery clerkships. Offered: AWSpS.

MEDECK 620 P-Critical Care Medicine Subinternship - Seattle (8) Participating students function at the sub-intern level on the MICU service at either Harborview Medical Center, UWMC, or VAMC. Through direct patient care responsibilities, students learn about various forms of critical care illness and gain experience in the application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 621 Advanced Outpatient Geriatrics (8) This is an advanced rotation in the care of older adults with an emphasis on age-related changes in physiology, pathophysiology, function, and quality of life. Students will prevent, diagnose and manage common geriatric syndromes; Identify available health and community services for older adults to address their care needs; and identify the complexity and uncertainty of many conditions and circumstances older adults experience. Prerequisite: Successful completion of the third year medicine clerkship Offered: AWSpS.

MEDECK 622 P-Clinical Medical Genetics (8) Students see outpatients and attend a variety of outpatient clinics including subspecialty clinics in cancer genetics, connective tissue genetics, neurogenetics, Turner syndrome and dermatologic genetics, and pediatric general genetics clinics with an emphasis on dysmorphology, developmental delay, disorders of sexual differentiation, skeletal dysplasia, craniofacial anomalies, and neurogenetics. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 623 P-Clinical Wound Management (*) Opportunity for medical student to be exposed to and learn wound care management in clinical setting. At end of rotation students should be able to diagnose cause of chronic ulcer or wound, outline the approach to the management of diabetic foot

ulcer, peripheral artery disease ulcer and VLU, and initiate treatments such as sharp debridement, VAC, dressing, and Unna Boot placement. (Two weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 624 Hospitalist Subinternship - Seattle, WA (8) Intensive experience in hospital medicine. The student works primarily with an attending hospitalist or nocturnist.

MEDECK 625 Cardiology Subinternship - Seattle, WA (8) Students serve as intern on the cardiology service under the supervision of senior resident and cardiology attending physicians.

MEDECK 626 P-Clinical Cardiology and Electrocardiography - Tacoma (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks) . Prerequisite: third-year required Medicine clerkship.

MEDECK 627 P-Clinical Endocrinology and Metabolism - Tacoma (*, max. 12) Clerkship in clinical endocrinology and metabolism. Combined inpatient and outpatient assignments at selected hospitals. (Four weeks) . Prerequisite: third-year required Medicine clerkship.

MEDECK 628 P-Clinical Infectious Diseases - Tacoma (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 629 P-Clinical Respiratory Disease and Critical Care - Tacoma (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 630 P-Ward Medicine Subinternship - Tacoma (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their

schedules permit. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 631 P-Ward Medicine Subinternship - Spokane (8) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 632 APC Inpatient and Outpatient Cardiology-Spokane (8) This rotation provides opportunities in inpatient and outpatient settings. Students assume ownership of inpatients, rounding on patients, formulating treatment plans, and following them through their hospital course. Emphasis will be placed on physical examination, electrocardiogram interpretation, basics of echocardiographic imaging, and the management of patients with congestive heart failure, dysrhythmia, angina, and valvular heart disease. Prerequisite: Successful completion of required medicine clerkship. Offered: AWSpS.

MEDECK 633 P-Clinical Cardiology and Electrocardiography - Washington (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 634 P-Clinical Dermatology - Washington (8) Participation in dermatology clinics and inpatient consultations. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 636 P-Clinical Gastroenterology - Washington (8) Participation in consulting ward rounds, procedures, conferences, and selected clinics at Sacred Heart Hospital in Spokane. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 637 Clinical Infectious Diseases - Yakima, WA (8) Students participate in the clinic and consulting service at area hospitals. Includes patients with a range of community acquired and hospital acquired infectious diseases. Students participate in antibiotic stewardship discussions and infection control meetings.

MEDECK 638 Clinical Infectious Diseases - Spokane (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 639 P-Nephrology and Fluid Balance - Washington (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 640 Critical Care Medicine Subinternship - Washington (8) Participating students function at the sub-intern level on the MICU. Through direct patient care responsibilities, students learn about various forms of critical care illness and gain experience in the application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 641 Hospitalist Subinternship-WY (8) Intensive experience in hospital medicine. The student works primarily with an attending hospitalist or nocturnist. Prerequisite: Medicine Required Clerkship Offered: AWSpS.

MEDECK 643 P-Clinical Cardiology and Electrocardiography - WY (8) The student will spend time in a consultative cardiology clinic. They will see new patients independently and present to the attending cardiologist on a daily basis. They will perform inpatient consultations and follow in patients. They will see ED patients in consultation. The student will spend time observing in the echocardiographic suite, the pacemaker clinic and the cardiac catheterization laboratory. Prerequisite: Successful completion of third year Medicine Clerkship Offered: AWSpS.

MEDECK 644 P-Clinical Dermatology - Wyoming (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 651 P-Ward Medicine Subinternship - Alaska (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 652 P-Infectious Disease Consults - Alaska (8) Intensive four week experience caring for patients with complex infectious diseases and immune compromise. Outpatient management of HIV-infected patients, execution of antimicrobial stewardship program, and exposure to treatment of a wide range of infectious disease pathology seen in Alaska. Prerequisite: Required internal medicine clerkship.

MEDECK 653 P-Clinical Cardiology and Electrocardiography - Alaska (8) Clerkship in clinical cardiology. Combined inpatient-outpatient assignments, ECG interpretation. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 654 P-Clinical Dermatology - Alaska (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 657 Clinical Hematology/Oncology (8) Work with patients with benign and malignant hematology disorders and patients with various solid tumors, with an emphasis on those with GI malignancies, breast, lung, and head/neck cancers. Procedures performed include bone marrow biopsy and aspirate and lumbar puncture with intrathecal chemotherapy. Learn about the diagnostic workup, staging, and treatment of such cancers. Learn about therapies to treat hematologic diseases and solid tumors. Prerequisite: Successful completion of third year required medicine clerkship Offered: AWSpS.

MEDECK 658 P-Clinical Infectious Diseases Alaska (8) Students participate in clinic and in the consulting service throughout the hospital, attend ICU, antimicrobial stewardship rounds, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four

weeks) . Prerequisite: third-year required Medicine clerkship; fourth-year standing. Offered: AWSpS.

MEDECK 660 P-Critical Care - Alaska (8) Advanced patient care clerkship on the MICU service at Alaska Native Medical Center. Through direct patient care responsibilities, students learn about critical care illness and gain experience in application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 661 P-Ward Medicine Subinternship-Billings, MT (8) Students act in the capacity of interns on the medical wards under supervision of the house staff and visiting physicians. They attend all regular medicine rounds and conference as their schedules permit. Prerequisite: Third year required Medicine clerkship.

MEDECK 662 Outpatient Medicine - Montana (8) Advanced ambulatory medicine elective at the Bozeman Health Internal Medicine Clinic. Students spend the most time in the Bozeman Health Internal Med Clinic, a primary care clinic serving a series of complex patients in the outpatient setting. Students see 3-4 patients a half day with a high level of autonomy. Time is also spent in medicine specialty clinics, as developed or desired. Prerequisite: successful completion of Patient Care Phase. Offered: AWSpS.

MEDECK 664 P-Clinical Dermatology - Montana (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 665 P-Clinical Endocrinology- Bozeman (8) Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals in Bozeman, MT. Prerequisite: Third-year required Medicine Clerkship Offered: AWSpS.

MEDECK 667 Hospitalist Medicine Subinternship-MT (8) Intensive experience in hospital medicine. The student works primarily with an attending hospitalist or nocturnist. Prerequisite: Successful

completion of required medicine clerkship. Offered: AWSpS.

MEDECK 668 Critical Care Medicine, Great Falls, MT (8) Students evaluate and manage critically ill patients in a mixed medical, surgical, cardiothoracic and neuro ICU. Students act as the primary provider and work closely with the intensivist and interprofessional team. Students will encounter a patient with septic shock on vasopressors, a patient with respiratory failure on mechanical ventilation, a post-cardiothoracic surgery patient, and a patient with a primary neurological insult. Prerequisite: Successful completion of the third year medicine clerkship Offered: AWSpS.

MEDECK 669 P-Nephrology and Fluid Balance - Montana (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Credit/no-credit only. Offered: AWSpS.

MEDECK 670 P-Clinical Medicine Critical Care - Idaho Falls (8) Inpatient critical care rotation in community hospital setting at Eastern Idaho Regional Medical Center in Idaho Falls. Assist in diagnosis and management of common ICU problems and major trauma resuscitation under supervision of critical care physicians. Exposure to common ICU problems, which may include sepsis, respiratory failure, hypotension, organ failure, and gastrointestinal hemorrhage. Students work as multidisciplinary team. (Four weeks) Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 671 P-Ward Medicine Subinternship - Idaho (*, max. 24) Students act in the capacity of interns on the medical wards under supervision of house staff and visiting physicians. They attend all regular medicine rounds and conferences as their schedules permit. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 672 P-Clinical Endocrinology and Metabolism - Idaho Falls, ID (8) Clerkship in clinical endocrinology and metabolism combined inpatient and outpatient assignments at selected hospitals. Prerequisite: medicine required clerkship. Offered: AWSpS.

MEDECK 673 P-Clinical Cardiology and Electrocardiography - Idaho (8) Clerkship in clinical cardiology-combined inpatient-outpatient assignments, ECG interpretation. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 674 P-Clinical Dermatology - Idaho (8) Participation in dermatology clinics and inpatient consultations. A continuing series of teaching seminars and weekly dermatopathology conferences. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 675 P-Clinical Allergy and Immunology - Boise, ID (4) Clinical experience seeing a combination of new and recheck patients with allergy, asthma and immunology disorders for example but not limited to, seasonal allergies, allergic rashes, asthma, chronic cough, chronic sinusitis, contact dermatitis, bee sting allergy, and food allergy. Prerequisite: Medicine Clerkship and 4th year standing.

MEDECK 676 P-Critical Gastroenterology - Boise, ID (8) Clerkship in clinical gastroenterology in Boise, ID. Participation in consulting ward rounds, procedures, conferences, and selected clinics with full-time divisional staff, plus directed tutorial work.

MEDECK 677 P-Clinical Hematology/Oncology - Idaho (8) Outpatient and inpatient experience with hematologic/oncologic disorders. The elective includes teaching rounds, conferences, and evaluation of laboratory work. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 678 P-Clinical Infectious Diseases - Idaho (8) Students participate in the consulting service throughout the hospital, attend daily plate rounds, conferences, and seminars. Participate in consulting service throughout hospital to learn microbiological aspects of infectious diseases through the clinical laboratories. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 679 P-Nephrology and Fluid Balance - Idaho (8) Students see clinical nephrologic problems under close supervision, participate in nephrology and transplant rounds, see consults, and work up patients in renal clinics. (Four weeks) . Prerequisite:

third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 680 P-Clinical Respiratory Disease and Critical Care Medicine - Idaho (8) Training in respiratory disease diagnosis and pulmonary therapy, with special emphasis on cardiopulmonary function testing and interpretation. Inpatient and outpatient teaching rounds, conferences, and basic science integration. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 681 P-Clinical Aspects of Aging - Idaho (8) Work with elderly patients as subintern with senior care program. Inpatient and ambulatory setting in nursing homes and patients' homes. Interdisciplinary approach. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 682 P-critical Care Subinternship- Idaho (8) Students function at the sub-intern level on the MICU service. Through direct patient care responsibilities, students learn about various forms of critical care illness and gain experience in the application of mechanical ventilation, arterial blood gas analysis, and palliative care medicine. (Four Weeks) . Prerequisite: Third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 683 P-Outpatient Clinical Cardiology Virginia Mason (8) Four-week clerkship in clinical outpatient cardiology at Virginia Mason Heart Institute. Covers ECG interpretation, stress testing, coronary angiography, stenting EP procedures, and echo cardiography. Prerequisite: third-year required Internal Medicine clerkship. Offered: AWSpS.

MEDECK 684 Subinternship in Hospital Medicine and Hematology/Oncology - Seattle, WA (8) Intensive experience in hospital medicine in which the student acts as an intern for the Medicine O service.

MEDECK 686 P-Advanced Clinical Dermatology Clinic - Idaho (8) Advanced clinical dermatology clerkship. (Four weeks) . Prerequisite: third-year required Medicine clerkship; either MEDECK 604, MEDECK 634, MEDECK 644, MEDECK 664, or MEDECK 674. Offered: AWSpS.

MEDECK 687 Advanced Outpatient Clerkship-Idaho

(8) The advanced outpatient clerkship at the Boise Veterans Medical Center (VAMC) is designed for medical students with an interest in solidifying ambulatory clinical knowledge and skills, with a unique focus on learning new models of primary care delivery. This four-week, full time clinical experience based in a primary care teaching clinic at the Boise VAMC will focus on inter-professional collaboration and the patient centered medical home model. Prerequisite: successful completion of the medicine clerkship. Offered: AWSpS.

MEDECK 690 P-General Internal Medicine - Shiprock

(8) Clerkship located at the Northern Navajo Medical Center in Shiprock, New Mexico. Students are involved in all aspects of patient care, including home visits, ambulatory care, and hospital stays. (Four weeks) . Prerequisite: third-year required Medicine clerkship. Offered: AWSpS.

MEDECK 691 P-Medicine Special Electives - Seattle

(* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 692 P-Medicine Special Electives -

Washington (* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 693 P-Medicine Special Electives -

Wyoming (* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 694 P-Medicine Special Electives - Alaska

(* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 695 P-Medicine Special Electives -

Montana (* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 696 P-Medicine Special Electives - Idaho

(* , max. 24) By special arrangement for qualified students, special clerkships or externships. Prerequisite: permission of department.

MEDECK 697 P-Medicine Special Electives - Away (* ,

max. 24) Special clerkship, externship, or research opportunities at times made available at institutions other than University of Washington. Faculty advise students of opportunities. Students obtain from Dean's office a special assignment form at least three months before preregistration. (Two, four, six, or twelve weeks) . Prerequisite: permission of department.

MEDECK 701 P-Occupational and Environmental Medicine (8)

Overview of Occupation and Environmental Medicine subspecialty. Introduction to Washington Worker's Compensation system and diagnosis and treatment of occupational injuries and illness. Students complete special projects in OEM aligning with student interest, participate in worksite visits, and attend conferences.

MEDECK 704 P-Intro to Clinical Dermatology (2

Wks) (4) Students develop a basic approach to diagnosis and management of common skin conditions. Students see patients in dermatology resident under the supervision of dermatology faculty. (2-weeks) Offered: AWSpS.

MEDECK 711 P-Introduction to Community Internal Medicine Subspecialty Practice (4)

Introduction to the outpatient Medicine specialty clinics of Endocrinology, Gastroenterology (GI) , and Rheumatology in the Olympia medical community. Two weeks. Offered: Sp.

MEDECK 713 P-Intro to Clinical Nutrition (2 Wks) (4)

Develop a basic approach to the assessment of nutritional status and management of nutrition across a variety of disease states. Mix of hands-on patient centered learning, interactive didactic based teaching sessions and independent learning. Exposure to inpatients and outpatients. Prerequisite: Completion of Foundation Curriculum. Offered: Sp.

MEDECK 714 Intro to Opioid Use Disorder (4)

Intensive experience in the clinical care of patients with opioid use disorder in the inpatient and outpatient settings. Students will evaluate inpatients with opioid use disorder, providing treatment recommendations and linkage to outpatient services with appropriate supervision. Will work with patients in outpatient settings including primary care-based and opioid treatment programs. Students will complete training for buprenorphine waiver.

Prerequisite: successful completion of medicine clerkship. Offered: AWSpS.

MEDECK 724 P-Interprofessional Hospital Medicine

(4) Introduction to inpatient internal medicine focusing on interprofessional hospital services. Students work as a member of Hospitalist service, managing 1-2 patients, under direction of an attending physician with afternoons dedicated to rounding with other interprofessional services.

MEDECK 744 P-Intro to Clinical Dermatology (2

Wks) - Sheridan, WY (4) Students develop a basic approach to diagnosis and management of common skin conditions. Students see patients in dermatology clinic while paired with a PA and attending dermatologist. Prerequisite: Completion of Foundation Curriculum. Offered: AWSpS.

MEDECK 764 Clinical Dermatology-Bozeman, MT (4-

8, max. 8) Students will provide surgical assist for cancer procedures, and will have a variety of general-dermatologic clinic exposures and patient care. Shared time between surgical and general dermatology. Prerequisite: successful completion of medicine clerkship. Offered: AWSpS.

MEDECK 774 P-Intro to Clinical Dermatology (2

Wks) - Boise, ID (4) Clinical rotation designed to help students develop a basic approach to the diagnosis and management of common skin conditions. They will see patients in dermatology clinic at Gem State, Boise, Idaho. Offered: Sp.

REQUIRED CLERKSHIPS

MEDRCK 601 P-Clinical Clerkship (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 608 Clinical Clerkship Seattle-Tacoma (1-24, max. 25) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and

participate in a six-week outpatient experience emphasizing continuity of care. Inpatient daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Prerequisite: Successful completion of Foundations curriculum. Offered: AWSpS.

MEDRCK 610 P-Clinical Clerkship Seattle-Shelton, WA (24)

Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experiences emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time) . Offered: AWSpS.

MEDRCK 612 P-Clinical Clerkship - Seattle-Madigan (*, max. 24)

Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 614 P-Clinical Clerkship - Seattle-

Montesano (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 615 Clinical Clerkship Seattle-Longview (1-

24, max. 25) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Prerequisite:

Successful completion of foundation years curriculum. Offered: AWSpS.

MEDRCK 616 P-Clinical Clerkship Seattle-Olympia (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 617 P-Clinical Clerkship Seattle-Port Townsend (*, max. 24) *Paauw* Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 618 P-LIC Clinical Clerkship (24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experiences emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (38-44 week integrated clerkship, full-time) . Offered: AWSpS.

MEDRCK 621 P-Clinical Clerkship - Spokane (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Some students can schedule outpatient time in Pullman, WA. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 623 Clinical Clerkship Seattle-Spokane (1-24, max. 25) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and

participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Prerequisite: successful completion of foundation years curriculum. Offered: AWSpS.

MEDRCK 624 P-Clinical Clerkship - Seattle-Wenatchee (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 625 Clinical Clerkship Seattle - Moses Lake, WA (1-24, max. 25) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time) .

MEDRCK 630 P-Write Medicine Clinical Clerkship (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (18-22 week integrated clerkship, full-time.)

MEDRCK 632 P-Clinical Clerkship - Seattle-Jackson (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWSpS.

MEDRCK 633 P-Clinical Clerkship Seattle- Gillette (1-24, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. (Twelve weeks, full-time) . Offered: AWPpS.

MEDRCK 634 P-Clinical Clerkship - Seattle-Sheridan (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 635 Clinical Clerkship-Seattle-Casper-Cody (1-24, max. 25) Third -year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Prerequisite: Successful completion of Foundation years curriculum. Offered: AWPpS.

MEDRCK 636 P-Clinical Clerkship - Seattle-Douglas (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 638 P-Clinical Clerkship - Seattle-Lander (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising

physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 652 P-Clinical Clerkship - Seattle-Anchorage (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 653 P-Clinical Clerkship Seattle- ANMC (1-24, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. (Twelve weeks, full-time) . Offered: AWPpS.

MEDRCK 654 P-Clinical Clerkship - Seattle-Soldotna (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 672 P-Clinical Clerkship - Seattle-Billings (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPpS.

MEDRCK 673 P-Clinical Clerkship Seattle-Great Falls (*, max. 24) *Paauw* Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with

resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time) . Offered: AWPSP.

MEDRCK 674 P-Clinical Clerkship - Seattle-Dillon (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPSP.

MEDRCK 675 P-Clinical Clerkship Boise- Billings (1-24, max. 24) Third -year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full time) Offered: AWPSP.

MEDRCK 676 P-Clinical Clerkship - Seattle-Missoula (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPSP.

MEDRCK 678 P-Clinical Clerkship - Seattle-Bozeman (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPSP.

MEDRCK 691 P-Clinical Clerkship - Boise (*, max. 24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a

teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. (Twelve weeks, full-time.) Offered: AWPSP.

MEDRCK 693 Clinical Clerkship Seattle-Twin Falls (24) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Prerequisite: Successful completion of Foundation years curriculum. Offered: AWPSP.

MEDRCK 697 Clinical Clerkship Boise-Twin Falls (1-24, max. 25) Third-year medical students assume increasing responsibility for care of hospitalized patients in a teaching-hospital setting and participate in a four-week outpatient experience emphasizing continuity of care. Daily rounds with resident and attending physicians, with lectures and conferences. Progress evaluated by supervising physicians and a written examination. Prerequisite: Successful completion of Foundation years curriculum. Offered: AWPSP.

MICROBIOLOGY

MICROM 101 Microbes and Society (5) NW Intended for liberal arts majors and students not majoring in the biological sciences. Focuses on activities of bacteria, viruses, and other microorganisms, and their influence on humans. Microbe-related topics include disease, bioterrorism, food, biotechnology, and ecology. Examines the nature of scientific inquiry, along with major biological concepts.

MICROM 301 General Microbiology (3) NW D. *Anderson, R. Bumgarner* Acquaints students with microorganisms and their activities. Topics include microbial cell structure and function, metabolism, microbial genetics, and the role of microorganisms in disease, immunity, and other selected applied areas. Prerequisite: either CHEM 120, CHEM 140, CHEM 142, or CHEM 145. Offered: AWPSP.

MICROM 302 General Microbiology Laboratory (2)

NW Laboratory course primarily for students taking MICROM 301. Covers a variety of microbiological techniques, with experiments designed to illustrate major concepts of bacteriology, virology, and immunology. No auditors. Offered: ASpS.

MICROM 402 Fundamentals of General Microbiology Laboratory (3) NW

Isolation of a broad range of nonpathogenic bacteria from natural sources, using selective and enrichment techniques, with microscopic, biochemical, and molecular identification. Related exercises include genetics, physiology, quantitation, and growth energetics. Prerequisite: BIOL 200. Offered: ASp.

MICROM 410 Fundamentals of General

Microbiology I (3) NW Survey of the microbial world, metabolism, biosynthesis, regulation, growth, structure, and function. Required for students majoring in microbiology; recommended for students majoring in biology. Prerequisite: minimum grade of 2.3 in BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Instructors: Parsek, Traxler Offered: A.

MICROM 411 Bacterial Genetics (4) NW Molecular genetics: description of fundamental genetic processes such as mutation, repair, genetic exchange, recombination, and gene expression. Use of genetic strategies to analyze complex biological processes. Focuses on prokaryotic organisms. Prerequisite: BIOL 200; either CHEM 223, CHEM 237, or CHEM 335. Offered: W.

MICROM 412 Prokaryotic Diversity (3) NW

Structure, biochemical properties, and genetics of the major groups of prokaryotes. Prerequisite: BIOL 200. Instructors: Greenberg, Leigh Offered: Sp.

MICROM 413 Special Topics in Microbiology (1, max. 3) Examines current subjects in microbiology. Credit/no-credit only.

MICROM 431 Prokaryotic Recombinant DNA

Techniques (3) NW Laboratory course emphasizing concepts and techniques/methodologies in recombinant DNA research employing bacteria and their viruses. Topics and experiments/demonstrations include genomic and plasmid DNA isolation, restriction mapping, cloning, transposon mutagenesis, sequencing, and Western

and Southern blotting. No auditors. Prerequisite: either BIOL 200 or MICROM 301. Offered: W.

MICROM 435 Microbial Ecology (3) NW

Consideration of the various roles that microorganisms, particularly bacteria and cyanobacteria, play in environmental processes. The interrelationships among microorganisms and the effects of the physical, chemical, and biological properties of their environment are discussed and assessed. Prerequisite: BIOL 180. Instructors: Stahl

MICROM 442 Medical Bacteriology (3) NW

Medically important bacterial pathogens are discussed in terms of the clinical, therapeutic, and epidemiological aspects of diseases caused by them, molecular mechanisms of pathogenesis and their identification in the clinical laboratory. Laboratory course, MICROM 443 coordinates. Prerequisite: BIOL 200. Instructors: Cookson Offered: W.

MICROM 443 Medical Bacteriology Laboratory (3)

NW Required for medical technology students, microbiology majors; elective for medical students. Procedures for isolation and identification of pathogenic bacteria, testing their susceptibility to antibiotics. No auditors. Prerequisite: BIOL 200. Offered: AW.

MICROM 445 Medical Virology (3) NW

Introduces medical virology emphasizing basic understanding of the pathogenesis and replication of medically important viruses including the spread, diagnosis, epidemiology, treatment, and prevention of human viral diseases. Prerequisite: either BIOL 180 or BIOL 200; Sp. Instructors: Lagunoff, Smith

MICROM 450 Molecular Biology of Viruses (3) NW

Introduction to the molecular biology of viruses and virus-host relationships. Designed for advanced undergraduates and graduate students in the biological sciences. Coverage includes bacterial and animal viruses, with an emphasis on the molecular mechanisms of viral gene expression and regulation. Prerequisite: BIOL 200. Instructors: Champoux Offered: W.

MICROM 460 Medical Mycology and Parasitology

(3) D. ANDERSON, M. CHANDLER, C. FISHER, S. MURPHY Examines medically important fungi and parasites in terms of the symptoms, diagnosis, epidemiology, and therapy of the diseases they

cause as well as their mechanisms of pathogenesis. The laboratory course MICROM 461 complements this lecture course but is not required. Prerequisite: BIOL 200 or MICROM 301 Offered: Sp.

MICROM 461 Medical Mycology and Parasitology Laboratory (2) *D. ANDERSON, M. CHANDLER* Hands-on practice to identify medically important fungi and parasites, using live, preserved, and stained samples. Demonstrations along with limited procedures are used to illustrate important features used to distinguish organisms. Prerequisite: Prerequisite: MICROM 460, which may be taken concurrently. Offered: Sp.

MICROM 482 Peer Teaching Assistants in Microbiology (1-5, max. 10) Direct experience in teaching a microbiology laboratory class. Peer TA's attend concurrent accompanying lecture course, meet weekly to coordinate, give introductory lab remarks, supervise the execution of lab exercises, and assist in preparing/grading of quizzes/exams. Training in teaching techniques, approaches. Student evaluation provided. Prerequisite: MICROM 402; MICROM 410. Credit/no-credit only. Offered: AWSpS.

MICROM 495 Honors Undergraduate Research (*-) *Leigh* Specific problems in microbiology or immunology. Offered: AWSpS.

MICROM 496 Undergraduate Library Research (2) An introduction to library research techniques and to microbiological literature. Staff assign a topic and supervise the project. Offered: AWSpS.

MICROM 499 Undergraduate Laboratory Research (*-, max. 35) *Leigh* Specific problems in microbiology or immunology. Credit/no-credit only. Offered: AWSpS.

MICROM 500 Introduction to Research (*, max. 20) Introduction to research areas of the faculty and the techniques employed in their investigations. Prerequisite: graduate standing in microbiology or permission of instructor. Credit/no-credit only. Offered: AWSpS.

MICROM 520 Seminar (1, max. 30) *Fang* Credit/no-credit only. Offered: AWSpS.

MICROM 522 Current Research in Microbiology (1, max. 30) Weekly student and faculty seminar presentations based on the current literature. Prerequisite: graduate standing in microbiology. Instructors: Harwood, Merrikh, Parsek Credit/no-credit only. Offered: AWSpS.

MICROM 526 Research of Cell Surface Problems (1, max. 30) Weekly research seminar and discussion of scientific literature pertaining to the process of membrane protein biogenesis. Prerequisite: permission of instructor. Instructors: Traxler Credit/no-credit only.

MICROM 529 Mechanisms of Bacterial Pathogenesis (1, max. 30) Student and faculty seminar presentations based on current research pertaining to mechanisms of bacterial pathogenesis at the molecular and cellular levels. Prerequisite: graduate standing in microbiology. Instructors: Fang Credit/no-credit only. Offered: AWSpS.

MICROM 532 Methanogenesis Research Meeting (1, max. 30) Weekly seminar concerning research topics in the genetics and biochemistry of selected bacteria. Prerequisite: MICROM 410, permission of instructor. Instructors: Leigh Credit/no-credit only. Offered: AWSpS.

MICROM 533 Herpesvirus Research Meeting (1, max. 30) Weekly research seminar and discussion of scientific literature pertaining to the study of molecular virology of Kaposi's Sarcoma-associated herpesvirus. Prerequisite: permission of instructor. Instructors: Lagunoff Credit/no-credit only. Offered: AWSpS.

MICROM 534 Research Seminar in Salmonella Pathogenesis (1, max. 30) *Fang* Provides a formal group setting for discussion and evaluation of a student's research progress. Credit/no-credit only. Offered: AWSpS.

MICROM 540 Virology (3) *J. Hyde, M. Lagunoff, J. Smith* The molecular biology, transmission, and pathogenesis of human viruses will be explored. In addition to general principles of virology, lectures and paper discussions will focus on specific human pathogens including HIV, herpesviruses, ebolaviruses, alphaviruses, and adenoviruses, among others. Recommended: one year of undergraduate

cellular and molecular biology Offered: A, even years.

MICROM 553 Molecular Interactions of Bacteria with their Hosts (3) The processes bacteria employ to shape interactions with their hosts will be explored in molecular detail through selected examples in the literature. Prerequisite: One year of undergraduate cellular and molecular biology. ; recommended: An introductory course in microbiology is recommended. Offered: A, odd years.

MICROM 554 Seminar in Molecular and Medical Microbiology (1, max. 15) Weekly one-hour seminar in which recent advances in molecular biology of microbial pathogenesis or the current research of the participants is presented and discussed critically. Prerequisite: permission of instructor. Instructors: Cookson Credit/no-credit only. Offered: AWSp.

MICROM 555 Advanced Clinical Microbiology (2.5) Attendance at daily plate rounds of the Division of Clinical Microbiology. Designed to increase understanding of clinical microbiological work and its application to the care of the patient. Prerequisite: MICROM 443 and permission of instructor. Instructors: Butler-Wu, Fang Credit/no-credit only. Offered: AWSp.

MICROM 560 Research and Journal Club in Retrovirology (1, max. 30) Weekly research seminar and discussion of literature in areas of retroviral replication and transformation. Prerequisite: graduate standing or permission of instructor. Instructors: Linial Offered: AWSpS.

MICROM 562 Oncogene and Retrovirus Research Seminar (1, max. 30) Weekly discussions of ongoing research related to retroviral replication, retroviral oncogenes and pathology. Prerequisite: graduate standing or permission of instructor. Instructors: Linial, Overbaugh Offered: AWSpS.

MICROM 585 Research in Cell and Molecular Biology (1, max. 30) Weekly research seminar. Prerequisite: permission of instructor. Instructors: Champoux Credit/no-credit only. Offered: AWSpS.

MICROM 588 Research in Applied Microbiology (1, max. 30) Weekly research seminar and discussion of scientific literature pertaining to applied

microbiology. Prerequisite: permission of instructor. Instructors: Lidstrom Credit/no-credit only. Offered: jointly with CHEM E 588; AWSpS.

MICROM 599 Research Presentations (2) Current research review. Credit/no-credit only.

MICROM 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

MICROM 650 Microbiology Clerkship in Scientific Teaching ([1-6]-, max. 15) The pedagogical requirement addressed by this course is direct experience in teaching undergraduate microbiology classes under the direct oversight and mentorship of regular course instructors. By the end of this course, the graduate student will have developed skills, abilities and insights as a science educator and communicator through the sustained support and guidance of the instructor of record. Prerequisite: PhD student standing. Offered: AWSp.

MICROM 700 Master's Thesis (*-) Credit/no-credit only.

MICROM 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

NEUROLOGICAL SURGERY

NEUR S 498 Undergraduate Thesis (*, max. 35) *D' Ambrosio, Ellenbogen, Hevner, Horner, MacDonald, Mourad, Morrison, Ojemann, Ramirez* Offered: AWSpS.

NEUR S 499 Undergraduate Research (*, max. 35) Investigation of special problems as an intimate member of the research team in the neurological surgery laboratories. Research to lead to a thesis, if desired. List of projects available on request. Prerequisite: permission of instructor. Instructors: *D' Ambrosio, Ellenbogen, Ferreira, Hevner, Horner, MacDonald, Mourad, Morrison, Ojemann, Ramirez, Rostomily, Silber* Offered: AWSpS.

NEUR S 505 P-Preceptorship in Academic Neurosurgery (1, max. 12) Opportunity for first- and second-year medical students to observe the research, teaching, and patient-care activities of academic neurosurgery. Prerequisite: permission of instructor. Instructors: Chestnut, Ellenbogen,

Ferreira, Hofstetter, Kim, Lee, Ojemann, Rostomily, Sekar, Silbergeld, Zhang Offered: AWSpS.

NEUR S 655 P-Clinical Neurosurgery Clerkship-Spokane WA (1-8, max. 8) Provides the medical student with exposure to common neurologic and neurosurgical problems such as trauma, hydrocephalus, stroke, back pain, bleeds in the head, and tumors. Satisfies the requirement of the Neurology clerkship requirement. For third- and fourth-year medical students. Offered: AWSpS.

NEUR S 665 P-Clinical Neurosurgery Clerkship (8) *Ellenbogen, Lee* Provides the medical student with exposure to common neurologic and neurosurgical problems such as trauma, hydrocephalus, stroke, back pain, bleeds in the head, and tumors. Satisfies the requirement of the Neurology clerkship requirement. For third- and fourth-year medical students.

NEUR S 680 P-Neurological Surgery Clerkship (*, max. 8) Student serves clinical clerkship as an intimate member of the staff, participating in inpatient and outpatient care, both preoperative and postoperative, involving neurological surgery patients. University of Washington Medical Center or a University-affiliated hospital may be selected, subject to approval of the department. (Four weeks) . Prerequisite: HUBIO 563. Instructors: Ellenbogen, Lee Offered: AWSpS.

NEUR S 697 P-Neurological Surgery Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship, externship, or research opportunities made available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor. Instructors: Ellenbogen Offered: AWSpS.

NEUR S 699 P-WWAMI Neurological Surgery Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department. Instructors: Ellenbogen

NEUROLOGY

NEURL 495 Community Rehabilitation of the Neurologically Impaired: Internship (*, max. 5) *Fraser, Clemmons* Supervised work with a neurologically disabled vocational rehabilitation population within a multidisciplinary vocational rehabilitation unit. Offered: AWSpS.

NEURL 499 Undergraduate Research (*, max. 25) Provides an opportunity to gain research experience and direct participation in clinical or basic science investigation in neurological topics. Offered: AWSpS.

NEURL 505 P-Preceptorship in Neurology (1, max. 12) Provides an opportunity for first and second-year medical students to gain personal experience with neurology practice situations by being stationed with carefully selected clinical faculty members in their offices. Prerequisite: permission of instructor. Instructors: Kraus Offered: Sp.

NEURL 536 Topics in Clinical Neurology (1) *Spain* Lectures on epilepsy, stroke, coma, drug overdose, dementia, headache, myelopathies, infectious disease. Credit/no-credit only. Offered: S.

NEURL 555 Frontiers in Neuroimmunology (1) Current concepts and developments in neuroimmunology. Prerequisite: either NBIO 301 or IMMUN 441. Instructors: Moeller Credit/no-credit only. Offered: AWSpS.

NEURL 559 Neurobiology of Disease (3) Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases, autism, psychosis, anxiety disorders, and mood disorders. Offered: jointly with NEURO 559/P BIO 559.

NEURL 598 P-Neurology Independent Study and Radiation (1-8, max. 8) Designed for medical students required to complete additional study related to the required Neurology clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Offered: AWSpS.

NEURL 600 P-Independent Study or Research (*)

Prerequisite: Instructor permission.

NEURL 631 P- Introduction to Neurology - Cheyenne

(8) Provides the medical student with a general understanding of basic clinical neurology, at Cheyenne Regional Medical Center Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 632 P-Introduction to Neurology - Casper,

WY (8) Provides the medical student with a general understanding of basic clinical neurology in Casper, WY. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Instructors: Kraus Offered: AWSpS.

NEURL 633 P-Introduction to Neurology -

Anchorage - Alaska Neurology Clinic (8) Provides the medical student with a general understanding of basic clinical neurology. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Instructors: Kraus Offered: AWSpS.

NEURL 634 P-Introduction to Neurology -

Anchorage - ANMC (8) Provides the medical student with a general understanding of basic clinical neurology at Alaska Native Medical Center in Anchorage, Alaska. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 636 P-Introduction to Neurology-Kalispell (8)

Provides the medical student with a general understanding of basic clinical neurology, at kalispell Regional Medical Center. For third- or fourth-year students. Prerequisite: Medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 637 P-Introduction to Neurology-Missoula

(8) Provides the medical student with a general understanding of basic clinical neurology at Montana Neurobehavioral Specialist in Missoula, MT. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 638 P-Introduction to Neurology - Great

Falls (8) Provides the medical student with a general understanding of basic clinical neurology at Advanced Neurology Specialists in Great Falls,

Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 639 P-Introduction to Neurology - Billings Regional Neuroscience Clinic (8)

Provides the medical student with a general understanding of basic clinical neurology at Neurology Associates in Billings, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 640 P-Introduction to Neurology - Billings Clinic (8)

Provides the medical student with a general understanding of basic clinical neurology at Billings Clinic in Billings, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 641 P-Introduction to Neurology- Bozeman

(8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Joshua Knappenberger in Bozeman, Montana. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 642 P-Introduction to Neurology- St. Lukes

Boise (8) Provides the medical student with a general understanding of basic clinical neurology. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Instructors: Kraus Offered: AWSpS.

NEURL 643 P-Introduction to Neurology - Dr. Lyons,

Boise (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. George Lyons in Boise, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 644 P-Introduction to Neurology - Idaho

Falls EINA (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Stephen Vincent in Idaho Falls, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 645 P-Introduction to Neurology - Idaho

Falls Neurology (8) Provides the medical student with a general understanding of basic clinical

neurology at the office of Dr. Erich Garland in Idaho Falls, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 647 P-Introduction to Neurology - Boise St. Alphonsus (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Karin Lindholm in Boise, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 648 P-Introduction to Neurology - Coeur D' Alene (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Michael Coats in Coeur d' Alene, Idaho. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 649 P-Introduction to Neurology - Tacoma St. Joseph (8) Provides the medical student with a general understanding of basic clinical neurology in Tacoma, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 650 P-Introduction to Neurology - Lacey, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Lacey, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 651 P-Introduction to Neurology - Kirkland, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Kirkland, WA. For third- or fourth-year students. Prerequisite: either medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 652 P-Introduction to Neurology - Spokane Rockwood Clinic (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 653 P-Introduction to Neurology - Spokane CMA, WA (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, WA. For third- or fourth-year students.

Prerequisite: either medicine, family medicine, surgery, or pediatrics.

NEURL 654 P-Introduction to Neurology - Selkirk (8) Provides the medical student with a general understanding of basic clinical neurology at Selkirk Neurology in Spokane, Washington. For third- or fourth-year students. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 655 P-Introduction to Neurology - Spokane (8) Provides the medical student with a general understanding of basic clinical neurology in Spokane, Washington. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Offered: AWSpS.

NEURL 656 P-Introduction to Neurology - Wenatchee (8) Provides the medical student with a general understanding of basic clinical neurology at Wenatchee Valley Medical Center in Wenatchee, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 657 P-Introduction to Neurology - Yakima (8) Provides the medical student with a general understanding of basic clinical neurology at the office of Dr. Richard Sloop in Yakima, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 658 P-Introduction to Neurology - Olympia Neurology (8) Provides the medical student with a general understanding of basic clinical neurology at Olympia Neurology in Olympia, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 659 P-Introduction to Neurology - NW Neurology, Lakewood (8) Provides the medical student with a general understanding of basic clinical neurology at Northwest Neurology, a Franciscan Medical Group clinic, in Lakewood, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 660 P-Introduction to Neurology - Madigan (8) Provides the medical student with a general understanding of basic clinical neurology at Madigan

Army Medical Center in Tacoma, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 661 P-Introduction to Neurology - Tacoma/Puyallup Multicare (8) Provides the medical student with a general understanding of basic clinical neurology at Neurology and Neurosurgery Associates in Tacoma and Puyallup, Washington. Students spend time at both clinics. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 662 P-Introduction to Neurology - Group Health, Tacoma (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Tacoma Medical Center in Tacoma, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 663 P-Introduction to Neurology - Group Health, Eastside (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Eastside Specialty Center in Redmond, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 664 P-Introduction to Neurology - Burien (8) Provides the medical student with a general understanding of basic clinical neurology at South Seattle Neurology Associates in Burien. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 665 P-Introduction to Neurology- UWMC (8) Provides the medical student with a general understanding of basic clinical neurology, at UWMC. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics. Instructors: Kraus Offered: AWSpS.

NEURL 666 P-Introduction to Neurology - HMC (8) Provides the medical student with a general understanding of basic clinical neurology at Harborview Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 667 P-Introduction to Neurology - VA (8) Provides the medical student with a general

understanding of basic clinical neurology at the VA Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 668 P-Introduction to Neurology - Northwest Hospital (8) Provides the medical student with a general understanding of basic clinical neurology at Northwest Hospital in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 669 P-Introduction to Neurology - Virginia Mason (8) Provides the medical student with a general understanding of basic clinical neurology at Virginia Mason Medical Center in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 670 P-Introduction to Neurology - Minor and James (8) Provides the medical student with a general understanding of basic clinical neurology at Minor and James Medical in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 671 P-Introduction to Neurology - Swedish (8) Provides the medical student with a general understanding of basic clinical neurology at Swedish Medical Center I in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 672 P-Introduction to Neurology - Group Health, Seattle (8) Provides the medical student with a general understanding of basic clinical neurology at Group Health Capitol Hill Campus in Seattle, Washington. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics.

NEURL 673 P-Introduction to Neurology - Renton, Valley Medical Center (8) Provides the medical student with a general understanding of basic clinical neurology in Renton, WA. For third- or fourth-year students. Prerequisite: medicine, or family medicine, or surgery, or pediatrics.

NEURL 674 P-Introduction to Neurology- Bellingham (8) Provides the medical student with a

general understanding of basic clinical neurology at Peace Health in Bellingham, Washington.

Prerequisite: Completion of one required clerkship in medicine, family medicine, surgery or pediatrics.

Offered: AWSpS.

NEURL 675 P-Introduction to Neurology- Vancouver (8) Provides the medical student with a general understanding of basic clinical neurology in Vancouver, Washington. For third- or fourth-year students. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 681 P-Seizure Clinic Clerkship (2.5)

Evaluation and follow-up of patients with seizure disorders. Limited contact with inpatients.

Prerequisite: MED 665 and permission of instructor.

Instructors: A. Wilensky Offered: AWSpS.

NEURL 685 Epilepsy and Clinical Electroencephalography (4/8, max. 8) Miller

Introduction into epilepsy and the use and interpretation of the electroencephalogram and other clinical studies used to assess it, under the direct supervision of several of the faculty epileptologists and clinical neurophysiologists.

Offered: AWSpS.

NEURL 686 P-Clinical Neurology (8) Swanson

Clerkship including both inpatient and outpatient experiences and didactic sessions on neurological subjects. Student assigned to one of the affiliated hospitals and supervised by neurology residents and full-time staff. Offered: AWSpS.

NEURL 687 Advanced Clerkship in Child Neurology (4, max. 8)

Advanced course in neurology dealing with neurological disease in children. Supervision by child neurology residents and attending.

Prerequisite: NEURL 665, third- and fourth-year medical students. (Limit: one student.) Instructors: Gospe Offered: AWSpS.

NEURL 688 Elective Clerkship in Child Neurology (8)

Fundamentals of the neurological history and exam for children. As part of a team at Seattle Children's Hospital, students have opportunity for both outpatient and inpatient experiences. Prerequisite: completion of one required clerkship in medicine, family medicine, surgery, or pediatrics. Offered: AWSpS.

NEURL 697 Neurology Away Elective (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions outside the WWAMI region. Students obtain special assignment form from the dean's office at least one month prior to preregistration. Prerequisite: permission of department adviser. Offered: AWSpS.

NEURL 699 WWAMI Neurology Special Assignment Elective (4/8, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of adviser. Offered: AWSpS.

OBSTETRICS AND GYNECOLOGY

OB GYN 498 Undergraduate Thesis (*, max. 30) By arrangement.

OB GYN 499 Undergraduate Research (*, max. 30)

OB GYN 505 P-OB GYN Preceptorship (1, max. 12)

Provides an opportunity for first- and second-year medical students to gain direct obstetrics and gynecology experience with a variety of clinical faculty members in diverse patient-care settings. Includes opportunities to observe labor and delivery, gynecologic surgery in the operating room, ambulatory obstetrics and gynecology in clinic, and family planning.

OB GYN 550 P-Voluntary Pregnancy Termination: An Overview of Medical and Social Issues (2) Prager

A flexible curriculum which allows the medical student to observe in an abortion clinic, read articles and a textbook on abortion. Can be used by medical student as elective credit.

OB GYN 551 Perinatal Care Elective (1) Provide an introduction and overview of perinatal care for first- or second-year medical students with emphasis on late third trimester, labor and delivery, and postpartum. Opportunity to observe the patient-provider relationship. Optional labor and delivery observation. Offered: AWSp.

OB GYN 579 P-Obstetric and Gynecologic Investigation (*) The investigation may cover any

one of the following fields: normal and complicated pregnancy, hormone assays in obstetrics and endocrinology, obstetric and gynecologic oncology, genetics. By arrangement.

OB GYN 598 P-OB/GYN Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Obstetrics and Gynecology clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWSpS.

OB GYN 610 P-Introduction to Obstetrics and Gynecology - Twin Falls, ID (1-12, max. 12) Provides experience in the provision of comprehensive medical care and counseling services to adult and adolescent female patients. Offered: AWSpS.

OB GYN 620 P - Introduction to Obstetrics and Gynecology- Meridian, ID (12) This 6 week clerkship course is an introductory experience in the provision of comprehensive medical care and counseling services to adult and adolescent female patients. The obstetrical conditions and gynecological problems commonly encountered by the physician provide the primary focus for this clerkship experience, but knowledge of serious, less common conditions, is also required.

OB GYN 626 Maternal Fetal Medicine Elective - Missoula, MT (4) Provides clinical training experiences and hands-on education within a Maternal Fetal Medicine (MFM) clinic serving non-urban areas throughout western Montana and eastern Idaho. Students integrate into the MFM service as a member of the team, participating in all aspects of the MFM practice, offering both inpatient and outpatient experiences. Rural outreach experiences may be available. Offered: AWSpS.

OB GYN 627 Reproductive Endocrinology and Infertility Elective (8) V. Mendiratta The rotation will provide the 4th year student clerk multidisciplinary exposure to the full spectrum of reproductive endocrinology and infertility in a variety of clinical settings including at comprehensive university-based IVF center, county hospital based clinic, cancer center and sub specialty clinic in pediatric and adolescent gynecology. Opportunity to participate

on scheduled reproductive surgeries at URC, UWMC, HMC, and SMH. Prerequisite: All required patient care phase electives.

OB GYN 628 P- Gynecology Elective (4) This elective is designed to introduce 4th year medical students to first trimester abortion care and family planning through direct involvement under the supervision of family medicine and OBGYN providers. Please contact obgyn administrator for more information and permission to take this elective. Prerequisite: OBGYN required clerkship. Offered: AWSpS.

OB GYN 629 P- Introduction to Obstetrics and Gynecology- Wasilla, AK (1-24, max. 25) Clerkship equivalent to OB GYN 649 Fairbanks, AK Offered: AWSpS.

OB GYN 630 P-WRITE Obstetrics and Gynecology Clinical Clerkship (6-12) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: Completion of Foundations Phase curriculum; acceptance to the WRITE program. Offered: AWSpS.

OB GYN 631 P-Introduction to Obstetrics and Gynecology, NWHMC (*, max. 12) See OB GYN 665. Offered at Northwest Hospital, Seattle, WA. (Six weeks, full-time) . Prerequisite: HUBIO series, 3rd year medical students.

OB GYN 632 P-Introduction to Obstetrics and Gynecology - Bellingham (*, max. 12) See OB GYN 665.

OB GYN 633 P-Introduction to Obstetrics and Gynecology- Spokane Rockwood (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered in Spokane, WA. (Six weeks, full time) Offered: AWSpS.

OB GYN 634 P- Introduction to Obstetrics and Gynecology- Olympia LIC (1-12) Clerkship equivalent of OB GYN 665, but held in Olympia, WA Offered: AWSpS.

OB GYN 635 P-Introduction to Obstetrics and Gynecology - Great Falls, MT (1-12) Clerkship equivalent to OBGYN 665, but offered in Great Falls, MT. Offered: AWSpS.

OB GYN 636 P- Introduction to Obstetrics and Gynecology Clerkship - Butte, MT (1-12) Clerkship equivalent to OBGYN 650 on Kalispell, MT.

OB GYN 637 P- Introduction of Obstetrics and Gynecology - Hamilton, MT (1-12) Clerkship equivalent to OB GYN 665 offered in Hamilton, MT. Offered: AWSpS.

OB GYN 638 P-Gynecology Planned Parenthood- Spokane, WA (4) Clinical elective in family planning at Planned Parenthood in Spokane, WA. Exposure to contraceptive and options counseling. Experience in evaluating patients for sexually transmitted infections and appropriate therapies. May participate in first trimester ultrasound, medical and surgical abortions. Prerequisite: Basic OB GYN clerkship. Offered: AWSpS.

OB GYN 639 P-Introduction to Obstetrics and Gynecology, St. Alphonsus (*, max. 12) See OB GYN 665. Offered at St. Alphonsus, Boise, ID. (Six weeks, full-time) . Prerequisite: HUBIO series, 3rd year medical students.

OB GYN 640 P- Introduction to Obstetrics and Gynecology- Pullman/Moscow (12) Clerkship equivalent to OB GY 668 Spokane, WA Offered: AWSpS.

OB GYN 641 P- Introduction to Obstetrics and Gynecology- Nampa, ID (1-24, max. 25) This 6 week clerkship course is an introductory experience in the provision of comprehensive medical care and counseling services to adult and adolescent female patients. The obstetrical conditions and gynecological problems commonly encountered by the physician provide the primary focus for this clerkship experience, but knowledge of serious, less common conditions, is also required. Offered: AWSpS.

OB GYN 642 P- Gynecology Elective (4) 4th year medical student OBGYN elective in Cody, WY. Students will be rotating in private physician office . Student's weeks will consist of a combination of clinic and doing surgeries. They will be learning how to care for women of all ages from young women - through menopause - into geriatric. Please contact OBGYN clerkship administrator for permission to take this course. Prerequisite: OBGYN required clerkship. Offered: AWSpS.

OB GYN 643 P-Introduction to Obstetrics and Gynecology- Powell WY (*, max. 12) See OB GYN 665. Offered in Powell, WY. (6 weeks, full time.)

OB GYN 644 P-Introduction to Obstetrics and Gynecology - Gillette, WY (12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 645 P-Introduction to Obstetrics and Gynecology - Sheridan, WY (1-24, max. 25) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 646 Introduction to Obstetrics and Gynecology - Rock Springs, WY (12) Clerkship equivalent to OB GYN 665 offered in Rock Springs, WY. (Six weeks, full-time) .

OB GYN 647 Introduction to Obstetrics and Gynecology - Nampa, ID (*, max. 12) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Offered in Nampa, ID. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565. Offered: AWSpS.

OB GYN 648 P- Introduction to Obstetrics and Gynecology- Pocatello, ID (12) Clerkship equivalent to OBGYN 665 but offered in Pocatello, ID. Offered: AWSpS.

OB GYN 649 P-Introduction to Obstetrics and Gynecology- Fairbanks,TVC (1-12) Clerkship equivalent to OB GYN 665 offered in Fairbanks, AK. Offered: AWSpS.

OB GYN 650 P-Introduction to Obstetrics and Gynecology - Kalispell, MT (1-24, max. 25) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 651 P-Introduction to Obstetrics and Gynecology - Helena, MT (1-24, max. 25) General introductory obstetrics and gynecology clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to third- and fourth-year medical students. Prerequisite: HUBIO 565.

OB GYN 652 P-Introduction to Obstetrics and Gynecology - Bozeman, MT - Deaconess Women's Specialists (1-24, max. 25) See OB GYN 665 for description. Located at Deaconess Women's Specialists in Bozeman, MT. (six weeks. Limit: one student) .

OB GYN 653 Introduction to Obstetrics and Gynecology - Ellensburg, WA (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered in Ellensburg, WA. (Six weeks, full-time) . Prerequisite: HUBIO series; 3rd Year medical students.

OB GYN 654 Introduction to Obstetrics and Gynecology - Moses Lake, WA (12) Clerkship equivalent to OB GYN 665 offered in Ellensburg, WA. (Six weeks, full time) .

OB GYN 656 P-Introduction to Obstetrics and Gynecology - Wasilla (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Wasilla, AK. Includes experience in several private physicians' offices. (Six weeks) . Prerequisite: HUBIO series, third-year medical student status.

OB GYN 657 P-Introduction to Obstetrics and Gynecology - Lander (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Lander, WY. Includes experience in several private physicians' offices. (Six weeks) . Prerequisite: HUBIO series, third-year medical student status.

OB GYN 659 P-Introduction to Obstetrics and Gynecology - Cody (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Cody, WY. Includes experience in several private physicians' offices. (Six weeks) . Prerequisite: HUBIO series, third-year medical student status.

OB GYN 660 P-Introduction to Obstetrics and Gynecology - Billings, St. Vincent (*, max. 12) Introductory clerkship providing comprehensive medical care and counseling to female patients. Includes management and delivery of obstetrical

patients, diagnosis and management of gynecologic diseases, hospital rounds, outpatient clinics, seminars, tutorial, and community healthcare agencies for women. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 662 P-Introduction to Obstetrics and Gynecology - Libby (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Libby, Montana. Includes experience in several private physicians' offices. Prerequisite: third- year medical student after completion of HUBIO series.

OB GYN 663 P-Introduction to Obstetrics and Gynecology - Wenatchee (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Wenatchee, WA. Includes experience in several private physicians' offices. (Six weeks) . Prerequisite: HUBIO series, third-year medical student status.

OB GYN 664 P-Introduction to Obstetrics and Gynecology - GH Tacoma (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Tacoma, WA. Includes experience in several private physicians' offices. (six weeks, full time) Prerequisite: HUBIO series; third-year medical student status.

OB GYN 665 P-Introduction to Obstetrics and Gynecology - Seattle WA (*, max. 25) Introductory clerkship providing comprehensive medical care and counseling to female patients. Includes management and delivery of obstetrical patients, diagnosis and management of gynecologic diseases, hospital rounds, outpatient clinics, seminars, tutorial, and community healthcare agencies for women. Prerequisite: HUBIO 565. Offered: AWSpS.

OB GYN 666 P-Introduction to Obstetrics and Gynecology - Boise (*, max. 12) Clerkship equivalent to 665 offered in Boise, Idaho (WWAMI) . Includes experience in several private physician offices. (Six weeks. Limit: one student. Not offered summer quarter) . Prerequisite: HUBIO 565.

OB GYN 667 P-Introduction to Obstetrics and Gynecology - Madigan (*, max. 12) Clerkship equivalent to OB GYN 665 offered at Madigan Army Medical Center, Tacoma. (Six weeks. Limit: three students) . Prerequisite: HUBIO 565.

OB GYN 668 P-Introduction to Obstetrics and Gynecology - Spokane (1-24, max. 25) Clerkship

equivalent to OB GYN 665 offered in Spokane (WWAMI) . Includes experience in several private physicians' offices. (Six weeks. Limit: two students) . Prerequisite: HUBIO 565.

OB GYN 669 P-Introduction to Obstetrics and Gynecology - Swedish (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered at Swedish Hospital Medical Center. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 670 P-Introduction to Obstetrics and Gynecology - GH-Central (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered at the Central facility of Group Health Cooperative of Puget Sound in Seattle. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: two students) . Prerequisite: HUBIO 565.

OB GYN 671 P-Introduction to Obstetrics and Gynecology - Anchorage (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered at Anchorage, Alaska (WWAMI) . Includes experience in several private physicians' offices as well as Providence Hospital. (Six weeks. Limit: four students) . Prerequisite: HUBIO 565.

OB GYN 672 P-Introduction to Obstetrics and Gynecology - GH-East (1-24, max. 25) Clerkship equivalent to OB GYN 665 offered at the Eastside facility of Group Health Cooperative of Puget Sound in Redmond. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 676 P-Introduction to Obstetrics and Gynecology - Missoula (12) Clerkship equivalent to OB GYN 665 offered in Missoula, Montana. Students spend time in delivery room, surgery, and clinic, and have a specific preceptor assigned. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 677 P-Introduction to Obstetrics and Gynecology - Rock Springs (12) Equivalent of OB GYN 665, offered in Rock Springs, Wyoming. Student rotates among outpatient clinic, labor and delivery, operating suites, and medical/surgical inpatient areas. (Limit: two students.) Offered: AS.

OB GYN 678 P-Introduction to Obstetrics and Gynecology - Billings (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Spokane (WWAMI) . Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 679 P-Introduction to Obstetrics and Gynecology - Cheyenne (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Cheyenne, WY. Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 681 P-Gynecological Oncology Subspecialty (8) Experience in reproductive tract malignancy, chemotherapy, and radiation therapy. Student follows selected patients through primary surgery, recovery, and initial adjuvant treatment, as well as continuing treatment in both clinic and inpatient settings. (Limit: two students each four weeks) . Prerequisite: basic OB GYN clerkship.

OB GYN 682 P-Antenatal High-Risk Obstetrics (8) Four weeks on high-risk antenatal obstetrics ward and clinic. Students responsible for initial workups, daily laboratory evaluations, continuing care of high-risk antepartum patients. Weekly conference with obstetrics attending; presentation of one or more topics per rotation. Excellent coordination with resident and attending staff required to maintain patient-care continuity. (Limit: two students each four weeks) .

OB GYN 683 P-Gynecological Oncology Subspecialty - Boise, ID (4/8, max. 8) Experience in reproductive tract malignancy, chemotherapy, and radiation therapy. Student follows selected patients through primary surgery, recovery, and initial adjuvant treatment, as well as continuing treatment in both clinic and inpatient settings. (Two- and four-week options) . Prerequisite: basic OB GYN clerkship. Offered: AWSpS.

OB GYN 685 P-Subspecialty Gynecology - UWMC (8) Specialty areas in gynecology including urogynecology, family planning, adolescent gynecology, and reproductive endocrinology and infertility. Patients in both outpatient and inpatient setting, follow patients to operating room and fully participate in their hospital care. Consult on inpatients and emergency room visits. Exposes

interested students to the breadth and depth of benign gynecologic subspecialty areas. (Limit: one student/four weeks.)

OB GYN 686 P-Introduction to Obstetrics and Gynecology - Yakima (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Yakima (WWAMI) . Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 687 P-Introduction to Obstetrics and Gynecology - Fairbanks (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Fairbanks, AK. Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 689 P-Introduction to Obstetrics and Gynecology - Havre (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Havre, MT. Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 690 P-Introduction to Obstetrics and Gynecology - Sandpoint (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Sandpoint, ID. Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 691 P-Introduction to Obstetrics and Gynecology - Tacoma (*, max. 12) Clerkship equivalent to OB GYN 665 offered in Tacoma. Includes experience in several private physicians' offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 692 P-Introduction to Obstetrics and Gynecology - Bozeman, MT - Bozeman OB/GYN (*, max. 12) Clerkship equivalent to OB GYN 665 offered Bozeman, MT. Includes experience in several private physician offices. (Six weeks. Limit: one student) . Prerequisite: HUBIO 565.

OB GYN 693 P-Introduction to Obstetrics and Gynecology - Valley Medical Center (*, max. 12) Clerkship equivalent to OB GYN 665 offered at Valley Medical Center. Includes experience in several private physicians' offices. (Six weeks. Limit one student) . Prerequisite: HUBIO 565.

OB GYN 695 P-Introduction to Obstetrics and Gynecology - Tri Cities (*, max. 12) Clerkship equivalent to OB GYN 665 offered in the Tri Cities. Includes experience in several private physicians' offices. (Six weeks. Limit one student) . Prerequisite: HUBIO 565.

OB GYN 697 P-Obstetrics and Gynecology Special Electives (*, max. 24) By arrangement, for qualified students, special clerkship or research opportunities are sometimes made available at other institutions. Prospective students obtain special assignment form one month before preregistration. Department evaluates student performance. Prerequisite: permission of department.

OB GYN 699 P-WWAMI Obstetrics and Gynecology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located inside the WWAMI region. A special assignment form must be obtained one month in advance of preregistration. Prerequisite: permission of department.

OPHTHALMOLOGY

OPHTH 498 Undergraduate Thesis (*, max. 25)
Francis Thesis-based research in vision and ophthalmology. Elective. Offered: AWSpS.

OPHTH 499 Undergraduate Research (*, max. 25)
Francis Laboratory or clinical research in morphology, biochemistry, immunology, experimental pathology, or clinical studies of the eye and visual system. Offered: AWSpS.

OPHTH 501 P-Ophthalmology Preceptorship (1, max. 12) Individualized experiences with one or more of the full-time faculty members of the department covering research, teaching, and patient care. Student observes activities in the clinic, hospital ward, operating room, and research laboratories. Prerequisite: first- and second-year medical student standing and permission of instructor. Instructors: Francis Offered: AWSpS.

OPHTH 600 Independent Study or Research (*)
Prerequisite: Permission of instructor.

OPHTH 681 P-Ophthalmology Clerkship - HMC/Eye Institute (4/8, max. 12) Students gain experience in the diagnosis and treatment of common ocular disorders. Basic examination techniques, including tonometry, ophthalmoscopy, and biomicroscopy. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 683 P-Pediatric Ophthalmology Clerkship - Seattle Children's (4) Student examines and observes treatment of children with ocular diseases and learns to differentiate trivial from potentially blinding disorders. Furnishes programmed text in general ophthalmology. Prerequisite: completion of an ophthalmology clerkship. Offered: AWSpS.

OPHTH 685 P-Ophthalmology Clerkship - VAPSHCS (4) Participation in diagnosis and treatment of medical and surgical ocular disease. Outpatient examinations, inpatient surgery, as well as neuro-ophthalmologic, retinal, and glaucoma consultations. Basic techniques involved in tonometry, ophthalmoscopy, and biomicroscopy of eye. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 686 P-Ophthalmology Clerkship - Kaiser Permanente (4) Diagnosis and treatment of ocular disease in outpatients. Weekly assignments to Kaiser Permanente ophthalmologist responsible for the care of walk-in and urgent patients, demonstrating findings pertinent to the future practice of primary-care physicians. Examination techniques, including tonometry, ophthalmoscopy, and biomicroscopy of eye. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 688 P-Ophthalmology Clerkship - Anchorage (4-8) Two or four week externship at Alaska Native Medical Center in Anchorage. Opportunity to learn and practice common eye examination techniques, including slit-lamp biomicroscopy, tonometry, and funduscopy. Patients seen three days a week; two days spent in the operating room. Prerequisite: completion of human biology series, MED 665, and SURG 665; fourth-year medical students only. Offered: AWSpS.

OPHTH 689 P-Ophthalmology Clerkship - Spokane (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, glaucoma, contact lenses, and strabismus.

Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 690 P-Ophthalmology Clerkship - Missoula (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, glaucoma, contact lenses, and strabismus. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 691 P-Ophthalmology Clerkship - Nampa (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, neuro-ophthalmology, glaucoma, contact lenses, and strabismus. Prerequisite: completion of human biology series. Offered: AWSpS.

OPHTH 692 P - Ophthalmology Clerkship - Bozeman (4) Diagnosis and management of commonly seen eye diseases. Subspecialty clinics include cornea, retina, glaucoma, contact lenses, and strabismus. Offered: AWSpS.

OPHTH 695 P-Ophthalmology Advanced Clerkship - HMC (4) Students gain advanced experience in the diagnosis, evaluation, and treatment of inpatient and emergency department ophthalmology consults, including emergency surgeries. Prerequisite: completion of human biology series; prior ophthalmology clerkship. Offered: AWSpS.

OPHTH 697 P-Ophthalmology Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship, externship, or research opportunities are at times made available at institutions or clinics other than the UW. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor. Instructors: Francis Offered: AWSpS.

OPHTH 699 P-WWAMI Ophthalmology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department. Offered: AWSpS.

ORTHOPEDICS

ORTHP 498 Undergraduate Thesis (*, max. 30) *Eyre* Student works directly with a preceptor in selecting a suitable area for laboratory or clinical research in the area of orthopaedics, and develops a thesis for recognition. Offered: AWSpS.

ORTHP 499 Undergraduate Research (*, max. 90) *Eyre* Investigation of pertinent musculoskeletal problems in the orthopaedic laboratories as part of the research group. Offered: AWSpS.

ORTHP 505 P-Preceptorship in Orthopaedic Surgery (1, max. 12) Opportunity for first- and second-year medical students to gain experience with clinical faculty members in the community. Students observe general aspects of private practice from a longitudinal perspective. Prerequisite: permission of department. Offered: AWSpS.

ORTHP 585 P-Sports Medicine (2) Lectures, patient problem presentations, and seminar discussions to explore impact of exercise and sport participation on various body systems. Includes nutritional concerns, biomechanics of certain sports injuries, and cardiovascular, pulmonary, and musculoskeletal concerns. Prerequisite: second-year medical student standing. Instructors: O' Kane Offered: Sp.

ORTHP 643 P-General Orthopedic Clerkship - Cody, WY (8) Provides a basic education in the fundamentals of musculoskeletal system. Heavy emphasis placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: HUBIO series; third- and fourth-year medical students.

ORTHP 644 P-General Orthopaedic Clerkship - Jackson (*, max. 8) Provides a basic education in the fundamentals of the musculoskeletal system. Heavy emphasis is placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three a year. Instructors: Khoury Offered: AWSpS.

ORTHP 650 P-General Orthopaedic Clerkship - Billings (*, max. 8) Provides a basic education in the fundamentals of the musculoskeletal system. Emphasizes reconstructive alternatives in the

treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three a year. Instructors: Shenton Offered: AWSpS.

ORTHP 655 P-General Orthopaedic Clerkship - Boise (*, max. 8) Provides a basic education in the fundamentals of the musculoskeletal system. Emphasizes reconstructive alternative in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Instructors: Scheffel

ORTHP 662 P-General Orthopaedic Surgery-Casper, WY (8) Provides a basic education in the fundamentals of the musculoskeletal system. Heavy emphasis is placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: Third or fourth year medical student.

ORTHP 668 P-Pediatric Orthopaedics - Spokane (*, max. 8) Acquaints students with all aspects of musculoskeletal problems in childhood. Includes didactic conferences and seminars, and opportunities for active participation in both inpatient and outpatient care at Shriners Hospital for Children in Spokane. (Four weeks, full-time) . Prerequisite: SURG 665 or HUBIO 553. Instructors: Caskey Offered: AWSpS.

ORTHP 669 P-General Orthopaedic Clerkship - Spokane (*, max. 8) Provides a basic education in the fundamentals of musculoskeletal system. Heavy emphasis placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: HUBIO series; third- and fourth-year medical students. Instructors: Scott Offered: AWSpS.

ORTHP 675 P-Preceptorship in Orthopaedics (*, max. 4) Student spends full time with the preceptor during all his or her working day in order to gain a better understanding of the diagnosis and the management of problems of the musculoskeletal system as seen in the private orthopaedic practice. (Two weeks, full-time) . Prerequisite: SURG 665 or HUBIO 553 and permission of department. Offered: AWSpS.

ORTHP 676 P-Pediatric Orthopaedics - Seattle Children's (*, max. 8) Acquaints students with all aspects of musculoskeletal problems in childhood. Didactic conferences and seminars, and

opportunities for active participation in both inpatient and outpatient care at Seattle Children's Hospital, and correlative anatomy and pathology. (Four weeks, full-time) . Prerequisite: SURG 665 or HUBIO 553. Instructors: Burton, Dales, Jinguji, Krengel, Lindberg, Mosca, Schmale, Steinman, White Offered: AWSpS.

ORTHP 677 P-Musculoskeletal Trauma (*, max. 8) Harborview Medical Center. Emergency room, wards, operating room, and outpatient clinics. Instruction in general and special clinics, including hand, hip, foot, and fracture, with emphasis placed on physical examination of the patient. Students take correlative anatomy and pathology. (Four weeks, full-time) . Prerequisite: SURG 665, HUBIO 553. Instructors: Barei, Beingessner, Bellabarba, Bransford, Dunbar, Firoozabadi, Henley, Kleweno, Nork, Taitsman Offered: AWSpS.

ORTHP 678 P-Musculoskeletal Oncology (8/12) In-depth experience on musculoskeletal oncology service with primary involvement in initial evaluation, staging, treatment, and postoperative follow-up of patients with various musculoskeletal malignancies. Elective involves experience in surgical, oncologic, radiologic, and pathologic principles of managing sarcomas. Prerequisite: basic orthopaedic elective or permission of instructor. Instructors: Conrad, Davidson Offered: AWSpS.

ORTHP 680 P-General Orthopaedic Clerkship - VAMC (*, max. 8) Veterans' Administration Hospital: structured to provide a basic education in the fundamentals of the musculoskeletal system. Heavy emphasis is placed on the reconstructive alternatives in the treatment of degenerative joint diseases. Prerequisite: completion of HUBIO series; third- and fourth-year students. Enrollment limited to three. Instructors: Chansky Offered: AWSpS.

ORTHP 681 P- Sports Medicine Orthopaedic Clerkship (8) Orthopaedic subspecialty clerkship at University of Washington Medical Center. Preceptor-based outpatient, inpatient, emergency, or operative orthopaedic care. Students work primarily in one subspecialty area and in one general orthopaedic clinic. For students who plan careers in orthopaedic surgery. Prerequisite: completion of HUBIO series, third- and fourth-year medical students. Instructors: Green, Larson, O' Kane, Twaddle Offered: AWSpS.

ORTHP 682 P-Outpatient Orthopaedics (8)

Outpatient orthopaedic experience at University of Washington Medical Center. Emphasis on physical exam, diagnosis, radiographic evaluation, and non-operative treatment. Rotation through general orthopaedics as well as all subspecialty areas. For students who plan careers in primary care. Prerequisite: completion of HUBIO series. Instructors: Conrad, Davidson, Manner, Matsen, Wagner, Warne Offered: AWSpS.

ORTHP 684 P-Disorders of the Spine (8) Evaluation and assessment strategies of spinal disorders for patients of all ages and wide variety of clinical conditions including trauma, deformity, degenerative disorders, metabolic, and inflammatory diagnoses. Outpatient, surgical, and conference-based teaching sessions aimed at all experience levels and individualized for practitioners with interest in medical specialties, emergent care, radiology, physiatry, intervention pain management. Offered: AWSpS.

ORTHP 685 P-Adult Reconstruction: Total Joint Service (8) *Manner* Preceptor-based outpatient, inpatient, emergency, and operative orthopaedic care. Students work with faculty in the Total Joint Service which specializes in lower extremity adult reconstructive surgery, including: complex primary hip/knee arthroplasty; less invasive approaches to hip/knee arthroplasty; revision hip/knee arthroplasty; periacetabular and proximal femoral osteotomy; osteotomy about the knee; and hip arthroscopy. Offered: AWSpS.

ORTHP 686 Orthopaedics: Lower Extremity/Foot and Ankle - Boise, ID (1-8, max. 8) *Gregory A Schmale* Orthopaedic clinical clerkship in Boise, ID. Preceptor-based outpatient, inpatient, emergency, or operative orthopaedic care focused on the treatment and rehabilitation of foot and ankle injuries. Students work primarily in one subspecialty area (foot and ankle) and in one general orthopaedic clinic. For students who plan careers in orthopaedic surgery. Prerequisite: completion of HUBIO series, third- and fourth-year medical students. Offered: AWSpS.

ORTHP 687 P-Shoulder and Elbow (8) *Matsen, Warne* Preceptor-based outpatient, inpatient, emergency, and operative orthopaedic care. Work with the faculty in the Shoulder and Elbow Service,

which provides comprehensive evaluation and management for a wide range of shoulder and elbow problems, including: arthritis, dislocation or instability, fractures, rotator cuff/tendon tears, joint stiffness, and unsuccessful previous surgery. Offered: AWSpS.

ORTHP 688 P-Sports Medicine- Spokane, WA (8)

Orthopedic clinical clerkship in sports medicine. Students participate in care of patients with sports-related injuries. Emphasis on physical examination and determining appropriate operative interventions and rehabilitation. Offered: AWSpS.

ORTHP 697 P-Orthopaedic External Elective (*, max. 24)

Special arrangements can be made for students desiring to take orthopaedic electives at other institutions. Programs generally approved include orthopaedic clerkships at other universities or at large orthopaedic institutes. Prerequisite: HUBIO 553 and permission of department. Offered: AWSpS.

ORTHP 699 P-WWAMI Orthopedics Special Electives (*, max. 24)

By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

OTOLARYNGOLOGY — HEAD AND NECK SURGERY

OTOHN 498 Undergraduate Thesis (*, max. 35)

Student works directly with department faculty in selecting a suitable area for laboratory or clinical research in the area of otolaryngology, and develops a thesis for recognition. Offered: AWSpS.

OTOHN 499 Undergraduate Research (*, max. 35)

Research opportunities offered under direction in the area of otolaryngology. (Twelve weeks.) Offered: AWSpS.

OTOHN 501 P-Preceptorship in Otolaryngology - Head and Neck Surgery (1, max. 12)

One morning a week for a total of 30 hours per quarter spent observing patient care in either inpatient or outpatient settings at the University of Washington Medical Center; associated readings. Prerequisite: first- or second-year medical student standing. Coordinator: OTOHNS office. Offered: AWSpS.

OTOHN 600 Independent Study or Research (1-3, max. 24)

Independent study or research in otolaryngology conducted under the direction of one or more instructors. Prerequisite: permission of department and sponsoring faculty member. Offered: AWSpS.

OTOHN 670 Otolaryngology - Head and Neck Surgery - Subinternship (*, max. 16)

Provides medical students exposure to an immersive educational experience in otolaryngology. Sub-interns function as members of the surgical team, participating in outpatient clinics, inpatient care, emergency procedures, and the operating room. Prerequisite: clinical rotations in General Surgery and Internal Medicine.

OTOHN 675 P-Otolaryngology Clerkship Bozeman, MT (4-8, max. 8)

Surgical subspecialty of otolaryngology-head and neck surgery is structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: third or fourth year medical student; recommended: patient-care courses in internal medicine or surgery. Offered: AWSpS.

OTOHN 676 P-Otolaryngology Clerkship Jackson Hole WY (4-8, max. 8)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: Completion of Internal Medicine or Surgery required third year clerkship is strongly recommended, third or fourth year medical student standing. Offered: AWSpS.

OTOHN 677 P-Otolaryngology Clerkship Harborview (4, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: Completion of Internal Medicine or Surgery required third year clerkship is strongly recommended, third or fourth year medical student standing. Offered: AWSpS.

OTOHN 679 P-Otolaryngology - Head and Neck Surgery Clerkship - Missoula (4/8, max. 24) M. Whipple

Introduction to surgical subspecialty of

otolaryngology-head and neck surgery. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 680 P-Otolaryngology - Head and Neck Surgery Clerkship - UWMC (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Rotation at UWMC. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 681 APC -Otolaryngology Clerkship - Harborview (8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: Internal Medicine or Surgery required third year clerkship is strongly recommended, third or fourth year medical student standing. Offered: AWSpS.

OTOHN 682 P-Otolaryngology - Head and Neck Surgery Clerkship - VA (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 683 P-Otolaryngology - Head and Neck Surgery Clerkship - Madigan (*, max. 8)

Individual externship training at an outpatient clinic, where visits average twelve hundred per month, supplemented by inpatient assignments. Students may reside at the hospital during externship, using facilities of bachelor officer quarters and hospital mess. (Two or four weeks, full-time) . Prerequisite: completion of human biology series. Instructors: (Madigan Army Medical Center) Offered: AWSpS.

OTOHN 684 P-Otolaryngology - Head and Neck Surgery Clerkship - Seattle Children's (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds,

and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 685 P-Otolaryngology - Head and Neck Surgery Clerkship - Boise (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 686 P-Otolaryngology - Head and Neck Surgery Clerkship - Greater Seattle Private Practice (4)

Provides exposure to all aspects of patient care through a private practice setting. The student is exposed to the outpatient clinic and operating room procedures with daily directed contact with one attending faculty member. Contact administrator to arrange rotation. Prerequisite: permission of course director. Offered: AWSpS.

OTOHN 687 P-Otolaryngology - Head and Neck Surgery Clerkship - Spokane (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 688 P-Otolaryngology - Head and Neck Surgery Clerkship - Anchorage (4/8, max. 24)

Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, and have an opportunity to go to the operating room. Prerequisite: human biology series. Offered: AWSpS.

OTOHN 689 P-Otolaryngology - Head and Neck Surgery Clerkship - Laramie (4/8, max. 24) P.

Johnson Introduction to surgical subspecialty of otolaryngology-head and neck surgery. Structured to allow broad introduction to breadth of specialty. Students see patients in clinic, join inpatient rounds, have an opportunity to go to operating room. Prerequisite: Human biology series. Offered: AWSpS.

OTOHN 697 P-Otolaryngology - Head and Neck Surgery - Away Externship (*, max. 8) By specific arrangement. Special clerkship, externship, or research opportunities are at times made available at institutions other than the University of Washington. Prospective students obtain a special assignment form from the dean's office at least one month before preregistration. Prerequisite: permission of clerkship director. Instructors: Fultran
Offered: AWSpS.

OTOHN 699 P-Otolaryngology - Head and Neck Surgery Clerkship - WWAMI (4/8, max. 8) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department. Offered: AWSpS.

PEDIATRICS

PEDS 498 Undergraduate Thesis (*, max. 35) For medical students. Offered: AWSpS.

PEDS 499 Undergraduate Research (*, max. 35) Participation in various clinical or basic research programs in progress, specifically: child development, developmental biology, human embryology and teratology, medical genetics, infectious diseases, neonatology, neuroembryology, cardiology, endocrinology and metabolism, immunology, respiratory disease. Offered: AWSpS.

PEDS 505 P-Preceptorship in Pediatrics (1, max. 12) To provide opportunity for first- and second-year medical students to gain personal experience with medical practice situations for pediatricians by being stationed with carefully selected clinical faculty members in their offices. Enrollment limited. Coordinator: Department of Pediatrics. Credit/no-credit only. Offered: AWSpS.

PEDS 513 Scientific Investigation in Pediatric Medicine (1) Faculty Investigators in the Department of Pediatrics will lecture on the general biology of their research area and its relevance to understanding pediatric disease and developing therapies. Given the varied nature of research represented in the Department of Pediatrics, the course will be wide-ranging and include basic science and clinical/translational approaches. Each

participating investigator will give one 1-hour presentation. Offered: AWSpS.

PEDS 530 P-Homeless Youth and Their Medical Care (1) Seminar and interview practice; students learn how to deal with special health problems and other related problems of "street kids" through interviews and observations. Credit/no-credit only. Offered: W.

PEDS 562 Ethical Issues in Pediatrics (3) *Nancy S. Jecker, Douglas S. Diekema* Provides a survey of contemporary ethical issues that arise in the clinical and research environment when children are involved, including the role of children and adolescents in decision-making, the limits of parental decision-making authority, and issues related to genetic testing, transplantation, research, and public health. Offered: jointly with B H 562; A.

PEDS 598 P-Pediatrics Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Pediatrics Clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission
Offered: AWSpS.

PEDS 600 Independent Study or Research (*) Facilitates and promotes mentored independent study/scholarship related to the care of children. Students participate in projects that promote individual, self-directed and creative scholarly activity with appropriate supervision, oversight, and mentorship with an emphasis on the process of scholarship.

PEDS 609 Indian Healthcare Clerkship (8, max. 16) Examines the health disparities, health systems, and cultural/community strengths associated with American Indian/Alaska Native or other indigenous peoples. Prerequisite: either UCONJ 530, Indian Health Pathway declaration, or permission of course coordinator. Offered: AWSpS.

PEDS 610 Traditional Indian Medicine (8, max. 24) Students experience how Western physicians collaborate with traditional Indian healers (and vice versa) to best care for American Indian and Alaska Native patients. Prerequisite: UCONJ 530; Indian Health Pathway declaration; and advanced

permission from Indian Health Pathway Program Manager. Offered: AWSpS.

PEDS 611 P-Country Doctor Free Teen Clinic (1, max. 2) Participation in a free clinic for out-of-home youth, either Monday or Tuesday evenings. Clinical services include general medical care, with a focus on reproductive health, STD evaluations/treatment, and the impact of a homeless lifestyle on general health. (Limit per rotation: one student.) Offered: AWSpS.

PEDS 612 Pediatric Intensive Care - HMC (8) Elective in Pediatric Intensive Care at Harborview Medical Center. Open to Explore and Focus medical students who have completed their Core Pediatrics Rotation. Students will be expected to manage patients with the supervision of the Pediatric Critical Care attending or fellow. Students will have the opportunity to manage patients with complex multisystem disease and learn key elements of acute resuscitation in the intensive care setting. Prerequisite: Explore and Focus standing, completion of Core Pediatrics Rotation. Offered: AWSpS.

PEDS 613 Pediatric Gastroenterology (8) Fourth-year medical students will see clinical pediatric gastrointestinal problems under close faculty supervision. They will participate in inpatient gastroenterology consultations, outpatient clinic evaluations for new and follow-up patients, and (observe) endoscopic and therapeutic gastrointestinal procedures. Prerequisite: Completion of Peds, IM and Surgery required clerkships Offered: AWSpS.

PEDS 620 Pediatric Sub-Specialty Clinics-Billings (4, max. 8) The student will choose 2 weeks of specialty clinics based on student interest and availability of faculty preceptors at the time of the rotation. Available clinics include: Pediatric Cardiology, Pulmonary, Gastroenterology and Neurology. The maximum time spent with one specialty is 2 weeks; the minimum is one week. Students will evaluate both patients seen in consultation and patients returning for on going care for existing problems. Prerequisite: completion of Pediatrics Clinical Clerkship. Offered: AWSpS.

PEDS 623 Pediatrics Child Abuse - Spokane, WA (4, max. 8) Exposes future clinicians to the most common issues relating to child abuse and neglect.

(Limit: one student) . Prerequisite: fourth-year medical students who have completed their core pediatrics rotation; permission of department. Offered: AWSpS.

PEDS 624 Pediatric Emergency Medicine - Spokane (8) Students manage patients with the supervision of a Pediatric Emergency Medicine attending or fellow. Includes the opportunity to manage patients with a wide spectrum of disease processes as well as learn key emergency medicine procedural skills. Prerequisite: PEDS core clerkship; by departmental permission. Offered: AWSpS.

PEDS 625 Pediatric Emergency Medicine (8) Elective in Pediatric Emergency Department at Seattle Children's Hospital. Students manage patients with the supervision of a Pediatric Emergency Medicine attending or fellow. Includes the opportunity to manage patients with a wide spectrum of disease processes as well as learn key emergency medicine procedural skills. Prerequisite: fourth- year medical students. Offered: AWSpS.

PEDS 628 P-Pediatric Allergy and Immunology - Missoula (*, max. 24) The clinic involves seeing patients with allergy asthma and immunology disorders, such as seasonal allergies, allergic rashes, asthma, chronic cough, chronic sinusitis, contact dermatitis, bee sting allergy, food allergies and more. Focus on obtaining a detailed history, physical exam and formulating a personalized management plan for patients. Training and interpretation of major procedures - allergen skin, patch and pulmonary function testing. Prerequisite: PEDS core clerkship; departmental permission Offered: AWSpS.

PEDS 629 Neonatal Pediatrics- Missoula, MT (4, max. 24) Participation in the activities in the newborn and premature divisions; ward rounds, seminars, conferences, and familiarization with certain laboratory techniques, particularly those relating to acid-base balance. Offered: AWSpS.

PEDS 630 P-WRITE Pediatrics Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: PEDS 665 , inpatient only; acceptance in the WRITE program.

PEDS 631 LIC Pediatrics Clinical Clerkship (12) Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: acceptance into LIC program.

PEDS 635 Pediatric Cardiology - Boise, ID (4/8, max. 24) *Michael S. Womack* Emphasis on physical examination skills. Application of fundamental anatomy and physiology to analyze a variety of cardiovascular situations, normal and abnormal, applicable to any medical field, including congenital heart disease. Independent reading and analysis of relevant anatomy and physiology for one-on-one discussion. Clinic and catheterization laboratory each week. (Two or four week rotation. Limit: one student) . Prerequisite: permission of department. Offered: AWSpS.

PEDS 636 Pediatric Cardiology - Spokane (4, max. 24) Elective rotation with an emphasis on physical diagnosis, electrocardiography, clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 637 Pediatric Cardiology - Anchorage (4, max. 24) Elective rotation with an emphasis on physical diagnosis, electrocardiography, clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 638 Pediatric Cardiology - Missoula (4, max. 24) Elective rotation with an emphasis on physical diagnosis, electrocardiography, clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 640 Pediatric Gastroenterology - Boise (4, max. 24) Elective rotation where students see clinical pediatric gastrointestinal problems, participate in inpatient gastroenterology consultations, outpatient clinic evaluations for new and follow-up patients, and (observe) endoscopic

and therapeutic gastrointestinal procedures. (Limit: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 642 Pediatric Clinical Clerkship - Sheridan, WY (12) Offers a comprehensive overview of the approach for providing care to children and their families. Explores the range of reasons children seek medical care, from well-child visits to acute medical problems. Students gain experience in inpatient and outpatient settings and the ongoing management of chronic illnesses. Offered: AWSpS.

PEDS 643 Pediatric General Clerkship - Spokane Kaiser (1-24, max. 25) The core pediatric clerkship is designed to provide a comprehensive overview of the approach to the care of children and their families. In addition, explores the range of reasons children seek medical care, from well child visits to acute medical problems in both inpatient and outpatient settings and the ongoing management of chronic illnesses. Offered: AWSpS.

PEDS 644 Pediatric General Clerkship - Wasilla, AK (1-24, max. 25) General introductory pediatric clerkship. Student will split time in hospital setting, outpatient department, clinic, or private office. Open to all third- and fourth year students. (Six weeks, full-time. Limit per rotation: one student) . Offered: AWSpS.

PEDS 645 Pediatric General Clerkship - Kalispell (1-24, max. 25) General introductory pediatric clerkship. One half in hospital setting; one half in outpatient department, clinic, or private office. Open to all third and fourth year student. Offered: AWSpS.

PEDS 647 Pediatric General Clerkship- Lewiston, ID (1-24, max. 25) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time) Offered: AWSpS.

PEDS 648 Pediatric General Clerkship - Everett, WA (1-24, max. 25) General introductory pediatric clerkship. One half in hospital setting; one half in outpatient department, clinic, or private office. Open to all third- and fourth year students. (Six weeks, full-time. Limit per rotation: one student) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 650 Pediatric General Clerkship - Moses Lake, WA (1-24, max. 25) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 651 Pediatric General Clerkship - Bozeman, MT (1-24, max. 25) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 652 Pediatric General Clerkship - Idaho Falls, ID (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 653 Pediatric General Clerkship - Helena, MT (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to diverse settings where children receive health services. The six-week experience takes place in Helena, MT.

PEDS 655 Pediatric General Clerkship - Jackson, WY (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Takes place primarily in an active pediatric group practice with appropriate outpatient and inpatient opportunities, including access to a community hospital with nursery, pediatric beds, and physician-staffed emergency room. (Six weeks, full time. Limit per rotation: one student) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 656 Pediatric General Clerkship - Wenatchee (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: one student) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 657 P-Pediatric General Clerkship - Missoula (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to

diverse settings where children receive health services. The six-week experience takes place in three active pediatric practices with appropriate outpatient and inpatient opportunities and at Community Medical Center. (Six weeks, full time. Limit per rotation: one or two students.) Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 658 Pediatric General Clerkship - Boise (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Provides exposure to diverse settings where children receive health services. The six-week experience takes place in three active pediatric practices with appropriate outpatient and inpatient opportunities and at St. Luke's Medical Center. (Six weeks, full time. Limit per rotation: one or two students) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 659 Pediatric General Clerkship - Billings, MT (*, max. 24) General introductory inpatient and outpatient pediatric clerkship. Exposes students to diverse settings where children receive health services. The six-week experience takes place primarily in two active pediatric group practices with appropriate outpatient and inpatient opportunities. (Six weeks, full time. Limit: per rotation: one student.) Offered: AWPpS.

PEDS 660 Pediatric General Clerkship - Cheyenne, WY (*, max. 24) Introductory inpatient and outpatient pediatric clerkship that exposes students to environments in settings where children receive medical and health services. The six-week experience takes place primarily in an active pediatric group practice with appropriate outpatient and inpatient opportunities. (Six weeks, full time. Limit per rotation: one student) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 661 Pediatric General Clerkship - Anchorage (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: three students) . Prerequisite: HUBIO 563. Offered: AWPpS.

PEDS 663 P-Pediatric General Clerkship - Mary Bridge (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office.

Location preferences are considered. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: three or four students) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 664 P-Pediatric General Clerkship - Pocatello, ID (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: one student) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 665 P-Pediatric General Clerkship - Seattle (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department or clinic. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: ten students) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 666 P-Pediatric General Clerkship - Great Falls, MT (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 667 Pediatric General Clerkship - Madigan (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two students) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 668 P-Pediatric General Clerkship - Spokane (*, max. 24) General introductory pediatric clerkship. One-half in hospital setting; one-half in outpatient department, clinic, or private office. Open to all third- and fourth-year medical students. (Six weeks, full time. Limit per rotation: two or three students) . Prerequisite: HUBIO 563. Offered: AWSpS.

PEDS 669 P-Neonatal Pediatrics - Clerkship (*, max. 24) Participation in the activities in the newborn and premature divisions; ward rounds, seminars, conferences, and familiarization with certain laboratory techniques, particularly those relating to acid-base balance. (Limit per rotation: one or two

students) . Prerequisite: PEDS and OB GYN core clerkships. Offered: AWSpS.

PEDS 670 P-Pediatric Infectious Diseases (*, max. 24) Students see and work up clinic consultations and present in detail to attending physician. Daily rounds include problem-solving discussions and didactic presentations in broad category of infectious diseases. Opportunity for experience in clinical research and laboratory techniques. (Limit per rotation: one student) . Prerequisite: PEDS and MED core clerkships; fourth-year medical student standing. Offered: AWSpS.

PEDS 671 Pediatric Endocrinology (*, max. 24) Focuses on the evaluation of the normal progression of hormone mediated processes in children and the recognition, diagnosis, and management of a variety of endocrine problems. Includes participation in clinics, impatient endocrine rounds, and a variety of conferences at Seattle Children's Hospital. (Limit per rotation: one student.) Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 672 P-Office Practice - Spokane (*, max. 12) Opportunity to observe and function in the private office settings of a number of clinical pediatric faculty and to accompany pediatricians as they pursue their daily activities in the community. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 673 P-Office Practice (*, max. 12) Opportunity to observe and function in the private office settings of a number of clinical pediatric faculty and to accompany pediatricians as they pursue their daily activities in the community. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 674 P-Pediatric Genetics - Spokane (*, max. 24) Clinical focus on evaluation and management of children with genetic disorders. Exposure to genetic counseling, the evaluation of children with hereditary structural defects, and diagnosis and management of children with inborn errors of metabolism. Emphasis on genetic mechanisms that cause human disease. (Two or four weeks. Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 675 P-Clinical Complementary and Integrative Medicine (4/8, max. 8) Clinical rotation for students interested in Complementary and Integrative Medicine (CIM) . Students arrange clinical placements with selected CIM providers in the community: naturopathic physician, chiropractor, acupuncturist, and massage therapist. Students arrange their own schedules and must do so at least four weeks in advance of the rotation. (Limit per rotation: one or two students) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 677 P-Pediatric Intensive Care (8) Students manage patients with the supervision of the Pediatric Critical Care attending or fellow at Seattle Children's Hospital. Includes the opportunity to manage patients with complex multisystem disease and learn key elements of acute resuscitation in the intensive-care setting. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 678 P-Pediatric Infectious Diseases - Boise (*, max. 24) Students see and work up clinic consultations and present in detail to attending physician. Daily rounds include problem-solving discussions and didactic presentations in broad category of infectious diseases. Opportunity for experience in clinical research and laboratory techniques. (Limit per rotation: one student) . Prerequisite: PEDS and MED core clerkships; third- or fourth-year medical student standing; departmental permission. Offered: AWSpS.

PEDS 679 P-Clinical Problems in Developmental Disabilities (*, max. 12) Experience in multidisciplinary evaluation and management of the handicapped child. Student performs pediatric evaluations, obtains appropriate consultations, observes additional professional assessments (e.g., psychological testing) , and plans rehabilitation program. Opportunity to provide parent counseling. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 681 P-Medical Genetics (*, max. 24) Clinical focus on evaluation and management of children with genetic disorders. Exposure to genetic counseling, the evaluation of children with hereditary structural defects, and diagnosis and management of children with inborn errors of metabolism. Emphasis on genetic mechanisms that

cause human disease. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 683 P-Pediatric Nephrology (8) Four-week elective clerkship at Seattle Children's Hospital. Students participate in nephrology and transplant rounds, consult with renal fellows and attendings, and work up patients in renal clinics. Participation in seminars; special course in fluid balance. (Limit per rotation: one student) . Prerequisite: third- or fourth-year medical student; PEDS and MED core clerkships; departmental permission. Offered: AWSpS.

PEDS 684 P-Pediatric Pulmonary Medicine (8) Respiratory disorders, diagnostic techniques, and treatments unique to children in the inpatient, intensive care, and outpatient settings. Application of principles of pulmonary physiology to clinical problems. Students conduct consultations under the supervision of the attending and present a topic of choice. Inpatient rounds and clinics. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship, fourth-year medical student standing. Offered: AWSpS.

PEDS 685 P-Pediatric Hematology and Oncology (*, max. 24) One-on-one teaching plus four weekly didactic sessions. Specific training in techniques and interpretation of bone marrow aspirations, intravenous chemotherapy, transfusions, and laboratory techniques of hematologic evaluation. Self-learning programs available. (Two or four weeks, full-time. Limit per rotation: one student) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 686 P-Pediatric Cardiology (*, max. 24) Emphasis on physical diagnosis and electrocardiography and on clinical knowledge of diagnostic techniques and surgical possibilities for inpatients and outpatients with cardiovascular problems. Opportunity to observe catheterizations and cardiovascular operations. Weekly clinics and twice-daily inpatient rounds. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 687 Neonatal Pediatric Clerkship (4) Offered: AWSpS.

PEDS 688 Pediatric Rheumatology (8) Exposes students to a wide range of pediatric rheumatologic diseases and provides them with the opportunity to evaluate new patients, help work up and manage inpatients with complex multisystem disease, and learn key elements of evaluation and treatment of childhood rheumatic diseases. Open to 4th year medical students. Prerequisite: completion of core pediatrics rotation; interest in rheumatology.

PEDS 689 P-Advanced Rural Pediatrics - Ft. Washakie, WY (8) Student functions at the sub-intern level to care for patients with acute pediatric illness, provide well child care, and provide follow up care to patients seen in the newborn nursery, Level II Neonatal ICU, hospitalizations, and previous clinic visits. Students interested should make arrangements well in advance of registration. Prerequisite: required clerkship in Pediatrics, Obstetrics and Gynecology, Internal Medicine, and Surgery.

PEDS 690 Advanced Pediatric Clerkship - Boise (*, max. 24) Inpatient and/or outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care at St. Lukes Hospital. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 691 P-Advanced Pediatric Clerkship - Seattle (*, max. 24) Inpatient and/or outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care as Seattle Children's. (Limit per rotation: three students) . Prerequisite: PEDS core clerkship. Offered: AWSpS.

PEDS 692 P-Advanced Pediatric Clerkship - Spokane (*, max. 24) Inpatient and outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care at Sacred Heart Children's Hospital. (Limit per rotation: one student) . Prerequisite: PEDS core clerkship; departmental permission. Offered: AWSpS.

PEDS 693 Advanced Pediatric Subinternship - Mary Bridge (*, max. 24) Inpatient and outpatient experience with responsibilities comparable to intern for patient workup, diagnosis, and care. (Limit per rotation: one student) . Prerequisite: Core Clerkship in PEDS, OB/GYN, I-Med, Surgery; departmental permission.

PEDS 694 P-Pediatric Adolescent Medicine (8) Elective in Adolescent Medicine at Seattle Children's Hospital. Open to 4th year medical students who have completed their Core pediatrics Rotation. Students will be expected to manage patients with the supervision of attending physicians. Students will have the opportunity to manage adolescent patients in the outpatient setting and learn key elements of subspecialty care of adolescents.

PEDS 695 Pediatric Hematology and Oncology (4) Offered: AWSpS.

PEDS 696 Pediatric Endocrinology (4) Offered: AWSpS.

PEDS 697 P-Pediatric Special Electives (*, max. 24) By specific arrangement, for qualified students, special clerkship externship or research opportunities at institutions other than University of Washington. The faculty can advise of possible opportunities. Obtain special assignment form from the Department of Pediatrics at least one month before preregistration. Prerequisite: permission of department and the away site. Offered: AWSpS.

PEDS 698 Pediatric Boot Camp (4) Focuses on what is needed on day one of internship to care for children through hands-on experience, simulation, group problem solving, role-playing, didactics, and supplemental reading material. Emphasizes the acquisition and practice of core skills. Themes include communication, procedural competency, and medical decision making pertinent to both inpatient and outpatient pediatrics. (Two weeks.) Prerequisite: Prerequisite: fourth-year standing; departmental approval. Offered: Sp.

PEDS 699 P-WWAMI Pediatrics Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be within the WWAMI region. Prerequisite: permission of department and the away site. Offered: AWSpS.

PHARMACOLOGY

PHCOL 401 General Pharmacology I (2-4, max. 4) *Wang* Principles governing drug-receptor interactions, dose-response relationships, desensitization, and tolerance. Drug toxicity, allergy, mutagenesis, and carcinogenesis. Pharmacogenomics

and DNA/RNA therapies. General pharmacology of drugs acting on the endocrine and vascular systems. For pharmacy students and other undergraduates. Offered: A.

PHCOL 402 General Pharmacology II (3/4) General pharmacology of drugs acting on the autonomic, cardiovascular, and central nervous systems. For Pharmacy students and other undergraduates. Prerequisite: PHCOL 401. Instructors: Storm Offered: W.

PHCOL 434 General Pharmacology (2) *Grubbs* Lectures concerning the action of drugs on physiological and pathological processes with special emphasis on agents of special importance in the practice of dentistry. For dental students. Offered: A.

PHCOL 435 General Pharmacology (2) *Grubbs* Lectures concerning the action of drugs on physiological and pathological processes with special emphasis on agents of special importance in the practice of dentistry. For dental students. Offered: W.

PHCOL 498 Undergraduate Thesis (*, max. 35)
Offered: A.

PHCOL 499 Undergraduate Research (*, max. 35)
Participation in departmental research projects. Offered: AWSpS.

PHCOL 501 Drug Discovery and Emerging Therapeutics (2) *Ning Zheng* Consideration of the general principles and current approaches involved in modern drug discovery and development, with an emphasis on basic concepts in drug action, delivery, and metabolism. Discussion of novel drug discovery techniques and emerging non-standard therapeutics. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: A.

PHCOL 502 Signal Transduction from the Cell Membrane to the Nucleus (2) *John D. Scott, Shao-En Ong, Rich Gardner* Intracellular signaling pathways leading from cell membrane receptors to nucleus. Pathways activated by seven transmembrane receptors and G-proteins, insulin/PI3 kinase, nitric oxide and WNTs and mechanisms of signal termination. Cytokine/Jak/Stat signaling and role of subcellular localization in signal transduction.

Prerequisite: basic knowledge of biochemistry. Offered: jointly with CONJ 532; A.

PHCOL 503 Autonomic/Cardiovascular Pharmacology (2) *Neil M Nathanson* Consideration of the pharmacology of the cardiovascular and autonomic nervous systems. Emphasizes the mechanisms of neurotransmitter, hormone, drug action at autonomic synapses, and the molecular basis for physiology and pathophysiology of the cardiovascular system. Lectures, group discussion, and analysis of recent research. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: W.

PHCOL 504 Neuropharmacology (2) *Sandra Bajjalieh* Consideration of the neurobiological basis of drug action on the central nervous system, including mechanism of action and therapeutic use in psychiatric disorders; neurodegeneration/neuroinflammation; control of neuronal excitability and pain; and drug abuse and addiction. Lecture, group discussion, and analysis of recent research. Offered: W.

PHCOL 505 Endocrine Pharmacology (2) *Stanley McKnight* Consideration of the pharmacology of endocrine systems including the hypothalamic/pituitary regulatory peptides, glycoprotein hormones/growth factors, peptide and steroid hormones. Lecture, group discussion, and analysis of recent research. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Offered: Sp.

PHCOL 506 Immunopharmacology and Chemotherapeutics (2) *Stanley McKnight* Basic principles of immunology as applied to immunopharmacology. Current overview of cancer chemotherapy and antimicrobial chemotherapy. Lectures, group discussions, student presentations, and analysis of recent research. Prerequisite: coursework in biochemistry and physiology. Offered: Sp.

PHCOL 507 Pharmacology Seminar (1, max. 30)
Presentation of comprehensive reports on recent medical and scientific literature in fields of current importance. Research progress reports, and reports on results of completed research. Prerequisite: permission of instructor. Offered: AWSp.

PHCOL 513 Endocrine Pharmacology and Chemotherapeutics (2) Consideration of the pharmacology of endocrine systems including the hypothalamic/pituitary regulatory peptides, glycoprotein hormones/growth factors, peptide and steroid hormones. Basic principles of chemotherapy of endocrine and other cancers, as well as viral and microbial diseases. Lecture, group discussion, and analysis of recent research. Prerequisite: organic chemistry, biochemistry, and introductory anatomy and physiology. Instructors: McKnight Offered: Sp.

PHCOL 514 Current Topics in Pharmacology (1, max. 30) Current research related to the mechanisms of drug action presented in a seminar format. Presentations include relevant background material as well as detailed experimental results taken from current research articles. Prerequisite: permission of instructor. Instructors: Gardner Offered: AWSp.

PHCOL 515 General Pharmacology Laboratory (*, max. 9) Laboratory course for professional and graduate students who wish to do independent laboratory research under the direction of a specific faculty member. Prerequisite: permission of instructor. Offered: AWSp.

PHCOL 519 Introduction to Laboratory Research in Pharmacology (4, max. 20) *Storm* On a rotation basis students carry out individual research projects in the laboratories of different faculty members. At the end of each quarter students make formal presentations of their work. For first-year graduate students in pharmacology. Offered: AWSpS.

PHCOL 527 Drug Metabolism (4) *A. RETTIE, K. THUMMEL* Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Includes reaction mechanisms, ultrastructural considerations, induction mechanisms, methodology, kinetics of inhibition and activation, steroid and amine metabolism. Offered: jointly with MEDCH 527; W, odd years.

PHCOL 529 Ion Channel Pharmacology (2) Current topics in ion channel structure, function, genetics, and pharmacology, including consideration of role in electrical signaling in cell membranes and information transfer and processing in nervous system, inherited diseases of ion channels, and sites and mechanisms of action of drugs and toxins. Prerequisite: CONJ 532 and CONJ 536 or permission

of instructor. Instructors: Catterall, Tempel Offered: A, odd years.

PHCOL 530 Neuronal Signaling Pathways (2) Advanced consideration of the molecular events between drug or hormone binding to receptors and the resulting responses. Emphasizes roles played by signal transduction pathways in regulation of synaptic plasticity, memory formation, neuronal apoptosis, and developmental neurobiology. Prerequisite: UCONJ 532 or permission of instructor. Instructors: Beavo, Hague, Storm, Xia Offered: W, even years.

PHCOL 531 Genetic Analysis of Signaling Systems (3) *Rich Gardner, Stanley McKnight* Introduction to classic model organisms including plants, yeast, slime mold, flies, worms, fish, mice, and humans and a discussion of their use in current signal transduction research. A major focus will also be on developing a research grant proposal culminating in a mock study section in which student proposals are evaluated by their peers. Prerequisite: permission of instructor; recommended: molecular and cellular biology; and genetics. Offered: Sp, odd years.

PHCOL 534 Molecular Basis of Addictive Drug Action (2) Advanced consideration and discussion of current literature addressing the basis of opiate, psychostimulant, and cannabinoid effects on signal transduction events, electrical activity of neurons, and drip-motivated behaviors in animal models of human drug abuse. Prerequisite: PHCOL 512 or permission of instructor. Instructors: Chavkin, Phillips, Stella Offered: A, even years.

PHCOL 535 Transcriptional Control in Human Disease (3) Advanced consideration and discussion of the mechanisms regulating transcription/gene expression and of aberrant transcription factors which disrupt this process found in cancer and other human diseases. Prerequisite: PHCOL 512 or permission of instructor. Instructors: Bomszyk, Wang Offered: Sp, even years.

PHCOL 550 An Overview of Faculty Research (1) Reviews research topics currently being studied in pharmacology. Student reads articles published on each topic. Prerequisite: first-year student standing in pharmacology. Instructors: Wang Credit/no-credit only. Offered: A.

PHCOL 560 Regulation of Cell Function by Cyclic Nucleotide Phosphodiesterases (1) Discussion of research strategies, methodologies, and literature relating to regulation of cyclic nucleotide levels in the cell. Emphasis on practical problem solving, data analysis, and presentation of methods important to understanding published data and designing new experiments in this area of research. Prerequisite: permission of instructor. Instructors: Beavo Credit/no-credit only. Offered: AWSpS.

PHCOL 561 Molecular Properties of Ion Channels (1) Discussion of research strategies, methodologies, and literature concerning the structure, function, and regulation of sodium and calcium channels and the mechanism of action of drugs on them. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Catterall Credit/no-credit only. Offered: AWSpS.

PHCOL 562 Molecular Basis for Motivated Behavior (1) Discussion of research strategies and methodologies involved in the regulation of motivated behavior by understanding signal transduction and synaptic physiology. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Instructors: Chavkin Credit/no-credit only. Offered: AWSpS.

PHCOL 563 Signal Transduction Mechanisms in Neuroplasticity and Neuron Growth (1) Discussion of research strategies, methodologies, and literature relating to signal transduction mechanisms important for neuroplasticity and regulation of neuron growth in the central nervous system. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Instructors: Storm Credit/no-credit only. Offered: AWSpS.

PHCOL 564 Cellular Regulation by Protein Kinases (1) Analysis of research problems, techniques, and emerging concepts in the study of the function of protein kinases. Emphasis on critical evaluation of research and development of presentation skills. Prerequisite: permission of instructor. Instructors: McKnight Credit/no-credit only. Offered: AWSpS.

PHCOL 565 Intercellular Signaling in Development (1) Molecular genetic approaches to dissecting the roles and mechanisms of intracellular signaling during development. Emphasis on vertebrate genes related to *Drosophila* segment polarity genes. Prerequisite: permission of instructor. Instructors: Moon Credit/no-credit only. Offered: AWSpS.

PHCOL 566 Molecular Pharmacology of Neurotransmitter and Neurokine Receptors (1) Discussion of research strategies and methodologies in the areas of molecular neurobiology and signal transduction of muscarinic receptors, G-proteins, and neurokine receptors. Emphasis on practical problem solving, data analysis, and presentation methods important to modern scientific work. Prerequisite: permission of instructor. Instructors: Nathanson Credit/no-credit only. Offered: AWSpS.

PHCOL 569 Molecular Genetics of Potassium Channel Function (1) Discussion of research strategies, methodologies, and literature concerning the structure, function, and regulation of potassium channel genes and their role in behavior as studied in mutant mice. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Tempel Credit/no-credit only. Offered: AWSpS.

PHCOL 571 Molecular Mechanisms of Neurosecretion (1) Discussion of research strategies, methodologies, and literature relating to regulation of cyclic nucleotide levels in the cell. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Bajjalieh Credit/no-credit only.

PHCOL 572 Transcriptional Regulation of Growth Control Genes (1) Discussion of research strategies, methodologies, and literature relating to proliferative growth control, cellular differentiation, and gene expression. Emphasis on practical problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Wang Credit/no-credit only.

PHCOL 573 Signaling Systems Linked to Neuroinflammation (1) Discussion of research strategies, methodologies, and literature related to neuroinflammation, microglial cell activation, and the cannabinoid signaling pathway. Emphasis on solving practical problem, data analysis, and

presentation. Prerequisite: permission of instructor. Instructors: Stella Offered: AWSpS.

PHCOL 575 Structural Biology of Ubiquitination (1)

Discussion of research strategies, methodologies and literature concerning the structure, function, and regulation of ubiquitin-protein ligases and the mechanism underlying ubiquitination and ubiquitin-dependent proteolysis. Emphasis on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Zheng Credit/no-credit only. Offered: AWSpS.

PHCOL 576 Pharmacological, Molecular, and Functional Characterization of G-protein Coupled Receptors (1)

Discusses research strategies, methodologies, and literature relating to the pharmacological characterization, molecular biology, and functional coupling of GPCRs. Emphasizes practical problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Hague Credit/no-credit only. Offered: AWSpS.

PHCOL 577 Regulatory Roles of Ubiquitin in the Nucleus (1)

Focuses on the design and implementation of research aimed at understanding the nuclear functions of the small protein modifier ubiquitin. Strongly emphasizes the understanding of current literature, experimental design and troubleshooting, data analysis, and presentation of experimental results. Prerequisite: permission of instructor. Instructors: Gardner Credit/no-credit only. Offered: AWSpS.

PHCOL 578 A-Kinase Anchoring Proteins in Cell Signaling Research (1)

Scott Focuses on the design and implantation of research A-Kinase anchoring proteins in cell signaling. Emphasizes understanding experimental design and troubleshooting, data analysis, and presentation of experimental results. Credit/no-credit only. Offered: AWSpS.

PHCOL 579 Genetic Regulation of Emotional Behavior (1)

Zweifel Provides background in the materials and methods used in the study of the genetic basis of learning and memory and neural circuit function achieved through discussion of current literature, data acquisition and analysis, and experimental design. Offered: AWSpS.

PHCOL 580 Proteomics for Cellular Systems (1)

Ong Discusses and reviews literature for proteomics and other genome-wide approaches to study cellular systems. Trains students to integrate knowledge from existing literature with ongoing laboratory research to enhance data analysis and experimental design. Offered: AWSpS.

PHCOL 581 Mitochondrial Signaling and Metabolism (1, max. 35)

Y. Sancak Trains graduate students on mitochondrial biology, signaling and metabolism by literature review and data analysis. Focuses on effective experimental design, scientific presentation and writing. Introduces basic and advanced laboratory techniques commonly used in mitochondrial biology. Offered: AWSpS.

PHCOL 582 Nuclear Architecture and the Noncoding Transcriptome (1, max. 35)

D. Shechner Examines the biogenesis, regulation, and functional impact of mammalian nuclear architecture during differentiation and disease, emphasizing the interplay between chromatin biology and noncoding RNAs. Trains graduate students in rigorous approaches to experimental design and data analysis, novel technology design and implementation, effective scientific communication and writing, and comprehensive command of the literature. Offered: AWSpS.

PHCOL 583 Kinase Signaling in Neurodevelopment and Disease (1, max. 35)

Explores fundamental concepts in kinase mediated signaling pathways and their regulation of neuronal structure and function during development and disease. Current genetic and proteomic approaches to investigate kinase pathways will be examined. Principles of experimental design, data interpretation and analysis will be discussed as graduate students present key findings of their individual research projects. Offered: AWSpS.

PHCOL 600 Independent Study or Research (*-)

Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

PHCOL 700 Master's Thesis (*-)

Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

PHCOL 800 Doctoral Dissertation (*-) Pharmacology graduate students only. Credit/no-credit only. Offered: AWSpS.

PHYSIOLOGY AND BIOPHYSICS

P BIO 375 Human Physiology in Health and Disease (4) NW Anna Melby Structure and function of the human body with emphasis on pathophysiology and disease treatment. Introduces the basic concept of homeostasis and focuses on the nervous system, musculoskeletal system, endocrine system, and immune system. Prerequisite: BIOL 220; and either CHEM 155 or CHEM 162; recommended: knowledge of basic cell biology and biochemistry. Offered: A.

P BIO 376 Human Physiology in Health and Disease (4) NW Anna Melby Structure and function of the human body with emphasis on pathophysiology and disease treatment. Focuses on the digestive system, cardiovascular system, respiratory system, renal system, and reproductive system. Prerequisite: P BIO 375; recommended: knowledge of basic cell biology and biochemistry. Offered: W.

P BIO 498 Undergraduate Thesis (*, max. 35) Offered: AWSpS.

P BIO 499 Undergraduate Research (*, max. 35) Offered: AWSpS.

P BIO 504 Biophysics of Nerve, Muscle, and Synapse (3) Sullivan Introduces biophysical properties of nerve and muscle cells. Topics include intrinsic electrical properties of neurons, ion channels, receptor signaling, calcium signaling, contraction of muscles, and synaptic function. Offered: jointly with NEURO 504.

P BIO 505 Human Physiology (4-) Binder Provides an introduction to the study of human physiology. Covers the physiology of excitable cells, muscle physiology, renal physiology, gastrointestinal physiology, and the physiology of the central nervous system. Offered: A.

P BIO 506 Human Physiology (-4) Provides an introduction to the study of human physiology. Covers cardiovascular physiology, respiratory physiology, acid base balance, neuroendocrinology, and reproductive physiology. Prerequisite: P BIO

505, or equivalent with permission of instructor. Instructors: Wordeman Offered: W.

P BIO 508 Introduction to Laboratory Research in Physiology (1-5, max. 15) Students participate in the performance of ongoing projects in designated research laboratories. Emphasis is on experimental design, methodology, and techniques. For first- and second-year graduate students in physiology and biophysics to provide a basis for future independent research. Offered: AWSpS.

P BIO 509 Neuroendocrinology (3) Emphasizes the cellular and molecular aspects of several topics in neuroendocrinology, including neuropeptide genes, reproduction, steroid hormone regulation of gene expression, mechanisms of hormone action, endocrine rhythms, and neural oscillations. Prerequisite: BIOL 220; BIOC 442 or permission of instructor. Instructors: Steiner Offered: jointly with NEURO 541; W, even years.

P BIO 513 Practicum in Teaching Physiology and Biophysics (4) Students undertake instructional material development, presentation of materials, and develop problem-solving techniques. Credit/no-credit only. Offered: AW.

P BIO 519 Membrane and Muscle Biophysics Seminar (1) Oscar Vivas, Sharona E Gordon Lectures on current research topics in cell membrane function and muscle contraction with emphasis on presentation skills. Prerequisite: permission of instructor. Credit/no-credit only. Offered: Sp.

P BIO 520 Physiology Seminar (*) Selected topics in physiology. Prerequisite: permission of instructor.

P BIO 521 Biophysics Seminar (*) Selected topics in biophysics. Prerequisite: permission of instructor.

P BIO 522 Selected Topics in Respiratory Physiology (1-3, max. 3) Advanced seminar on selected topics, including pulmonary mechanics, gas exchange, lung fluid balance, regulation of breathing, pulmonary circulation, respiration in the neonate, liquid breathing, airway dynamics, lung structure and development, cardiopulmonary interactions, exercise physiology. Prerequisite: permission of instructor. Instructors: Hildebrandt Offered: AWSpS.

P BIO 523 Heat Transfer and Temperature Regulation (2-5, max. 5) Thermal exchange between the body surface and the environment. Heat production and distribution within the body. Properties of cutaneous and deep temperature receptors. Neural integration and homeothermy. Prerequisite: permission of instructor. Instructors: Brengelmann Credit/no-credit only.

P BIO 525 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: A.

P BIO 526 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: W.

P BIO 527 Readings in Advanced Physiology and Biophysics (*) Guided study of the experimental literature of physiology and biophysics. Essays are written and discussed with the staff. Emphasis is placed on critical analysis, accuracy of expression, bibliographical technique, and other factors of good scholarship. Prerequisite: permission of instructor. Offered: SpS.

P BIO 540 Molecular Mechanisms of Cardiac Remodeling and Heart Failure (1) The mini-course discusses recent progress on novel molecular mechanisms underlying cardiac hypertrophy, myocardial remodeling, and heart failure development. Novel methodologies in basic and translational cardiovascular research will also be discussed.

P BIO 545 Quantitative Methods in Neuroscience (3) Discusses quantitative methods applicable to the study of the nervous system. Revolves around computer exercises/discussion of journal papers. May include linear systems theory, Fourier analysis, ordinary differential equations, stochastic processes, signal detection, and information theory.

Prerequisite: NEUBEH 501, NEUBEH 502, NEUBEH 503, or permission of instructor. Instructors: Rieke Offered: jointly with NEURO 545.

P BIO 548 Molecular Mechanisms of Synaptic Plasticity (2) *Barria* Discusses recent primary literature on the molecular mechanisms underlying structural and functional changes of dendritic spines and synapses in the mammalian brain as result of synaptic activity and experience. Offered: jointly with NEURO 548; Sp, even years.

P BIO 550 Biophysics of Calcium Signaling (1) Introduction to cellular calcium signaling including theoretical and technical issues of calcium signal detection and biological conclusions. Prerequisite: CONJ 531. Instructors: Hille, Santana Offered: jointly with NEURO 550; Sp, odd years.

P BIO 554 Motor Learning: Cellular and Network Mechanisms (1) *Fetz, Perlmutter* Five-week mini-course reviews the current state of research on cellular and network mechanisms of motor learning. After an introductory overview of behavioral and physiological examples of motor learning in various species and systems, students choose specific topics for discussion, using the primary literature as a source. Offered: jointly with NEURO 554.

P BIO 555 Sensory Receptors (1) *Detwiler, Rieke* Five-lecture mini-course examines how different kinds of sensory receptors detect and respond to different modalities of sensory stimuli. Discussion focuses on the cellular and molecular mechanisms of the underlying transduction processes and the experimental evidence that they are based on. Offered: jointly with NEURO 555.

P BIO 556 Axon Pathfinding Mechanisms (1) *Bothwell* Examines mechanisms governing axon growth cone behavior during embryonic development and during regeneration in the injured adult. Discusses approaches employing both invertebrate and vertebrate model systems. Offered: jointly with NEURO 556.

P BIO 557 Ion Channel Gating (1) *Zagotta* Compares and contrasts mechanisms of gating in ligand-gated and voltage-gated ion channels. Covers basics of ligand gating and voltage gating, kinetic schemes, inactivation and desensitization, gating currents and

partial agonists, and ion channel structure. Offered: jointly with NEURO 557.

P BIO 558 Concepts and Mechanisms in Mitosis (2)
Asbury, Wordeman Examines how the mitotic spindle organizes and separates duplicated chromosomes during cell division. Overview of spindle components and key mechanistic concepts. Discusses recent or classic papers from the primary literature.

P BIO 559 Neurobiology of Disease (3) Introduces medically important neurological and psychiatric diseases and experimental approaches to understanding the basis for diseases and their treatments. Covers stroke, epilepsy, autoimmune diseases of the CNS, neurodegenerative diseases, autism, psychosis, anxiety disorders, and mood disorders. Offered: jointly with NEURL 559/NEURO 559.

P BIO 561 From Biophysics to Neural Computation (2) Introduces the mathematics and methods of neuronal modeling. Develops, compares, and relates dynamical systems approaches and empirical characterizations of neuronal function. Includes lectures, student-led journal paper discussions, biweekly computational workshops on neuronal modeling packages, and a computations project. Offered: jointly with NEURO 561; Sp.

P BIO 600 Independent Study or Research (*-)
Offered: AWSp.

P BIO 700 Master's Thesis (*-) Offered: AWSpS.

P BIO 800 Doctoral Dissertation (*-) Offered: AWSpS.

PSYCHIATRY AND BEHAVIORAL SCIENCES

PBSCI 498 Undergraduate Thesis (*, max. 15)
Opportunity to complete work on psychiatric research projects or to pursue a specific psychiatric topic in depth, for instance, through library research. Offered: AWSpS.

PBSCI 499 Undergraduate Research (*, max. 15)
Opportunities are available for participation in a wide variety of ongoing research in the behavioral sciences and clinical psychiatry, or for the development of an individual investigative project

under the supervision of a faculty sponsor. Offered: AWSpS.

PBSCI 505 P-Psychiatry Preceptorship (1, max. 12)
Opportunity for first- and second-year medical students to gain direct experience with clinical faculty members in psychiatry. Includes opportunities to observe different areas of psychiatry including addiction, child, geriatrics, community, crisis, and consultation. Prerequisite: permission of department. Instructors: Combs
Offered: AWSp.

PBSCI 525 P-Psychiatry and the Law (3) E.
GOLDENBERG, J. PIEL Explores issues at the interface of law and psychiatry through didactic curriculum and research. Trainees develop an individualized research project with the assistance of their faculty mentors. Covers topics in civil and criminal forensic psychiatry, research ethics, research design, grantsmanship, and mental health law. Offered: Sp.

PBSCI 546 Psychiatric Epidemiology (3) I. Rhew, A. Vander Stoep Using epidemiological methods to study mental illness. Topics include contributions of mental illness to global disease burden; major population-based studies of mental illness; measurement of psychopathology; culture and mental illness; role of neurodevelopment, genetics, social and physical environment in etiology of mental disorders; mental health services research. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Credit/no-credit only. Offered: jointly with EPI 546.

PBSCI 580 Applied Research in Behavioral Health and Justice Policy (2) Direct experience working with community agencies to build research capacity. Emphasized child welfare, children's mental/behavioral health, and juvenile justice. Seminars cover translational research, community-based research, and communicating research to program and policy audiences. For graduate students, psychiatric residents, and graduate psychology, psychosocial nursing, social work, and public health students. Offered: AW.

PBSCI 598 P-Psychiatry Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Psychiatry Clerkship offered during the patient care phase of the School of

Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWSpS.

PBSCI 600 Research in Psychiatry ([1-15]-)

Independent laboratory research under the guidance and supervision of research scientists in the Psychiatry Department. Faculty permission required.

PBSCI 630 P-WRITE Psychiatry Clinical Clerkship (*, max. 24)

Basic clinical clerkship for students enrolled in the WRITE Program. Prerequisite: completion of basic curriculum; third- and fourth-year students; acceptance in the WRITE program.

PBSCI 631 P-Basic Psychiatry Clerkship - Juneau, AK (1-24, max. 25)

Basic psychiatry clerkship in Juneau, Alaska. Fulfills graduation requirements for clerkship in psychiatry.

PBSCI 632 P-LIC Psychiatry Clinical Clerkship (1-12, max. 12)

Basic clinical clerkship for students enrolled in the LIC program. Prerequisite: acceptance into LIC program.

PBSCI 633 P-Basic Psychiatry Clerkship - Billings Clinic (1-24, max. 25)

Rotations on inpatient adult, child, and adolescent psychiatry, consultations, electroconvulsive therapy (ECT), crisis stabilization units (CSU), psychiatry teleconsultation (project ECHO). Involves a range of psychiatric disorders and substance abuse. Professional experiences working with nurse practitioners, physician assistants, and social workers. Drug screening prior to student rotation. Prerequisite: successful completion of School of Medicine 1st and 2nd year foundation courses. Offered: AWSpS.

PBSCI 635 P-Basic Psychiatry Clerkship - Kalispell (1-24, max. 24)

Basic psychiatry clerkship in Kalispell, MT. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 637 P-Basic Psychiatry Clerkship - Fairfax - Kirkland, WA (12)

Basic psychiatry clerkship in Kirkland, Washington. Fulfills graduation requirements for clerkship in psychiatry.

PBSCI 639 P-Basic Psychiatry Clerkship - Olympia (12)

Basic psychiatry clerkship at Olympia, WA.

Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 640 P-Basic Psychiatry Clerkship - Pocatello (12)

Basic psychiatry clerkship at in Pocatello, ID. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 641 P-Basic Psychiatry Clerkship - Orofino, ID (12)

Basic psychiatry clerkship in Orofino, ID. Fulfills graduation requirement for clerkship in psychiatry. Offered: AWSpS.

PBSCI 642 P-Basic Psychiatry Clerkship - Blackfoot ID (1-24, max. 25)

Students will spend most of their time in a State hospital with 29 geriatric, 90 adult, and 16 adolescent beds. Students participate as a member of a multidisciplinary team and have exposure to a wide range of psychiatric illnesses including mood, anxiety, psychotic, personality and substance use disorders. They have the opportunity to spend time in the outpt setting at the Fort Hall Indian Reservation and spend time with a psychopharmacologist. Prerequisite: Successful completion of School of Medicine 1st and 2nd year foundation courses. Offered: AWSpS.

PBSCI 649 P-Basic Psychiatry Clerkship-Eastern State Hospital-Spokane (1-24, max. 25)

Basic psychiatry clerkship at Eastern State Hospital in Spokane, WA. Fulfills graduation requirement for clerkship in Psychiatry. Offered: AWSpS.

PBSCI 655 P-Basic Psychiatry Clerkship - Cheyenne (1-24, max. 25)

Basic psychiatry clerkship in Cheyenne, WY. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 660 P-Basis Psychiatry Clerkship-Bozeman (1-24, max. 25)

Basic psychiatry clerkship in Bozeman, MT. Fulfills graduation requirement for clerkship in psychiatry. Offered: AWSpS.

PBSCI 661 P-Basic Psychiatry Clerkship - Helena (1-24, max. 25)

Basic psychiatry clerkship in Helena, MT. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 662 P- Basic Psychiatry Clerkship - Missoula (1-24, max. 25)

Students work at St. Patrick Hospital with adult and adolescent inpatients and in the

emergency room for emergent-care exposure. Students have outpatient experience through the adult intensive outpatient program, Pain Treatment Center, and in faculty outpatient practices. Didactics include psychopharmacology, addiction, psychosis, mood disorders, child and geriatric psychiatry. Prerequisite: completion of the HUBIO series; third and fourth year students.

PBSCI 663 P- Basic Psychiatry Clerkship - Billings (1-24, max. 25) Students work at South Center Regional Mental Health Center and Behavioral Sciences Clinic with adult and adolescent inpatients, in the emergency room for emergent care exposure. Outpatient experience including consultations at the community mental health center, Indian reservation, and prison. Didactics include psychopharmacology, addiction, psychosis, mood disorders, child and geriatric psychiatry. A vehicle is needed by students at this site. Prerequisite: completion of the HUBIO series; third and fourth year students.

PBSCI 665 P-Basic Clinical Clerkship (*, max. 24) Inpatient clerkship in psychiatry. Students have primary responsibility under direction of attending psychiatrists and residents for diagnosis and care of patients at UW Medical Center, Harborview Medical Center, or Veterans Administration Hospital. Emergency room, crisis intervention, consultation to patients with psychiatric dysfunction. Familiarity with psychopharmacology and short-term hospitalization emphasized. (Six weeks, full-time.)

PBSCI 666 P-WWAMI Psychiatry and Behavioral Sciences Clerkship (12) Rotation aims to increase student's skills in basic psychiatry, social psychiatry, transcultural psychiatry, and community psychiatry. Orientation is around the diagnosis, treatment, and clinical management of white, Aleut, Indian, and Eskimo children and adults in outpatient, inpatient, and community settings. Third-, fourth-year medical students. (Limit: Two or three students) . Prerequisite: HUBIO 563.

PBSCI 667 P-Basic Psychiatry Clerkship - Boise (1-24, max. 25) Basic psychiatry clerkship at Veterans' Administration Medical Center in Boise, Idaho. Fulfills graduation requirement for clerkship in psychiatry.

PBSCI 668 P-Psychiatry Clerkship - Spokane (1-24, max. 25) Students work on adult, geriatric, and

adolescent inpatient psychiatric units of Sacred Heart Medical Center, following patients after transfer to partial hospitalization or outpatient clinic. Didactics include basic psychiatric diagnosis, treatment, and pharmacotherapy. (Limit: two or three students) . Prerequisite: completion of HUBIO series; third and fourth-year medical students.

PBSCI 669 P-Basic Psychiatry Clerkship - Casper, Wyoming (12) Students work in the Wyoming Behavioral Institute with adult, adolescent, and child inpatients. Students have some outpatient experience and emergent care assessment experience at the Wyoming Medical Center. Didactics and discussion include topics such as psychopharmacology, emergent care and assessment, diagnosis, and substance abuse issues.

PBSCI 670 P-Clerkship in Consultation/Liaison Psychiatry - UWMC (*, max. 24) Assessment of patients with major psychosocial problems associated with physical disease, including: problems stemming from the way the illness is perceived and experienced, liaison with other clinical disciplines on complex diagnosis and treatment of problems. (Limit: one student; two or four weeks.) Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 671 P-Clerkship in Consultation/Liaison Psychiatry - HMC (*, max. 24) Students receive organized instruction and supervised clinical experience in the evaluation of psychiatric and/or behavioral problems in patients on medical and surgical services, and in effectively consulting with their health care providers regarding their clinical management. Includes evaluation of (non-financial) decisional competency. (Limit: two students) . Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 672 P-Elective Clerkship in Primary Care Psychiatry - Boise, VAMC (8/12) Assessment and treatment of patients with acute psychiatric problems in a primary care/rural setting. Consultation work on general medicine and surgery; assessment and dealing with outpatient psychiatric problems as they initially present. Evaluations, crisis intervention strategies, and brief therapies stressed. Prerequisite: satisfactory completion of required psychiatry clerkship (Four weeks; visiting students

interested in the Boise Psych Residency Track allowed.)

PBSCI 673 P-Outpatient Psychiatry Elective (*, max. 24) Offered at Harborview Outpatient Center. Students function as subinterns, conducting diagnostic interviews, initiating and managing pharmacotherapeutic treatment regimens, and providing crisis intervention, under the supervision of the full-time attending at Psychopharmacology Clinic. (Four to six weeks, full-time) . Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 674 P-Elective in Therapeutic Communication (4-8) *J. Carr, H. Combs* Students participate in diverse, interdisciplinary clinical encounters while being supervised by advanced psychotherapists. Includes multidisciplinary chemical dependency evaluations, cognitive assessments, cognitive-behavioral training, and hypnosis. Students complete a holistic patient assessment and are introduced to the complexities of therapeutic communication and improvement methods.

PBSCI 676 P-Inpatient Clerkship in Psychiatry - American Lake VA (8/12) For medical students with a defined interest in psychiatry who wish to develop their knowledge and skills in the evaluation, management, and treatment of a wide range of acute and chronic psychiatric conditions requiring inpatient hospital treatment. (Four or six weeks, full-time) . Prerequisite: satisfactory completion of required psychiatry clerkship. Instructors: Johnston

PBSCI 677 P-Alcohol and Drug Treatment Clerkship - American Lake VA (8/12) Student assists in every phase of the substance-abuse treatment, including admission interviews, patient evaluation, problem identification, group and individual psychotherapy, assertiveness training, anger control, human sexuality, medical evaluation and treatment, couples therapy, discharge and aftercare planning. Experience primarily clinical. Prerequisite: satisfactory completion of required psychiatry clerkship. (Four or six weeks, full-time) . Instructors: Lim

PBSCI 678 P-Clerkship in Psychiatric Long-Term Care and Rehabilitation (*, max. 12) Two- to six-week clerkship provides learning experiences in rehabilitation of long-term psychiatric patients with

medical illness. Multidisciplinary team approach, working with homeless mentally ill. Diagnostic skills emphasized. Spectrum of diseases (cardiovascular, Huntington's, organic brain syndrome) is such that physical rehabilitation is not an emphasis. Prerequisite: HUBIO 563; satisfactory completion of required psychiatry clerkship. Instructors: Johnston

PBSCI 680 P-Clerkship in Emergency Psychiatry (*, max. 24) Emphasis on clinical evaluation, acute management, and treatment planning for individual patients. Experience in coordinating these activities with other emergency room personnel, and various hospital and community resources. Emphasis on skills useful to physicians in any specialty. Third- and fourth-year medical students only. (Four or six weeks, full-time) . Prerequisite: satisfactory completion of required psychiatry clerkship. Instructors: Pasic

PBSCI 682 P-Addiction Medicine - Rock Spring WY (4) Students identify, assess, diagnose, and treat addiction disorders in inpatient and outpatient settings through hospital rounds, inpatient hospital consults, and observation of intensive outpatient groups. 2 weeks.

PBSCI 685 P-Geriatric Psychiatry Clerkship (*, max. 12) Two- to six-week elective (four weeks highly recommended) . Participation in the evaluation and care of older persons with psychopathology, such as intellectual impairment and depression, in a variety of settings. Emphasis on improving clinical skills regarding diagnosis and treatment of common behavioral problems in the elderly. Prerequisite: satisfactory completion of required psychiatry clerkship, vehicle required for this rotation.

PBSCI 688 P-Subinternship in General Psychiatry (*, max. 16) Students function as interns under the supervision of house staff and attending psychiatrists. Further development of their diagnostic and therapeutic skills emphasized. Special areas of interest, such as family intervention, substance abuse, psychoses, neuropsychiatry, community psychiatry, administration, research pursued. (Four or six weeks, full-time) . Prerequisite: satisfactory completion of required psychiatry clerkship; permission of instructor.

PBSCI 689 P-Subinternship in General Psychiatry - Spokane, WA (8, max. 16) Students function as

interns under the supervision of house staff and attending psychiatrists. Further development of their diagnostic and therapeutic skills emphasized. Special areas of interest, such as family interventions, substance abuse, psychoses, neuropsychiatry, community psychiatry, administration, research pursued. (Four or six weeks, full time.) Prerequisite: Satisfactory completion of required psychiatry clerkship, instructor permission. Offered: AWSpS.

PBSCI 695 P-Advanced Clerkship in Child Psychiatry - CSTC (*, max. 24) Provides an opportunity to participate in evaluation and treatment of children and adolescents in Lakewood, WA. Prerequisite: satisfactory completion of required psychiatry clerkship; fourth year medical student status. 2/4/6 weeks.

PBSCI 696 P-Advanced Clerkship in Child Psychiatry (*, max. 24) Provides students an opportunity to participate in evaluation and treatment. Experiences in specialized clinics are also available. (Four or six weeks, full-time. Limit: one student) . Prerequisite: satisfactory completion of required psychiatry clerkship.

PBSCI 697 P-Psychiatry Special Electives (*, max. 24) By special arrangement, clerkships, externships, and research opportunities can be taken at other institutions. Students obtain permission from Dr. Combs before contacting the dean's office one month before advance registration. Students contact affiliating institutions. Does not fulfill the requirement for a basic clerkship in psychiatry.

PBSCI 699 P-WWAMI Psychiatry and Behavioral Sciences Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

RADIATION ONCOLOGY

R ONC 499 Undergraduate Research (*, max. 51) R. *Ermoian, U. Parvathaneni, M. Phillips, D. Wilbur* Opportunities in clinical or laboratory investigation in radiation oncology, radiation physics, or computer-related research. Student participation in

ongoing or new projects. Open to students in the biological or physical sciences.

R ONC 505 P-Radiation Oncology Preceptorship (1, max. 12) *Kane, Kelly, Kim, Koh, Laramore, Liao, Patel, Rockhill, Russell* Students choose either to follow an attending physician through all aspects of radiation oncology including consults, follow-up, and treatment planning; or to follow a small cohort of patients throughout their treatment course to learn about the experience of a cancer patient undergoing treatment for life-threatening disease. Credit/no-credit only.

R ONC 600 Independent Study or Research (*) Prerequisite: permission of department and faculty sponsor. Offered: AWSpS.

R ONC 601 Multidisciplinary Oncology Clerkship (4) *Ralph P Ermoian* Introduces students to interdisciplinary oncology care. Students follow patients through multidisciplinary clinic visits, attend tumor boards, and spend dedicated time with specialties like medical oncology, radiation oncology, pediatric oncology, surgical oncology, pathology, and radiology. Students see patients at the Seattle Cancer Care Alliance, Seattle Children's Hospital, and University of Washington Medical Center. Prerequisite: UW School of Medicine students must have completed the Foundations phase of the curriculum. Visiting students must have completed their preclinical curriculum and be in the clerkship phase of medical school. Credit/no-credit only. Offered: AWSpS.

R ONC 694 P-Clinical Cancer Management - SCCA (*, max. 8) Participation in the clinical management of patients with cancer, emphasizing a multi-modality approach. Includes clinical assessment, planning of radiation treatment, and follow-up evaluation of patients. Special procedures include three-dimensional treatment planning, implant brachytherapy, and intraoperative radiation. Daily teaching conferences with faculty and residents. Prerequisite: medicine core clerkship or permission of instructor.

R ONC 695 P-Clinical Cancer Management - UWMC (*, max. 8) Participation in the clinical management of patients with cancer, emphasizing a multi-modality approach. Includes clinical assessment, planning of radiation treatment, and follow-up

evaluation of patients. Special procedures include three-dimensional treatment planning, implant brachytherapy, and intraoperative radiation. Daily teaching conferences with faculty and residents. Prerequisite: medicine core clerkship or permission of instructor. Instructors: Kane

R ONC 697 P-Radiation Oncology Special Elective (*, max. 24) By specific arrangement for qualified students, special clerkship, externship, or research opportunities are made available at institutions other than the University of Washington. Students obtain a "special assignment" form from the dean's office at least one month before advance registration. Prerequisite: permission of instructor. Instructors: Kane

R ONC 699 P-WWAMI Radiation Oncology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions located within the WWAMI region, other than the University of Washington. Prerequisite: permission of department. Instructors: Kane

RADIOLOGY

RADGY 498 Undergraduate Thesis (*, max. 30) Supervised clinical and/or laboratory research in the broad field of medical imaging, culminating in a thesis. Offered: AWSpS.

RADGY 499 Undergraduate Research (*, max. 35) Opportunity to gain research experience and direct participation in either clinical or basic sciences investigation in diagnostic and/or nuclear medicine. Offered: AWSpS.

RADGY 505 P-Preceptorship in Radiology (1-, max. 24) Opportunity for medical students to gain experience with faculty in clinical and academic environments. Students observe general aspects of diagnostic radiology, interventional radiology, or nuclear medicine, including clinical problems, the different relationships in clinic between physician and patient, and research aspects of the department. Prerequisite: permission of instructor. Offered: AWSpS.

RADGY 508 Physical Aspects of Medical Imaging (4) Quantitative physical principles of medical imaging

are presented for electromagnetic and sonic radiation. Methods of image formation and analysis are discussed for conventional film radiography, CT, DSA, PET, B-mode ultrasound, and Doppler ultrasound.

RADGY 580 P-Nuclear Medicine Technique, Physics, and Instrumentation (2.5) Provides familiarization with basic nuclear phenomena and with the instrumentation used in the practice of nuclear medicine. Discussions and laboratory exercises. Practical experience in instrument operation and sample counting are provided. Prerequisite: permission of instructor. Offered: S.

RADGY 600 Independent Study or Research (*-) Prerequisite: permission faculty sponsor. Offered: AWSpS.

RADGY 684 Interventional Radiology (8) *David Shin* Advanced Patient Care (APC) clerkship in interventional radiology (IR) for third- or fourth-year medical students strongly considering application to IR residency. Sites include UWMC, HMC, VA, and SCH. Prerequisite: permission of clerkship coordinator and director; recommended: RADGY 694. Offered: AWSpS.

RADGY 685 P-Introduction to Diagnostic Radiology - Bozeman (4/8) Overview of the sub-specialty areas of diagnostic radiology and nuclear medicine. Emphasizes utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies.

RADGY 686 P-Introduction to Diagnostic Radiology - Idaho Falls (4) Overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasizes utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies.

RADGY 687 P-Introduction to Diagnostic Radiology - Casper (4) Overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasizes utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWSpS.

RADGY 688 P-Introduction to Diagnostic Radiology - Boise (4)

RADGY 689 P-Introduction to Diagnostic Radiology - Billings (4) Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWSpS.

RADGY 690 P-Introduction to Diagnostic Radiology - Nampa (4) Half-time clerkship in the field of medical imaging. Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWSpS.

RADGY 691 P-Introduction to Diagnostic Radiology - Alaska (4) Half-time clerkship in the field of medical imaging. Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology and nuclear medicine. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWSpS.

RADGY 692 P-Introduction to Diagnostic Radiology - Spokane (4/8) Full-time clerkship in the field of medical imaging. Lectures, case discussions, film reading, and independent study provide an overview of the subspecialty areas of diagnostic radiology. Emphasis on utilization and selection of imaging tests, radiologic anatomy, and interpretation of commonly encountered studies. Offered: AWSpS.

RADGY 694 P-Advanced Radiology Clerkship (4/8)
G. REDDY Clerkship for third- or fourth-year medical students providing a more in depth experience in diagnostic or interventional radiology. Prerequisite: Offered: AWSpS.

RADGY 695 P-Radiology Elective Clerkship (4/8) Clinical rotations for third- or fourth-year medical students in one to four subspecialty areas of radiology at University of Washington and affiliated hospitals for those who have not previously completed a radiology clerkship. Offered: AWSpS.

RADGY 696 P-Nuclear Medicine Clerkship (*, max. 12) Daily participation at University of Washington Medical Center nuclear medicine clinic emphasizing technical performance, diagnostic interpretation, and clinical relevance of nuclear imaging. Daily clinical teaching conferences of the division. Four- and six-week clerkships can be preplanned in areas such as pulmonary, cardiovascular, renal, bone, computer analysis. Prerequisite: permission of instructor. Offered: AWSpS.

RADGY 697 P-Radiology Special Electives (*, max. 24) Radiologic training in a nonaffiliated institution. Permission and arrangements must be made at the time of registration through direct communication between the student and the education coordinator in Radiology. A written outline from a preceptor at the intended site required. Prerequisite: permission of radiology education coordinator. Offered: AWSpS.

RADGY 699 P-WWAMI Radiology Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

REHABILITATION MEDICINE

PROSTHETICS AND ORTHOTICS

RHB PO 501 Prosthetics and Orthotics Skills (1) Emphasizes the development of psychomotor skills for the application of contemporary technology uses. Practice and discussion of material and design theories related to durability, weight, and ease of fabrication to encourage problem-solving skills for independent practice. Credit/no-credit only. Offered: A.

RHB PO 502 Professional and Practice Issues (1) Provides an overview of professional and practice issues in prosthetics and orthotics. Includes discussion of healthcare, policy, and systems; introduction to reimbursement, Medicare and Medicaid rules and regulations; practice management; bioethics; professional organizations; legislative issues; and medical ethics and compliance. Offered: Sp.

RHB PO 511 Upper Limb Prosthetics I (4) Covers upper limb prosthetics providing students with

background knowledge of rehabilitation planning and principles of below elbow prosthetic management and prescription consideration. With direct patient contact, students assess and then formulate, implement, and evaluate a prosthetic treatment plan. Offered: A.

RHB PO 512 Upper Limb Prosthetics II (4) Integrates principles from upper limb prosthetics I, focusing on above-elbow prosthetic management. Encourages critical thinking and appropriate clinical decision-making through discussions and case study exercises that include body-powered, externally-powered, and hybrid systems. Offered: Sp.

RHB PO 515 Upper Limb Orthotics (3) Focuses on the integration of information acquired in previous foundational courses in anatomy and patient evaluation procedures with knowledge and skills of orthotic principles and theories related to upper limb orthotic interventions and patient management.

RHB PO 521 Lower Limb Prosthetics and Orthotics I: Theory and Application (5) Integrates prior core foundational knowledge (anatomy, kinesiology, medical science, gait analysis, patient evaluation procedures, and functional skills) with new knowledge of prosthetic and orthotic theory, patient evaluation, and clinical practice. Analyzes, evaluates, and synthesizes principles and theories in developing intervention plans for individuals with lower limb dysfunction or amputation. Offered: S.

RHB PO 522 Lower Limb Prosthetics I: Clinical Practice (4) Explains and applies biomechanical principles of prosthetic gait and alignment to treatment of individuals with amputations below the knee. Students develop individualized treatment plans that demonstrate analysis of client needs, application of transtibial socket design, prescription principles, and components. Integrates knowledge of available research and protocols into the planning process. Offered: S.

RHB PO 523 Lower Limb Orthotics I: Clinical Practice (4) Utilizes patient evaluation skills and applies knowledge of pathology, anatomy, biomechanics, and orthotic theory and principles to evaluate and provide orthotic treatment plans for individuals with lower extremity dysfunction. Students refine professional skills and behavior and develop

psychomotor and cognitive skills required for patient care. Offered: S.

RHB PO 524 Lower Limb Prosthetics and Orthotics II: Theory and Application (5) Integrates prior foundational knowledge acquired in RHB PO 521 with new knowledge and skills of prosthetic and orthotic theory and practice. Students actively analyze, evaluate, and synthesize principles and theories in the development of prosthetics/orthotics intervention plans for individuals with lower limb dysfunction or amputation. Prerequisite: RHB PO 521. Offered: A.

RHB PO 525 Lower Limb Prosthetics II: Clinical Practice (3) Includes advanced instruction in concepts and skills developed in Lower Limb Prosthetics I. Offered: A.

RHB PO 526 Lower Limb Orthotics II: Clinical Practice (3) Utilizes patient evaluation skills and applies knowledge of pathology, anatomy, biomechanics, and orthotic theory and principles to evaluate, develop, and provide orthotic treatment plans for individuals with lower extremity dysfunction. Students refine professional skills and behavior and develop psychomotor and cognitive skills required for patient care. Offered: A.

RHB PO 527 Pediatric Prosthetics and Orthotics (2) Focuses on the integration of information from previous coursework focusing on specific pediatric medical conditions and interventions. Includes discussion of pathology/pathophysiology, etiology, clinical presentation, natural history, and surgical and medical management. Discusses implications of various medical interventions and their functional considerations based on the available literature. Offered: ASp.

RHB PO 528 Lower Limb Prosthetics III: Theory and Application (5) Develops individualized prosthetic treatment plans based on a comprehensive knowledge of prosthetic gait, alignment, transfemoral socket design, and component principles. Develops support treatment plans by integrating knowledge of available research and treatment protocols into the decision-making process. Offered: W.

RHB PO 529 Lower Limb Prosthetics III: Clinical Practice (6) Advanced instruction in application of

biomechanical principles of prosthetic gait and alignment to treatment of individuals with amputations above the knee. Includes obtaining histories, assessing physical function, and taking residual limb impressions and measurements to prove prosthetic care. Offered: W.

RHB PO 530 Lower Limb Orthotics III: Theory and Application (4) Integrates knowledge and competencies from prior courses with new knowledge of orthotics management of the lower limb involving the knee and hip. Students acquire knowledge of components and design options for dysfunction of the hip and knee. Offered: WSp.

RHB PO 531 Lower Limb Orthotics III: Clinical Practice (4) Integrates prior knowledge of design principles, material science, and fabrication process; acquires knowledge of components and design options; and analyzes efficacy of orthotic treatment plans in achieving desired biomechanical goals and outcomes. Offered: WSp.

RHB PO 532 Spinal Orthotics (5) *Yamane* Integrates competencies gained from core foundational courses with additional theories and principles of orthotic management of spinal pathologies including scoliosis, trauma, and congenital and degenerative etiologies. Offered: Sp.

RHB PO 533 Spinal Orthotics I (2) Integrates prior knowledge (anatomy, physiology, patient evaluation skills) obtained in the foundational courses with knowledge and skills of orthotic theory and practice related to trauma and degenerative etiologies. Learning is achieved through lectures, discussion, and laboratory experiences. Offered: AWSp.

RHB PO 534 Spinal Orthotics II (3) Integrate prior knowledge of anatomy, physiology, and clinical evaluation with knowledge and skills of orthotic theory and practice related to scoliosis and kyphosis. Learning is achieved through lectures, discussion, and laboratory experiences.

RHB PO 541 Engineering Concepts (3) *S. Spaulding* Students are introduced to principles of mechanics, strength of materials, force analyses, fatigue, materials science and related topics that are relevant to prosthetic and orthotic device design. These concepts are applied to component failure and are relevant to the overall curriculum's laboratory and

clinical work. Engineering concepts are discussed for application in future courses. Offered: Sp.

RHB PO 561 Clinical Rotation I (2) Students actively observe patient care, perform patient histories and evaluation procedures, and develop clinical patient care psychomotor skills under the guidance and mentorship of clinical preceptors. Offered: S.

RHB PO 562 Clinical Rotation II (1) Students actively observe patient care, perform patient histories and evaluation procedures, and develop clinical patient care psychomotor skills under the guidance and mentorship of clinical preceptors. Offered: A.

RHB PO 563 Clinical Rotation III (1) Students actively participate in the provision of prosthetics and orthotics treatment services and develop clinical patient care skills under the mentorship of clinical preceptors. Offered: W.

RHB PO 564 Clinical Rotation IV (1) Students actively participate in the provision of prosthetics and orthotics treatment services and refine clinical patient care, decision-making, and problem-solving skills under the mentorship of clinical preceptors. Offered: Sp.

RHB PO 581 Outcome Measures for the Prosthetics and Orthotics Clinic (2) Examines development and use of health-related outcome measures. Focuses on the relationship between measurement constructs and patient populations as well as psychometric properties. Students select, implement, and critically evaluate patient outcome measures. Offered: Sp.

RHB PO 582 Critical Evaluation of the Prosthetics and Orthotics Literature (1) Examines and applies appropriate methods of analyzing prosthetics/orthotics literature. Offered: A.

RHB PO 583 Evidence Based Practice I (3) Focuses on the use and critical evaluation of evidence to answer clinical problems. Encourages students to become consumer of evidence by developing an understanding of how to acquire and incorporate evidence into routine clinical practice. Offered: W.

RHB PO 584 Evidence Based Practice II (3) Covers developing a treatment plan based on theory, evidence, and experience; and proposing a

quantitative and qualitative assessment strategy to evaluate the developed treatment. Encourages students to become consumers of evidence to answer clinically relevant questions. Offered: Sp.

REHABILITATION MEDICINE

REHAB 300 Introduction to Occupational Therapy (1) Introduction to occupational therapy profession. Provides historical perspectives, theoretical foundations, and clinical case studies in various practice arenas. Credit/no-credit only.

REHAB 496 Special Topics in Rehabilitation (1-9, max. 14) Guided opportunity for in-depth study in specific areas of rehabilitation. Topics vary.

REHAB 498 Undergraduate Thesis (*, max. 15)

REHAB 499 Undergraduate Research (*, max. 15) Opportunity to design, perform, and analyze research investigation in problem areas in rehabilitation medicine. These include clinical and basic research problems in, for example, head and spinal injury, chronic disease, pain neurophysiology, electrodiagnosis, communication, and bioengineering.

REHAB 500 Clinical Clerkship in Physical Therapy (4) Observation, instruction, and supervised practice in treatment of patients in diverse clinical settings. Emphasis is given to the application of previously learned material and skills to specific clinical problems. Required for physical therapy students. Credit/no-credit only.

REHAB 502 Pediatric Physical Therapy (4-, max. 8) Provides foundational knowledge in development and an overview of pediatric physical therapy practice for children with atypical development. Presents examination, evaluation, and development of physical therapy plans of care for children with various disabilities within the frameworks of family-centered care and disablement models.

REHAB 503 Lifespan III: Geriatric Physical Therapy (3) Theory and principles of exercise procedures used when treating the geriatric patient. Includes a discussion of age related changes in the systems essential to movement control; factors contributing to physical disability and frailty with aging;

adaptation of assessment and treatment procedures to the geriatric patient. Lectures and laboratories.

REHAB 504 Procedures I: Basic Physical Examination of the Extremities (2) Develops technical skills and theoretical foundations in the examination of patients from a neuromusculoskeletal perspective. Special emphasis on examination of the extremities, including applied anatomy, posture, screening tests, special tests, and scanning exams.

REHAB 505 Introduction to Pharmacology (2) Pharmacological survey of drugs commonly prescribed for clients seen in a physical therapy practice setting. Presentations on basic principles. Additional data search and group reports. Overview of medical emergencies.

REHAB 506 Procedures II: Basic Physical Examination of the Spine (2) Develops technical skills and theoretical foundations in the examination of patients from a neuromusculoskeletal perspective. Emphasizes examination of the spine including applied anatomy, posture, screening tests, special tests, and scanning exams.

REHAB 507 Physical Therapy Procedures III: Modalities (3-4) Principles and practice of physical therapy clinical treatment procedures utilizing therapeutic modalities. Lecture and laboratory format.

REHAB 508 Principles of Therapeutic Exercise (5) Theory, principles, and practice of exercise procedures used for treatment purposes in physical therapy, including motor learning, variables of motor performance, and exercise prescription. Lectures and laboratories. Simulated patient problems.

REHAB 509 Rehabilitation Procedures: Functional Skills Assessment (1) Development of clinical competence in assessment and training of basic patient functional skills, including handling techniques, transfers, and assisted ambulation.

REHAB 510 Rehabilitation Psychology (2) Focuses on understanding assimilation of disability, participation in rehabilitation, management of behavior, and maintenance of performance from both the practitioner and patient perspective. Focuses on the role of the psychologist in the

rehabilitation team. Includes case study and case conference materials.

REHAB 511 Musculoskeletal IV: Clinical Management (4) Physical therapy clinical evaluation and management of patients with musculoskeletal dysfunction. Special emphasis on upper quadrant anatomy. Lecture and laboratory format. Offered: A.

REHAB 512 Musculoskeletal V: Clinical Management (3-4, max. 8) Physical therapy clinical evaluation and management of patients with musculoskeletal dysfunction. Special emphasis on upper and lower extremity musculoskeletal conditions. Lecture, laboratory and simulation learning format.

REHAB 513 Special Studies in Physical Therapy (1-5, max. 15) Theory and practice in specialized areas of physical therapy. Includes organization and administration of specialized programs, advanced evaluation and treatment techniques, role of the consultant. Credit/no-credit only.

REHAB 514 Systems Review for Physical Therapists (3) Development of advanced physical assessment skills to provide students with the ability to determine if a patient's disorder is within the scope of practice for physical therapy or requires referral to another healthcare provider. Lectures and laboratory format, with an emphasis on the lab component. Credit/no-credit only.

REHAB 515 Advanced Neuromusculoskeletal Interventions in Physical Therapy (3) Advanced neuromusculoskeletal treatment techniques. Emphasis on review of manual therapy, exerciser and modality interventions in case studies across lifespan and continuum of care. Credit/no-credit only.

REHAB 516 Medical Information for Rehabilitation Counselors (3) Lectures in medical science field regarding the etiology, prognosis, and physical restoration of common disabling conditions. Case studies are used extensively, and major emphasis is placed on vocational implications of physical disability. Prerequisite: permission of instructor. Instructors: Johnson

REHAB 517 Physical Therapy Seminar (2-, max. 12) Focuses on physical therapy topics pertaining to transcurricular and professional practice issues.

REHAB 518 PT Professional Series III: Diversity, Inclusion and Health Disparities (2) In-depth exploration of health disparities in the United States based on race, ethnicity, culture, social economic status, or sexual orientation. Covers roles of health status indicators, social determinants of health, cultural competency, and access to health services. Offered: Sp.

REHAB 519 P-Preceptorship in Rehab Medicine (1, max. 12) *McNalley* Explores the field of physical medicine and rehabilitation. Students observe a physiatrist one half day each week, and gain understanding of the management of acute injuries, chronic disease, and disabilities. Offered: AWSpS.

REHAB 520 Seminar (1-5, max. 12) Conferences, seminars, discussions of advanced physical medicine and rehabilitation topics for graduate students, residents, and postdoctoral fellows in rehabilitation medicine. Lectures, discussion, and laboratory work in selected aspects appropriate to elected area of study for applicants for master-level degree.

REHAB 521 Survey of Pathophysiology for Rehabilitation (2-3, max. 6) *J. Jandreau* Uses a systems approach overview of the disease process and the impact it has on the rehabilitation process. Provides a foundation for understanding how dysfunction of major systems can influence a person's ability to move. Discusses risk reduction and prevention strategies surrounding diseases. Offered: AW.

REHAB 522 Physiological Topics in Rehabilitation Medicine (2) Reviews traditional physiological concepts related to the nervous, musculoskeletal, and cardiopulmonary systems as a foundation for rehabilitation practice. Includes recent advances in research and applicable case studies.

REHAB 523 Neuroscience III: Applied Neurology (4) Theory and principles of advanced exercise procedures used when treating patients with neurologic pathology. Includes the application of principles of motor learning and control; facilitation and inhibition of variables affecting functional motor performance; adaptation of assessment and

treatment procedures to patients with different types of neurologic impairments. Lectures and laboratories.

REHAB 525 Exercise Physiology for Rehabilitation (3) Provides systems approach to exercise physiology, including cardiovascular and musculoskeletal response to exercise training, and the impact it has on the rehabilitation process. Reviews common disease processes that effect ability and tolerance, and may benefit from rehabilitation interventions.

REHAB 527 Neuroscience IV: Special Topics in Neurologic Rehabilitation (3) Critical analysis and application of physical therapy assessment and treatment techniques to problems related to specific adult neurological disorders. Neurological disorders to be covered include stroke, spinal cord injury, traumatic brain injury, and multiple sclerosis.

REHAB 528 International Clinical Clerkship (2) Short-term clinical education experience outside the United States. Participants work in a mentored relationship as part of a multi-disciplinary rehabilitation team providing direct clinical services and consultation to patients and their care-givers. Sponsored sites selected and screened by clinical coordinator. Students may choose area of clinical focus. Credit/no-credit only.

REHAB 529 PT Professional Series II: Professional and Practice Issues in Physical Therapy (2) Augments the student's understanding of the profession and current issues in healthcare. Includes healthcare delivery, scope of practice, professional organization, political activism, specialist certification, licensure, collaboration, therapeutic relationships, disclosure, privacy, and informed consent. Offered: W.

REHAB 530 Medical Aspects of Vocational Counseling (2-3) Introduction to vocational implications of physical and emotional disabilities. Methods, counseling techniques, therapeutic modalities, community resources used in producing vocational assistance for persons with disabilities. Prerequisite: resident standing in rehabilitation medicine or permission of instructor. Instructors: Johnson

REHAB 531 PT Professional Series I: Critical Thinking Skills in Physical Therapy (2) *Kevin J McQuade* Introduces students to structured critical thinking for discussion and analysis of selected musculoskeletal approaches. Interactive small groups explore key papers with controversial or novel assertions, or that address commonly used treatment techniques. Offered: A.

REHAB 532 Clinical Affiliation for Rehabilitation Counselors (5-6) Under preceptorship of rehabilitation counseling staff, students counsel and evaluate patients with severe physical, emotional, or social problems; administer vocational testing; obtain placement on job stations; work with community resources for vocational/educational placement; and develop activity-oriented schedules. Prerequisite: permission of instructor. Instructors: Johnson

REHAB 533 Diseases and Diagnosis in Rehabilitation (2-, max. 4) Provides an introduction to medical diagnoses and diseases having high rates of referral to rehabilitation services in order to promote comprehensive patient care.

REHAB 535 Physical Therapy Administration Issues (2) In-depth discussion of administrative issues overarching physical therapy practice, including economic trends, operational policy, budgeting, reimbursement, staffing, business structure, and entrepreneurship. Required for physical therapy students. Credit/no-credit only.

REHAB 536 Patient Evaluation and Clinical Decision Making (1-2, max. 8) General principles and practice of physical therapy patient evaluation and use of the clinical decision-making models. The application of patient management principles through examination techniques and documentation strategies. Lecture and laboratory format.

REHAB 537 Functional Mobility Skills (2) Principles and practice of physical therapy interventions related to functional mobility skills, including transfer training, wheelchair fitting, wheelchair mobility, gait training, and caregiver training. Lecture and laboratory format.

REHAB 538 Integumentary, Edema Management, and Circulatory Screening for PT (2) Principles and practice of physical therapy evaluation and

interventions related to wound care, burn care, edema management, circulatory screening, and splinting applications. Lecture and laboratory format.

REHAB 539 Communication Disorders in Rehabilitation Medicine (1) *Yorkston* Overview of communication disorders secondary to central and peripheral nervous system impairment. Emphasis on facilitating identification of speech/language disorders with discussion of implications for rehabilitation.

REHAB 540 Acute Care Practice in Physical Therapy (3, max. 6) Provides an in-depth analysis of the role of the physical therapist in the acute care setting. Lectures frame care-based problem solving and experiential learning. Consequences of recumbent positioning and reduced activity examined using a systems-based approach. Develop entry-level knowledge for delivery of acute care PT services within a multidisciplinary team.

REHAB 541 Gross Anatomy Laboratory - Extremities (1) Uses cadavers to study the musculoskeletal, peripheral-vascular, and peripheral-nervous systems. Focuses on the extremities. Uses primarily prospected material, but provides some opportunity for independent dissection. Credit/no-credit only.

REHAB 542 Gross Anatomy Laboratory - Spine (1) Studies the musculoskeletal, peripheral-vascular, and peripheral-nervous systems from cadavers. Focuses on the spine. Uses primarily prospected material, but includes some opportunity for independent dissection. Credit/no-credit only.

REHAB 543 Rehabilitation Kinesiology Laboratory (1) Provides instruction and focus on practical experience and clinical problem solving in kinesiology by exploring and developing proficiency in a framework for observation, analysis, and description of human movement on the normal pathological spectrum. Credit/no-credit only.

REHAB 544 Functional Anatomy for Rehabilitation of the Extremities (5-) Covers the functions of the musculoskeletal system as applied by professionals in the practice of clinical rehabilitation. Focuses on anatomy and of the upper and lower extremities, including associated peripheral-vascular and peripheral-nervous systems. Intended to enhance

functional assessment and to improve diagnosis and treatment through greater understanding of underlying anatomy. Offered: A.

REHAB 545 Functional Anatomy for Rehabilitation of the Spine (-4) Covers functions of the musculoskeletal system as applied by professionals in the practice of clinical rehabilitation. Focuses on the anatomy of the spine, including associated vascular and nervous systems. Enhances functional assessments and the improvement of diagnosis and treatment through greater understanding of underlying anatomy. Offered: W.

REHAB 546 Teaching Practicum in Rehabilitation (1-3, max. 15) Integration of knowledge and skills in teaching through teaching in the classroom or presentation of a minicourse, workshop, or in-service training series. Prerequisite: permission of instructor.

REHAB 548 Kinesiology (4) Concepts for rehabilitation professionals in Physical Therapy, Occupational Therapy, and Prosthetics and Orthotics. Offered: Sp.

REHAB 550 Neuropsychology in Rehabilitation (2) *J. HOFFMAN* Examination and management of patients with brain lesions, as well as an understanding of the consequences of such conditions. Prerequisite: graduate standing in rehabilitation medicine.

REHAB 551 Neurobiology for Rehabilitation (5) In-depth analysis of human neuroanatomical structure and neurophysiological function as a basis for rehabilitation practice.

REHAB 554 Perspectives in Interprofessional Practice (0/1, max. 1) Distributed over seven consecutive quarters, this course integrates diverse interprofessional perspectives to prepare graduate and professional students for effective practice as collaborative team members. Offered: AWSpS.

REHAB 555 P-Neuromuscular Electrodiagnosis (2.5) Demonstration of fundamentals of electromyography and peripheral nerve stimulation followed by participation in clinical electrodiagnosis examinations. Develops awareness of knowing when such procedures are indicated for patients and interpreting results rather than developing proficiency in performing these examinations.

Prerequisite: permission of instructor. Instructors: Kraft

REHAB 556 Foundations of Rehabilitation Science

(3) Overview of rehabilitation science and social constructs of disability emphasizing bio-psycho-social-environmental models of the enabling-disabling process across the lifespan. Lays the philosophical and theoretical foundations for the study of rehabilitation as a science and is designed to promote interdisciplinary thinking. Prerequisite: instructor permission. Instructors: Johnson, Kartin, Yorkston

REHAB 557 Evidence-Based Rehabilitation (3)

Addresses frameworks for evaluating the evidence in rehabilitation science; asking answerable questions, using advanced search strategies; critically appraising literature; understanding the systematic review process; conducting and interpreting meta-analyses; developing evidence-based practice guidelines; communicating the evidence to stakeholders; and translating evidence into rehabilitation practice. Prerequisite: permission of instructor. Instructors: Kartin, Yorkston

REHAB 558 Rehabilitation Research Methods (3)

Provides an orientation and critical analysis of current practices in disability and rehabilitation research by appraising methodologies and strategies used to investigate consequences of human function, activity performance, and social participation. Topics include introduction to qualitative and quantitative methodologies with respect to rehabilitation research. Prerequisite: permission of instructor. Instructors: Johnson, Kartin, Yorkston

REHAB 559 Introduction to Global Rehabilitation (3)

Cody L McDonald Explores rehabilitation from a global perspective. Provides framework for students to develop proposals addressing current global rehabilitation issues. Offered: S, odd years.

REHAB 560 Defining and Measuring Outcomes in Rehabilitation Research (3)

Introduces the importance, methods, and challenges of outcomes research in rehabilitation. Addresses definitions and importance of outcomes research; behaviors measurement, functional abilities, quality of life, and consumer satisfaction; outcomes measurement for diverse populations across lifespan; research

outcomes design; and challenges specific to outcomes research. Prerequisite: permission of instructor. Instructors: Amtmann

REHAB 561 Epidemiological and Health Services Approaches to Rehabilitation Research (3)

Introduces the application of principles and methods from the fields of epidemiology and health services to rehabilitation research. Provides an overview of epidemiological research methods applicable to rehabilitation research, health services approaches, ethics, and use of research to inform disability policy. Prerequisite: permission of instructor. Instructors: Ciol, Hoffman

REHAB 562 Neuroscience in Rehabilitation (3)

Develops knowledge related to neural control of movement; movement dysfunction from neurologic pathology; and methodological approaches to investigating neural control of movement. Includes concepts in motor control; motor learning; and neural plasticity relating to movement dysfunction in people with neurologic pathology and to rehabilitation science. Prerequisite: permission of instructor. Instructors: Kelly, Yorkston

REHAB 564 Practice Skills for Occupational Therapy

(1, max. 3) Provides an introduction to physical assessments and interventions with a focus on physical management of clients, management of medical and adaptive equipment, splint fabrication, and maintenance of therapist and client safety. The therapeutic skills covered serve as a foundation for more advanced technical and professional competencies in subsequent courses and fieldwork. Credit/no-credit only. Offered: AWSp.

REHAB 566 Special Topics in Rehabilitation (1-9,

max. 14) Philosophy and concepts in the interdisciplinary rehabilitation of persons with major disabilities, including advanced content in the rehabilitation theory and process of selected categories.

REHAB 567 Practicum in Rehabilitation (1-12, max.

24) Specialized practicum experience in environment providing rehabilitation services. Practicum arrangements and permission by instructor.

REHAB 568 Biophysics as Applied to Physical

Medicine (2) Propagation and absorption characteristics of physical forms of energy used for

treatment in physical medicine. Physiologic effects basic to prescription of the physical therapy modalities. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Instructors: Esselman

REHAB 569 Prosthetics and Orthotics for Physical Therapists (2) Introduces the principles and designs of orthoses and prostheses, using a clinical problem-solving approach to determine functional deficits to create joint rehabilitation goals between physical therapy and prosthetics and orthotics in regards to the prosthesis and orthosis. Emphasizes team medicine and collaboration in rehabilitation.

REHAB 570 Foundations of Occupational Therapy (5) *Powell* An overview of the practice of occupational therapy, emphasizing the role of occupational performance in context, frames of reference, clinical reasoning, and purposeful activity. Introduces the diversity of occupational therapy practice environments through didactic and clinical experiences.

REHAB 572 Occupational Therapy Theory and Practice in Psychosocial Dysfunction I (1-7, max. 7) *Fogelberg* An overview of bodies of knowledge in psychosocial practice as related to occupational performance. Learning topics include major frames of reference, effects of psychosocial disorders on occupational performance (life activities), and occupational therapy evaluation and intervention skills. Lectures, reading, class discussions, role-playing, problem-based learning, and fieldwork comprise the learning experiences.

REHAB 574 Occupational Therapy Theory and Practice in Physical Disabilities I (6) Provides theoretical bases and clinical practice skills used in evaluation and intervention of occupational performance (life activities). Focus is on individuals with sensorimotor (physical) and/or cognitive impairments. Practical applications of theory occur through lecture, laboratory, and problem-based learning approaches.

REHAB 575 Occupational Therapy Theory and Practice in Physical Disabilities II (5) *Powell* Provides theoretical bases and clinical practice skills used in evaluation and intervention of occupational performance (life activities). Focus is on individuals with sensorimotor (physical) and/or cognitive

impairments. Practical applications of theory occur through lecture, laboratory, and problem-based learning approaches.

REHAB 576 Occupational Therapy Theory and Practice in Pediatrics (1-7, max. 7) Provides knowledge and skills necessary for providing occupational therapy evaluation, intervention, and transition services focused on occupational performance (life activities) for children and teens with disabilities and their families.

REHAB 577 Occupational Therapy Theory and Practice in Geriatrics (5) *Powell* Occupational therapy evaluation and intervention with older adults. Covers psychology, physiology, and socio-demographics of aging. Emphasis on interaction skills with the elderly and occupational performance (life activities). Laboratory experiences and fieldwork in the practice setting enhance didactic coursework.

REHAB 578 Occupational Therapy Domain and Process I (4) Skills in the analysis, adaptation, and sequencing of therapeutic occupations and activities to support occupational performance through the lifespan. The analysis process covers all aspects of the domain of occupational therapy including areas of occupation, client factors, performance skills, performance patterns, context, and environment.

REHAB 579 Occupational Therapy Domain and Process II (3) Introduces basic principles and skills of effective interpersonal communication in dyadic interactions and in groups. Emphasis on effective listening, interviewing, and principles and concepts of occupational therapy groups. Lectures, readings, class discussions, role playing, and in-class exercises comprise the learning experiences.

REHAB 580 Introduction to Research in Rehabilitation (3) Evaluation of rehabilitation research literature and design of research studies relevant to rehabilitation.

REHAB 581 Application of Measurement Systems (3) *Jirikowic* Provides basis for critically evaluating and using tests and measurements in occupational therapy evaluation. Focus on reliability, validity, norms, test development process, statistics relevant to tests and measurement, and ethical implications

of testing. Critical evaluation of selected standardized test used in occupational therapy.

REHAB 582 Assistive Technology in Rehabilitation (3) *T. JIRIKOWIC* Overview of the field of assistive technology as it impacts occupational performance in self-care, work, and leisure activities. Covers interface devices, computer applications, environmental controls, augmentative communications, power mobility, seating and positioning systems, and sensory enhancements.

REHAB 583 Exploring Disability (1) Explores multiple aspects of disability including social, mental, physical, and financial factors. Provides skills for working with people with disabilities and exposure to a multidisciplinary team approach to overcoming healthcare barriers. Utilizes interactive didactic with patient participation and introduction to community resources for people with disabilities.

REHAB 585 Leadership and Management in Occupational Therapy (5) *T. MROZ* Focuses on occupational therapy leadership and management in healthcare delivery systems. Includes theoretical and professional competencies focuses on healthcare access, health policy laws, service delivery settings, reimbursement, regulation, political advocacy. Management topics include leadership, program planning, budgeting, personnel, and outcome measurement.

REHAB 588 Fieldwork II Seminar (1) Supports a successful transition from academic work to the full-time Fieldwork II clinical experiences by reinforcing the integration and application of acquired technical and professional competencies needed for REHAB 594, Fieldwork II. Credit/no-credit only. Offered: Sp.

REHAB 591 Graduate Project (1-4, max. 10) Graduate project focuses on practice, administration, education, policy, research, or other scholarly or creative work. Required of entry-level occupational therapy students.

REHAB 592 Principles of Orthotic Use in Rehabilitation (2) *Crane* General principles and clinical applications of orthoses in patient management, with exposure to research issues in orthotic design.

REHAB 593 Principles of Prosthetic Use in Rehabilitation (2) *Morgenroth* General principles of prevention of amputation, prosthetic design, biomechanics, and clinical applications of upper and lower extremity prostheses.

REHAB 594 Clinical Fieldwork in Occupational Therapy (10, max. 30) *Rollinger* 12-week, full-time fieldwork, delivering occupational therapy services to clients focusing on application of meaningful occupation under direct supervision. Exposure to varied clients across the lifespan and in various settings reflective of current practice. Students must complete a minimum of two 12-week placements. Credit/no-credit only.

REHAB 595 Clinical Affiliation in Physical Therapy ([2-10]-, max. 30) Clinical practice of physical therapy techniques under supervision in community-based clinics. Credit/no-credit only.

REHAB 596 Electromyography and Clinical Neurophysiology (4) Didactic course covering electromyography and clinical neurophysiology. First part covers basic neurophysiology and second covers electromyography, nerve conduction studies, somatosensory-evoked potentials, residual- and auditory-evoked potentials, single fiber EMG, late response, quantitative analysis, and macro EMG. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Instructors: Kraft

REHAB 597 Electromyography and Electrodiagnosis Laboratory (1-) Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Instructors: Kraft Credit/no-credit only.

REHAB 598 Electromyography and Electrodiagnosis Laboratory (-1-) Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in rehabilitation medicine; others by permission of instructor. Instructors: Kraft Credit/no-credit only.

REHAB 599 Electromyography and Electrodiagnosis Laboratory (-1) Elective work in clinical electromyography and other electrodiagnostic methods. Prerequisite: resident standing in

rehabilitation medicine; others by permission of instructor. Instructors: Kraft Credit/no-credit only.

REHAB 600 Independent Study or Research (*-) Credit/no-credit only.

REHAB 683 P-Rehabilitation medicine Clerkship-Pediatric, Boise, ID (8) Incorporates material of REHAB 685 and expands into disabling pediatric disease. School planning, family counseling, community support services included. Four week, full time clerkship permits inpatient, outpatient, and consultation experience. Recommended for students contemplating pediatrics. Prerequisite: Third year medical student standing.

REHAB 684 Rehabilitation Elective - Boise, ID (8) Students work directly with the physician, seeing a variety of patients with musculoskeletal diagnoses as outlined in the objectives for the course, as well as working as a member of a multidisciplinary rehab team. They also observe procedures such as EMGs, nerve conduction studies, and a variety of peripheral and central injections. Students participate in care of injured workers and their return to work. (Four weeks).

REHAB 685 P-Chronic Disease and Disability (4) Structured clinical experience on rehabilitation medicine services. Differences between acute and chronic medicine, identification of disability problems, and therapeutic techniques for removing disability. Hospitals are within University system, local area, and WWAMI area. Prerequisite: third-year medical student standing. Instructors: McNalley

REHAB 686 P-Rehabilitation Medicine Clerkship - Pediatrics (8/12) Incorporates material of REHAB 685 and expands into disabling pediatric disease. School planning, family counseling, community support services included. Four- or six-week package permits inpatient, outpatient, and consultation experience. Recommended for students contemplating pediatrics. Prerequisite: third-year medical student standing. Instructors: McNalley

REHAB 687 Rehabilitation Medicine Clerkship - Harborview Medical Center - Seattle (8) Focuses on neuro-rehabilitation and general rehabilitation. Intended for those interested in exploring a career in Physical Medicine and Rehabilitation or wishing to gain more experience working with patients with

disability. Students primarily work on the inpatient rehabilitation unit. Some exposure to outpatient general rehabilitation and neuro-rehabilitation clinics. Prerequisite: completion of Patient Care Phase or equivalent. Offered: AWSpS.

REHAB 688 Rehabilitation Medicine Clerkship - VA Puget Sound Seattle Division, Rehab Care Services (8) Focuses on providing medical and rehabilitative care to inpatients with a variety of diagnoses and functional limitations including, but not limited to, stroke, amputation, multiple sclerosis and motor neuron disease. Structured clinical experience on a general inpatient rehabilitation unit. Opportunities to participate at a variety of outpatient rehabilitation clinics. Prerequisite: completion of Patient Care Phase or equivalent. Offered: AWSpS.

REHAB 689 Rehabilitation Medicine Clerkship - VA Puget Sound Seattle Division, Spinal Cord Injury (8) Introduction to diagnosis, management, and rehabilitation of patients with spinal-cord injuries. Interaction with rehabilitation team, psychiatrists, and subspecialists in urology, neurosurgery, and plastic surgery. Performance at subintern level expected. Prerequisite: completion of Patient Care Phase or equivalent. Offered: AWSpS.

REHAB 690 Rehabilitation Medicine Clerkship - UW Medical Center - Seattle (8) Four-week clerkship on inpatient PM&R management of patients with disabilities and functional impairments due to disorders such as acquired brain injury, CNS disorders, spinal cord injury, and complex medical conditions. Recommended for careers in family medicine, internal medicine, neurology, geriatrics, orthopedic surgery, neurosurgery, rheumatology, and cardiology. Prerequisite: completion of Patient Care Phase or equivalent. Offered: AWSpS.

REHAB 691 Rehabilitation Medicine Clerkship - Community Medical Center - Missoula (4/8) Two or four week Physical Medicine and Rehabilitation (PM&R) clerkship at Community Medical Center in Missoula, Montana. Work in inpatient setting for patients in acute rehab, and see patients in outpatient clinic. Two week rotation for students desiring broad overview of PM&R, seeing variety of patients. Four week rotation for students desiring more exposure to neuromuscular anatomy, physical exam, and neuromuscular disorders. Prerequisite:

completion of Patient Care Phase or equivalent.
Offered: AWSpS.

REHAB 692 P-Rehabilitation Medicine Elective - Spokane-St. Luke's (8) Students will provide medical and rehabilitative care to patients with variety of diagnoses and functional limitations including, but not limited to, stroke, amputation, multiple sclerosis and motor neuron disease. Recommended for careers in PM&R, family medicine, internal medicine, neurology, rheumatology, geriatrics, orthopedic surgery, or neurosurgery. Site is St. Luke's Rehabilitation in Spokane, WA. Prerequisite: 3rd year medical student standing Offered: AWSpS.

REHAB 697 P-Rehabilitation Medicine Special Elective (*, max. 24) Equivalent to REHAB 686, REHAB 687, or REHAB 688. Student arranges with another university, using the "special assignment form." Students qualify after review, similar experience at another university. Prerequisite: permission of instructor. Instructors: McNalley

REHAB 699 P-WWAMI Rehabilitation Medicine Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions other than the University of Washington located within the WWAMI region. Prerequisite: permission of department.

REHAB 700 Master's Thesis (*-) Credit/no-credit only.

REHAB 800 Doctoral Dissertation in (*-) Offered: AWSpS.

REHAB 801 Practice Doctorate Project/Capstone ([1-4]-, max. 12) Credit/no-credit only. Offered: AWSpS.

SURGERY

SURG 498 Undergraduate Thesis (*, max. 35) Offered to those students who have engaged in undergraduate research in general surgery. (Full- or part-time.)

SURG 499 Undergraduate Research (*, max. 35) Provides an opportunity to participate in ongoing research projects or carry out an independent

research project under supervision of Department of Surgery faculty. Practical experience in experimental design and execution is provided under direct supervision of selected faculty members. (Full- or part-time.)

SURG 505 P-Preceptorship in Surgery (1, max. 12) Opportunity for first- and second-year medical students to gain personal experience with clinical faculty members in the community. Students observe general aspects of private practice, including clinical problems seen; practice limitation; doctor-doctor, doctor-patient, and doctor-nurse relationships in the office and hospital. Prerequisite: permission of department.

SURG 598 P-Surgery Independent Study and Remediation (*, max. 8) Designed for medical students required to complete additional study related to the required Surgery clerkship offered during the patient care phase of the School of Medicine curriculum. Intended for students in remedial or extended programs to master fund of knowledge. Prerequisite: department permission. Offered: AWSpS.

SURG 600 Independent Study or Research (*-)

SURG 601 General Surgery Advanced Clerkship - Swedish Medical Center (8) Advanced clerkship at Swedish Medical Center/First Hill offering training in a 700-bed tertiary-care hospital. Emphasizes collegial relationships between attending surgeons, residents, and fourth year medical students considering a career in general surgery or one of its subspecialties. Prerequisite: required surgery clerkship. Offered: AWSpS.

SURG 602 P-Clinical Clerkship - Coeur D'Alene, ID (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 603 P-Clinical Clerkship - Spokane VAMC (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical

management. Care of inpatients and outpatients, including participation in the operating room.

SURG 604 P-Clinical Clerkship - Bozeman, MT (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 605 P-Clinical Clerkship - Swedish Medical Center (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 606 P-Clinical Clerkship - Anchorage, AK (1-24, max. 25) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision-making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 607 Colorectal Surgery - Boise, ID (8) Focus on benign and malignant diseases: colorectal carcinoma, colitis, inflammatory bowel disease, anorectal diseases such as anal fissure, anorectal abscess and fistula, hemorrhoids and pilonidal disease. Focus primarily on minimally invasive techniques with exposure to the OR, clinic, endoscopy unit, and da Vinci robotic surgical procedures. Practice of modern surgical techniques. Prerequisite: General Surgery clerkship. Offered: AWSpS.

SURG 608 General Surgery Advanced Clerkship - Virginia Mason (8) Advanced clerkship designed to give fourth year medical students direct exposure to defined categories of general surgery. Students participate in the pre-op, intra-op, and post-operative care of surgical patients. Students also participate in outpatient clinic and perform initial consults and post-operative visits. Students work closely with resident physicians to provide primary care for post-operative inpatients. Prerequisite: required Surgery clerkship.

SURG 609 Surgery Clerkship - Alaska Native Medical Center (12) Students participate in and contribute to the team approach to managing emergency general surgery conditions and oversight of management of complex trauma victims. Activities include patient care assessment in both inpatient and outpatient settings, observation and participation in the operating room, attendance of weekly conferences, and didactic experience with faculty. Offered: AWSpS.

SURG 610 Plastic Surgery Sub-Internship (8) Introduces fundamental techniques and enhances knowledge of plastic surgery, wounds, trauma, burns, cancers, and pediatric and adult cosmetic and reconstructive surgery. Participants act in sub-intern capacity in all surgery-related activities and work towards essential skills necessary for surgical residency. Students rotate through Veterans Affairs Puget Sound (primary site), UW Medical Center Montlake, and UW Medical Center Northwest. Prerequisite: completion of required general surgery and medicine clerkships.

SURG 630 P-WRITE Surgery Clinical Clerkship (*, max. 24) Basic clinical clerkship for students enrolled in the WRITEpProgram. Prerequisite: completion of basic curriculum; third- and fourth-year students; acceptance in the WRITE program.

SURG 631 P-LIC Surgery Clinical Clerkship (12) Basic clinical clerkship for students enrolled in LIC program. Prerequisite: Acceptance into LIC program. Offered: AWSpS.

SURG 632 P-Plastic Surgery - Spokane Plastic Surgeons (4-8) Introduces fundamental techniques and enhances knowledge of plastic surgery, wounds, trauma, burns, cancers and pediatric and adult cosmetic and reconstructive surgery. Participate in all surgery-related activities. Prerequisite: Surgery and medicine required clerkships

SURG 633 P-Clinical Clerkship - Olympia (non LIC) (1-12, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Offered: WSpS.

SURG 634 Surgery Clerkship - Twin Falls, ID (1-24, max. 25) Required surgery clerkship - Patient Care Phase; St. Luke's Magic Valley, Twin Falls ID Offered: AWSpS.

SURG 638 P-Rural Surgery - Lewistown, MT (8) Learn to identify and describe the most common surgical problems presenting in the particular community to which you are assigned. Prerequisite: Surgery required clerkship Offered: AWSpS.

SURG 639 P-Rural Surgery - Polson, MT (8) Evaluate and diagnose surgical referrals; do pre-op evaluations and counseling/discussion of surgical procedures. Evaluation of post operative patients in the hospital and clinic. Assessment of acute care surgical patients in the ED and hospital. Trauma resuscitations. Prerequisite: Surgery and Medicine required clerkships Offered: AWSpS.

SURG 640 P-Rural Surgery- Dillon, MT (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: Surgery required clerkship and permission of department. Offered: AWSpS.

SURG 641 P-Rural Surgery- Glasgow, MT (8) Designed to supplement basics learned in SURG 665. opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: Surgery required clerkship and permission of department. Offered: AWSpS.

SURG 642 P-Rural Surgery Clerkship - Pullman, WA (8) Designed to supplement basics learned in surgery required clerkship. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Highly suggested for student entering primary care. Prerequisite: required surgery clerkship; medicine clerkship.

SURG 644 P-Rural Surgery Clerkship - Lewiston, ID (8) Designed to supplement basics learned in surgery required clerkship. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Highly suggested for student entering primary care. Prerequisite: required surgery clerkship; medicine clerkship.

SURG 646 P-Rural Surgery Clerkship - Gillette (8) Designed to supplement basics learned in surgery required clerkship. Provides an excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery clerkship; medicine clerkship; permission of the department.

SURG 647 P-Rural Surgery Clerkship - Powell (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 648 P-Rural Surgery Clerkship - Libby (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 649 P-Rural Surgery Clerkship - Lewistown (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 650 P-Rural Surgery Clerkship - Twin Falls (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 651 P-Community Surgery Clerkship - Rock Springs, WY (8) Designed to supplement basics learned in Surgery 665. Excellent opportunity to participate in general surgery and various other subspecialties in a smaller city. Encouraged for students entering primary care. Prerequisite: completed required Surgery and Medicine clerkships.

SURG 652 P-Plastic Surgery - Spokane (8) Introduces fundamental techniques and enhances knowledge of

plastic surgery, wounds, trauma, burns, cancers, and pediatric and adult cosmetic and reconstructive surgery. Participate in all surgery-related activities. Prerequisite: surgery and medicine required clerkships.

SURG 653 P-Pediatric Surgery - Spokane (8) Student functions as a subintern directly assisting on the services and is an integral part of the team. Prerequisite: surgery required clerkship.

SURG 654 P-Cardiothoracic Surgery - Spokane (4-8) The student functions as a subintern and directly assists on the service and is an integral part of the team. Prerequisite: surgery required clerkship.

SURG 655 Surgery Clerkship - Gillette, WY (12) Provides a method of focused evaluation for patients with surgical problems. Includes workup and preparation of patients for anesthesia and surgical intervention. Offered: AWSpS.

SURG 656 P-Trauma/Acute Care Surgery - Boise (8) The student functions as a subintern and directly assists on the service and is an integral part of the team at St. Alphonsus Trauma Services. (Four weeks) .

SURG 657 P-Vascular Surgery - Spokane (4/8) Student spends two or four weeks at the Vascular Institute in Spokane. The student functions as a subintern and directly assists on the service and is an integral part of the team.

SURG 658 P-Ambulatory Surgery Clerkship - Mary Bridge (4) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 659 P-Ambulatory Surgery Clerkship - Madigan (4-8, max. 12) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 660 P-Ambulatory Surgery Clerkship - Group Health (4) Rotation focuses on increasing the student's ability as a primary care physician to

recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 661 P-Surgical Intensive Care Unit Sub-Internship - VA (8) Designed to augment experience gained in SURG 665. Excellent opportunity to participate in the management of critically ill patients under the close supervision of the staff/house staff. Recommended for students entering surgery or primary care. Prerequisite: surgery required clerkship.

SURG 662 P-Community Surgery Clerkship - Longview (8) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a group practice in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 663 P-Subinternship in General Surgery - Virginia Mason (*, max. 16) Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 664 P-Subinternship in General Surgery - VAMC (*, max. 16) Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 665 P-Clinical Clerkship - UWMC (*, max. 24) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 666 P-Clinical Clerkship - Boise (1-24, max. 25) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision making, and basic principles of surgical management. Care of inpatients and

outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 667 P-Clinical Clerkship - Spokane (1-24, max. 25) Diagnosis and management of surgical problems. Physiological basis of surgical care, differential diagnosis and decision-making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 668 P-Clinical Clerkship - Casper (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 669 P-Clinical Clerkship - Billings (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 670 P-Clinical Clerkship - Missoula (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 671 P-Clinical Clerkship - Madigan (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision-making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 672 P-Clinical Clerkship - HMC (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of

inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 673 P-Clinical Clerkship - VA (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 674 P-Clinical Clerkship - Virginia Mason (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery. Prerequisite: HUBIO 563.

SURG 675 P-Clinical Clerkship - Caldwell, ID (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 676 P-Pediatric Cardiothoracic Surgery (8) Students will learn about the technical and physiological aspects of cardiopulmonary treatments. Prerequisite: Surgery required clerkship Offered: AWSpS.

SURG 677 P-Clinical Clerkship - Sheridan, WY (*, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 678 P-Clinical Clerkship - Kalispell, MT (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 679 P-Clinical Clerkship - Wenatchee, WA (1-24, max. 25) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms.

SURG 680 P-Clinical Clerkship - Northwest Hospital (1-12, max. 12) Diagnosis and management of problems amenable to surgical therapy. Physiological basis of surgical care, differential diagnosis and decision making, and the basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Offered: AWSpS.

SURG 681 P-Peripheral Vascular Disease (4/8, max. 8) Peripheral arterial and venous problems, including methods of clinical evaluation; new diagnostic procedures; and the available methods of treatment. Patient workup, performance of diagnostic studies, and presentation of case material to the staff. Prerequisite: surgery required clerkship.

SURG 682 P-Clinical Burn Care (*, max. 12) Offered on the burn unit of Harborview Medical Center. Exposure to the care of patients with thermal injury, including management of severe metabolic and septic problems and opportunity to participate in surgical procedures. Exposure to plastic and reconstructive surgery. Prerequisite: surgery required clerkship.

SURG 683 P-Pediatric Surgery Externship (8/12) Surgical conditions peculiar to the particular age group with a preponderance of congenital and neoplastic conditions that are amenable to surgical treatment. Prerequisite: surgery required clerkship.

SURG 684 P-Pediatric Surgery Clerkship- Boise (8) Student functions as a subintern directly assisting on the services and is an integral part of the team. Held in Boise, ID. Prerequisite: PEDS and SURG clerkships. Offered: AWSpS.

SURG 685 P-Cardiothoracic Surgery Externship (*, max. 12) Serve as a subintern on the Cardiothoracic surgery service at the UWMC. Opportunity to participate in the full spectrum of perioperative care for both cardiac and thoracic surgery patients

including end stage lung disease, heart failure and transplantation patients, with an emphasis on cardiopulmonary physiology and perioperative management.

SURG 686 P-Plastic Surgery Clerkship and Preceptorship (*, max. 12) Introduces fundamental techniques and enhances knowledge of plastic surgery, wounds, trauma, burns, cancers, and pediatric and adult cosmetic and reconstructive surgery. Participate in all surgery-related activities. Prerequisite: surgery and medicine required clerkships.

SURG 687 P-Transplantation Surgery Clerkship (8) Clerkship is in the University regional multi-organ transplantation center. Student participates fully in the care of all transplant patients, on twice daily multidisciplinary rounds, in pre-operative conference, and in the operating room and on the donor harvest team. Weekly didactic teaching sessions. Prerequisite: surgery and medicine required clerkships.

SURG 688 P-Subinternship in General Surgery (*, max. 12) Offered on the general surgery wards of the University-affiliated hospitals. Diagnosis, preoperative care, and postoperative care; management of surgical emergencies, the ICU patient, and outpatient follow-up of discharged patients. Students function at the intern level under close supervision of the staff and house staff. Prerequisite: surgery required clerkship.

SURG 689 P-Community Surgery Clerkship - Coeur d' Alene (8) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a group practice in a smaller city. Recommended for students entering primary care. Prerequisite: SURG 665 and permission of department.

SURG 690 P-Alaska Native Medical Center Surgery Sub-Internship (8/12) Designed to supplement basics learned in SURG 665. Excellent opportunity to participate in general, thoracic, vascular, and plastic surgery in a specialized population of patients. Recommended for students entering primary care. Prerequisite: SURG 665 and permission of department.

SURG 691 P-Surgical Intensive Care Unit Sub-Internship - HMC (8) Designed to augment experience gained in SURG 665. Excellent opportunity to participate in the management of critically ill patients under the close supervision of the staff/house staff. Recommended for students entering surgery or primary care. Prerequisite: surgery required clerkship.

SURG 692 P-Ambulatory Surgery Clerkship - Seattle Children's (4) Rotation focuses on increasing the student's ability as a primary care physician to recognize and form an initial plan of management for common surgical problems seen in the outpatient setting. Offered: AWSpS.

SURG 693 P-Rural Surgery Clerkship - Buffalo (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 694 P-Rural Surgery Clerkship - Riverton (8) Designed to supplement basics learned in SURG 665. Opportunity to participate in general surgery and various other subspecialties in a smaller city. Recommended for students entering primary care. Prerequisite: surgery required clerkship and permission of department.

SURG 695 Vascular Surgery (8/12) The student spends four weeks on the vascular surgery at Harborview Medical Center. The student functions as a subintern and directly helps the residents manage all patients on the service and is an integral part of the OR team.

SURG 696 P-Breast Surgery - Spokane (4/8) Two or four weeks at the Breast Center in Spokane. Student functions as a subintern directly assisting on the service and is an integral part of the team.

SURG 697 P-Surgery Special Electives (*, max. 24) Special clerkship, externship, or research opportunities may be available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: surgery required clerkship and permission of department.

SURG 698 P-Clinical Clerkship - Fairbanks (*, max. 24) Includes the diagnosis and management of surgical problems. Focuses on the physiological basis of surgical care, differential diagnosis and decision making, and basic principles of surgical management. Care of inpatients and outpatients, including participation in the operating rooms. Fulfills graduation requirement for surgery.

SURG 699 P-WWAMI Surgery Special Electives (*, max. 24) By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

UROLOGY

UROL 498 Undergraduate Thesis (*, max. 35) Provides an opportunity for medical students to write in the area of urology.

UROL 499 Undergraduate Research (*, max. 35) The student participates in current urologic research projects under supervision of full-time staff. Certain specific problems may be elected by the student. Elective for medical students.

UROL 501 P-Urology Preceptorship (1, max. 12) Individual experiences with one or more of the full-time department faculty members covering research, teaching, and patient care. Students observe activities in the clinic, hospital ward, operating room, and research laboratories. Prerequisite: first- or second-year medical student standing; permission of instructor.

UROL 600 Independent Study or Research (1-3, max. 16) *John L Gore* Independent study or research in urology conducted under the direction of one or more instructors. Offered: AWSpS.

UROL 675 P-Urology Preceptorship (*, max. 8) Student follows a private practice preceptor in all of his or her work. Becomes acquainted with the office management of urological problems. (Two or four weeks). Prerequisite: UROL 680, HUBIO 562.

UROL 678 P-Urology Clerkship - Idaho (4-8, max. 8) Medical clinical rotation. Involves participation in a standard urology clinic, as well as procedures and

surgical cases. Prerequisite: completion of Internal Medicine or Surgery required third year clerkship is recommended. Offered: AWSpS.

UROL 679 P-Urology Clerkship - Boise VA (*, max. 8)

Two or four week rotation. Full activities of clinical service. Emphasizes basic principles of urology. Prerequisite: HUBIO 562.

UROL 680 P-Urology Clerkship (*, max. 8)

Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Prerequisite: HUBIO 562. Instructors: Dalkin, Grady, Krieger, Lendvay, Porter, Voelzke, Wessells, Yang

UROL 681 P-Female Urology (4) Observation of cases of lower urinary tract disorders specific to women, emphasizing behavioral management and multidisciplinary care. Ninety-five percent of cases observed are women. Not intended as the only exposure to urology for students considering urology as career choice. Prerequisite: third- or fourth-year standing and permission of instructor. Instructors: J. Miller

UROL 682 P-Urology Clerkship - Spokane (4-8, max. 8) Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Offered: AWSpS.

UROL 683 P-Urology Clerkship - Boise (*, max. 8) Full activities of clinical service. Basic principles of urology emphasized. (Two or four weeks). Prerequisite: HUBIO 562.

UROL 684 P-Urology Clerkship - Billings (*, max. 8) Two or four week rotation. Includes full activities of clinical service. Emphasizes basic principles of urology. Prerequisite: HUBIO 562.

UROL 685 P-Urology Sub-Internship (*, max. 12) Subintern is responsible for patient workups and for preoperative and postoperative care and participates in the operating room. Prerequisite: MED 665 or pediatrics basic clerkship, or permission of instructor. Instructors: Dalkin, Grady, Krieger, Lendvay, Porter, Voelzke, Wessells, Yang

UROL 686 P-Urology Clerkship - Bozeman (4-8, max. 8) Medical clinical rotation. Involves participation in

a standard urology clinic, as well as procedures and surgical cases. Prerequisite: completion of Internal Medicine or Surgery required third year clerkship is recommended. Offered: AWSpS.

UROL 687 P-Urology Clerkship - Northwest Hospital (4-8, max. 8)

Rotation providing exposure to all aspects of patient care in urology, including exposure to outpatient clinic and operating room. Recommended: third-year clerkship and completion of Patient Care Phase courses in Internal Medicine or Surgery. Offered: AWSpS.

UROL 688 Advanced Patient Care -Urology Clerkship - Bozeman (8)

Advanced patient care rotation provides exposure to all aspects of patient care in urology through a private practice setting. Students, as part of a primary or consultative team, are exposed to outpatient clinic and operating room procedures, with daily responsibilities. Four weeks. Prerequisite: third- or fourth-year medical student; recommended: Internal Medicine and/or Surgery clerkships. Offered: AWSpS.

UROL 690 P-Urology Specialties (*, max. 8) For those who wish further exposure to a specific aspect of urology. Students spend time with one attending at University of Washington Medical Center, Harborview Medical Center, Seattle Children's Hospital, or Veterans' Administration Hospital studying oncology, infections, infertility, stone disease, impotence, or other aspects of urology. Prerequisite: UROL 680 and permission of instructor.

UROL 697 P-Urology Special Electives (*, max. 24)

Special clerkship, externship, or research opportunities may be available at institutions other than the University of Washington. Prospective students obtain from the dean's office a special assignment form at least one month before preregistration. Prerequisite: permission of instructor.

UROL 699 P-WWAMI Urology Special Electives (*, max. 24)

By special arrangement for qualified students, special clerkships or externships may be available at institutions, other than the University of Washington, located within the WWAMI region. Prerequisite: permission of department.

SCHOOL OF NURSING

INFANT AND EARLY CHILDHOOD MENTAL HEALTH

IECMH 537 Development and Psychopathology: Parents and Infants (3) *Spieker* Provides an overview of typical social and emotional development and psychopathology in children ages three and younger. Demonstrates attachment relationships with parents and family to infant's development and psychopathology. Core course of Infant Mental Health Certificate program. Recommended: IECMH 548 Offered: A.

IECMH 548 Frameworks in Infant and Early Childhood Mental Health (3) Review infant mental health (IMH) and early development from a developmental interdisciplinary perspective. Pays special attention to brain development, sensory integration, early communication, and emotion regulation. Offered: A.

IECMH 555 Relationship Based Mental Health Assessment of Young Children (3) Focuses on multi-disciplinary, diagnostic mental health observation and assessment of infants, toddlers, and preschoolers within the context of their primary relationships. Recommended: IECMH 548 Offered: Sp.

IECMH 569 Reflective Practice And Consultation (2) *Colleen O. Dillon, Susan J Spieker* Focuses on reflective practice, consultation and supervision, distinct and core features of practice across disciplines providing infant mental health services to young children and families. Recommended: IECMH 548 Offered: S.

NURSING (NSG)

NSG 432 Infants and Children: Risk and Resilience (5) I&S *C. Dillon, M. Hirschstein, S. Spieker* Provides a survey of infant and early childhood development, including prenatal and neonatal factors, and social/societal influences, using an infant mental health framework. Emphasizes how risk and protective factors can impact social-emotional, physical, and cognitive growth. Includes research-

based principles and approaches to supporting families, teachers, and caregivers of young children. Offered: SpS.

NSG 505 Applied Occupational Health and Safety (3) Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with ENV H 559/IND E 567; Sp, even years.

NSG 506 Occupational Safety Management (4) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates philosophic issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Contains numerous case problems and student involvement opportunities. Offered: jointly with ENV H 560; Sp.

NSG 507 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, student receive an OSHA 510 30-hour Construction Safety and Health certificate. Offered: jointly with ENV H 562; W.

NSG 508 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission of instructor. Offered: jointly with ENV H 566/IND E 566; W.

NSG 511 Prevention Issues in Community Health (3)

An interdisciplinary overview of community health prevention approaches focusing on the social determinants of health and health disparity reduction among vulnerable populations. Analysis of community and population preventive strategies across the life course. Roles of advanced community health nurses as prevention leaders and consumers of prevention information are emphasized. Offered: Sp.

NSG 512 Prevention Critique in Community Health (3)

Critical examination of community health prevention programs that build community health capacity and show promise in facilitating long-term health equity among vulnerable populations. Focuses on the leading health disparities among U.S. racial and ethnic people of color, and how to be a critical program consumer, adopter, and adapter. Offered: A.

NSG 513 Psychopharmacology for Children and Adolescents (1)

Tyson, Walsh Reviews pertinent issues in prescribing psychoactive medications to children and adolescents. Emphasizes empirical neuroendocrine bases, and nursing management relevant to these interventions. Examines legal and ethical issues pertaining to prescribing for children and adolescents. Credit/no-credit only. Offered: S.

NSG 516 Physiological Aspects of Aging (3)

Barbara B. Cochrane Focuses on biological theories of aging, major physiological and pathophysiological changes that occur in human body systems with aging. Also addresses health considerations and individual adaptations based on current research. Offered: A.

NSG 526 Introduction to Person Centered and Interprofessional Palliative Care (1-5)

Introduces fundamental concepts in narrative and person centered communication and interprofessional practice. Presents foundations for learning to apply an interdisciplinary approach to palliative care. Offered: jointly with B H 566/FAMED 531; A.

NSG 527 Advanced Topics in Person Centered and Interprofessional Palliative Care (1-5)

Interprofessional course presenting advanced concepts in narrative and person centered communication and interprofessional practice. Requires admissions into the Palliative Care

Graduate Certificate Program. Prerequisite: NSG 526 Offered: jointly with B H 567/FAMED 532; W.

NSG 528 Palliative Care: Quality Metrics and System Integration (1-5) Prepares students to integrate team based palliative care into a larger system, introduces community engagement, and palliative care policy issues. Specific content includes building palliative care service, engaging leadership to support palliative care, and using quality metrics to leverage and support quality care. Requires admissions into the Palliative Care Graduate Certificate Program. Offered: jointly with B H 568/FAMED 533; Sp.

NSG 530 Leadership, Communication, and Professional Identity (3) Analyzes professional identity, transition to new roles and responsibilities, leadership approaches, and inter-professional teamwork skills needed to provide effective, efficient and patient/community-centered care. Covers advanced, multi-modal communication strategies specific to professional role certification, conflict resolution, professional communication, inter-professional teamwork and leadership using interactive, skills-based learning.

NSG 539 Management of Common Newborn Conditions (1-2, max. 2) Focuses on evidence-based clinical-decision making and management of common newborn health conditions. Emphasizes concepts of health promotion and patient/family centered care. Provides a theoretical and conceptual foundation for clinical decision-making and critical appraisal of data to determine diagnosis and comprehensive, cost-effective plan of care. Prerequisite: NCLIN 502 or equivalent, or permission of instructor.

NSG 540 Telehealth Systems and Applications (4)

Introduces challenges for designers and managers of telehealth and remote healthcare networks. Develops abilities of managers, leaders, and researchers of telehealth systems through exploration into systems components. Activities range from research to implementation of system design for applications that bridge geographic distance to the development of practical applications. Offered: jointly with BIME 581; S.

NSG 548 Basic Arrhythmia, Conduction Disturbance, and 12-Lead Electrocardiography Interpretation (2)

Covers the theory and practice of basic arrhythmia, conduction disturbance, and 12-lead electrocardiography (ECG) interpretation, as well as selected pharmacologic and electrical management. Content is appropriate for primary care, and provides foundation for advanced interpretation for students in acute/critical care.

NSG 549 Complex Arrhythmia, Conduction Disturbance, and 12-Lead Electrocardiography Interpretation (2) Covers the theory and practice of complex arrhythmia, conduction disturbance, and 12-lead electrocardiography (ECG) interpretation, as well as selected pharmacologic and electrical management. Appropriate for acute/critical care. Prerequisite: NSG 548, or satisfactory pretest of basic ECG interpretation.

NSG 550 Seminar on Professional Issues in Nursing Education (3) Seminar on role and related professional issues in nursing education. Prerequisite: either NSG 545, B NURS 513, or T NURS 513; either NSG 546, B NURS 511, or T NURS 511. Offered: jointly with B NURS 550/T NURS 550.

NSG 551 Health Politics and Policy (3) Critically analyzes the politics of health policy in the United States. Examines leadership and advocacy in influencing politics and policy to address and influence health outcomes.

NSG 552 Social Determinants of Health and Health Equity (3) Examines fundamental concepts, emerging theory, research, and intervention strategies regarding the influence and putative mechanisms of environment and societal factors on health at population, community, and individual levels. Emphasizes an interdisciplinary, multi-level socio-ecological perspective on health and illness with consideration of principles of equity and justice in societal contexts.

NSG 553 Foundations of Health Systems and Health Economics (3) Examines health systems and care delivery in the context of principles of business, finance, and economics. Concepts applied in the design of cost and care effectiveness system-level health improvements. Prerequisite: either NMETH 536, which may be taken concurrently, or permission of instructor.

NSG 554 Population Health and the Environment (3) Introduces core concepts and principles related to the science and practice of environmental and occupational health. Examines historical cases and current issues to illustrate how environmental conditions contribute to injury and illness among human populations. Explores health professionals' roles in actions that protect and promote healthy environmental and workplace settings. Offered: Sp.

NSG 555 Perspectives on Implementing Research in Advanced Nursing Practice (3) *Boutain, Landis* Provides an overview of contemporary multidisciplinary perspectives, models and research approaches for advanced practice nursing. Focuses on understanding and applying science to practice, and practice to science. Emphasizes ethical practice, scientific responsibility, research curiosity and use.

NSG 556 Program Planning and Health Systems and Multicultural Communities (4) *Carolyn Jb Strickland, Jenny Hsin-Chun Tsai* Explores culture as it related to the program planning process, methods, theories, attitudes, and skills in health promotion and disease prevention through community engagement. Offered: W.

NSG 557 Physiology and Pathophysiology Across the Life Span (4) Analyzes disordered physiologic responses in individuals within the context of lifespan physiology. Examines pathophysiologic principles and responses, using case studies as exemplars for selected concepts, and the relationship between physiologic and pathophysiologic principles and the evidence basis for current practice. Offered: A.

NSG 558 Occupational Health Nursing: Advanced Practice and Leadership in Program Development (3) Examination of advanced professional practice and leadership in the context of occupational health and safety programs. Focuses on assessment, development, implementation, and evaluation of programs involving workplace health surveillance, case management, workers' compensation, and health promotion in consideration of political, economic, legal, ethical issues, and application of current research.

NSG 559 Prevention Effectiveness in Community Health (1) Focuses on increasing effectiveness of organization- and community-level health promotion

and prevention programs with multicultural communities. Includes web-based tool-kits pertaining to: cross-cultural adaptations of health promotion programs; mental health promotion in communities; institutional readiness to sustain prevention policies; and community engagement in health promotion efforts. Credit/no-credit only.

NSG 560 Pediatric Case Studies (2) Focuses on integration and application of pediatric history-taking, diagnostic reasoning, behavioral and developmental assessment, health promotion, and management of common pediatric conditions in case-based scenarios. Prerequisite: NCLIN 502; NURS 518; NURS 529, any of which may be taken concurrently, or permission of instructor. Credit/no-credit only. Offered: W.

NSG 561 Community Health Systems for Equity (3) Defines, evaluates, and synthesizes how community health systems promote health equity. Emphasizes how various systems, such as care, public health, governmental, tribal, family, and social-kin, nonprofit, faith-based, and business, inhibit or promote communal health. Highlights advanced practice, practice inquiry, and leadership implications. Offered: A.

NSG 562 Management of Adults I (2-3) Focuses on evidence-based clinical-decision making and management of common adult health problems, emphasizing episodic and acute concerns. Emphasizes concepts of health promotion and patient/family focuses care. Provides a theoretical and conceptual foundation for clinical decision-making and critical appraisal of data to determine diagnosis and comprehensive, cost-effective plan of care.

NSG 563 Management of Adults II (3) Focuses on evidence-based clinical-decision making and management of common adult health problems, emphasizing episodic and acute concerns. Emphasizes concepts of health promotion and patient/family focuses care. Provides a theoretical and conceptual foundation for clinical decision-making and critical appraisal of data to determine diagnosis and comprehensive, cost-effective plan of care. Offered: Sp.

NSG 564 Management of the Adult III (3) Focuses on evidence-based patient-centered care of older

adults with multiple chronic conditions across the continuum from outpatient to acutely or critically ill, including prevention and management of geriatric syndromes. Explores strategies for optimal transition across care settings and across the health continuum.

NSG 565 Primary Care Management Across the Lifespan (1) Clinical application of theories of health promotion and chronic disease management in complex patients across lifespan, utilizing evidence-based approaches to health promotion, assessment, differential diagnosis and disease management. Emphasizes clinical decision-making, considering the chronic care model, coordination of care, poly-drug therapy, and information systems. Prerequisite: NCLIN 518, which must be taken concurrently; permission of instructor. Credit/no-credit only. Offered: A.

NSG 566 Pediatric Pharmacology (1-2, max. 2) Focuses on clinical application of pharmacologic management in pediatric acute and chronic illnesses. Emphasizes pediatric pharmacotherapeutics including selection of therapeutic agents, indications, efficacy, therapeutic and adverse effects, monitoring parameters, and dosing principles. Includes didactic as well as case-based learning strategies. Offered: Sp.

NSG 567 Advanced Pharmacotherapeutics in Complex Case Management (1) Uses a case-based method to examine an evidence-based approach to pharmacotherapeutic management of complex chronic conditions across the lifespan. Incorporates examination of both pharmacologic factors and patient-related factors, such as age, socioeconomic status, and behavioral aspects that support the selection of commonly used drugs for patients of all ages across multiple settings. Prerequisite: PHARM 514; permission of instructor. Offered: A.

NSG 568 Infant Observation (1-, max. 4) *Susan J Spieker, Colleen O. Dillon* Includes observing an infant and parent in the first year of life and reflecting on observations. GCPAPN-IMH core course. Four quarter sequence begins each Autumn. Offered: AWSpS.

NSG 569 Pediatric Cardiac Anatomy, Physiology, Pathophysiology, and Management (2) Explores anatomy and physiology of the normal heart,

transition from fetal circulation, and pathophysiology of congenital and acquired cardiac conditions common in pediatric patients. Comprehensive care from diagnosis through medical and surgical management as well as appropriate follow-up care and potential long-term sequelae. Content appropriate for both primary and acute-care providers. Prerequisite: NCLIN 502 or permission of the instructor. Offered: S.

NSG 571 Theory and Science of Population Health Nursing (3) Covers foundational concepts, principles, and historical events related to population health. Examines the evolution and intersection of nursing and public health sciences as they shape contemporary nursing knowledge, competencies, practices, and roles. Considers multidisciplinary frameworks and perspectives to understand health needs and strategies for groups, communities, and populations. Offered: A.

NSG 572 Collaborating for Health Equity (3) Evaluates models and approaches to effective collaboration with communities and other stakeholders toward advancing health equity. Emphasizes application of cultural humility in working across sectors, leveraging existing assets and other resources, and developing collective impact. Develops approaches to build community and organizational capacity, rectify power asymmetries, and institutionalize supportive practices for sustainment. Prerequisite: NSG 571. Offered: A.

NSG 573 Systems Thinking for Population Health (3) Develops systems-level thinking with emphasis on identifying, analyzing, and addressing factors relevant to improving population health. Reviews theories focused on approaches and actions to affect change for the utilization and delivery of health promoting services. Emphasis on developing a theory of action and multicultural considerations to transform the health status of underserved and marginalized communities. Prerequisite: either EPI 511; NSG 572; and NMETH 536, or permission of instructor Offered: W.

NSG 574 Program Development and Evaluation to Improve Population Health (4) Steps in developing population health interventions and programs, including assessment, prioritization, planning, and evaluation. Appraise best practices and evidence to

inform the execution of strategies that improve health. Makes use of reliable data sources and stakeholder engagement, while considering ethical, political, and socio-cultural contexts. Prerequisite: either EPI 511, NSG 572, NMETH 536, or permission of instructor. Offered: W.

NSG 575 Leadership for Population Health (3) Analyzes and applies leadership literature and models for advanced nursing practice in population health. Explores skills in organizational strategic planning and change, with emphasis on roles and responsibilities in advocacy, workforce development, operational management of organizations, and professional ethics. Emphasis on transforming organizations, communities, systems, and other contexts to advance the health of all populations. Prerequisite: NSG 571, or permission of instructor. Offered: Sp.

NURSING (NURS)

NURS 201 Growth and Development through the Life Span (5-6) I&S Focuses on human growth and development throughout the life span. Emphasizes influence of growth and development theory and research on achievement of health and health promotional efforts directed toward persons of various ages and life styles. Optional service learning component. Open to nonmajors. Offered: AWS.

NURS 204 Learning Wellness: Healthy Ways to Respond to Stressful Student Life (3) Examines the intimate connections of body, mind, spirit, as well as how stress challenges personal health. Provides overview of methods that respond to stress in health-producing ways, including time management, making healthy choices, and practicing wellness. Discusses evidence for each method and provides experiential components. Credit/no-credit only.

NURS 205 Nursing as a Career in Contemporary Society (1) Introduces an accurate description of nursing career, educational requirements and rationale, including advanced degree career possibilities. Explores breadth of nursing roles in promoting health to individuals, groups, and populations. Links historical development with contemporary practice. Explores factors that promote student and professional success in nursing. Credit/no-credit only.

NURS 210 Science, Evidence and Health: Mastering Health Information and Personal Health Technologies (4/5) NW/I&S, DIV Provides foundations for becoming skilled consumers of health information and health technologies. Using current topics in health, students will learn to navigate the available health information, understand its quality, become familiar with personal health technologies, and link information learned to their health and the health of their communities. Offered: W.

NURS 215 Disaster Management, Risk Reduction, and Health (5) I&S Explores how disasters affect the health of individuals and populations both locally and globally. Covers common health problems associated with disasters and the health care provider's role during disasters. Topics include natural hazards, responses to disasters, communicable and non-communicable disease management, water, sanitation, and hygiene (WASH), nutrition, policy, and personal and community preparedness. Offered: Sp.

NURS 301 General Anatomy (4) NW Introduces the student to general human anatomy, examining both cellular and gross anatomy. The relationship between structure and function is a central focus of course content. Offered: jointly with B STR 301.

NURS 303 Foundations of Professional Nursing Practice (4) Exploration of the profession of nursing, including past and present work of nurses, the experience of being ill and seeking healthcare, and the U.S. healthcare system.

NURS 304 Foundations in Pharmacotherapeutics and Pathophysiology (4) Covers concepts of normal and pathophysiological responses to states of health and illness. Emphasizes the principles of pharmacology, drug therapy, pharmacologic-therapeutic classes of drugs, clinically important prototype drugs, and drug information resources. Nursing issues related to drug administration are discussed. Offered: A.

NURS 308 Human Responses II (3) Examines normal and pathophysiological responses to states of health and illness. Examines internal and external defense systems, balance and regulation of body systems, and integration of these concepts in the assessment and management of patient problems. Offered: W.

NURS 309 Pharmacotherapeutics in Nursing Practice I (-[2-3]) Emphasizes the principles of pharmacology, drug therapy, pharmacologic-therapeutic classes of drugs, clinically important prototype drugs, and drug information resources. Nursing issues related to drug administration are also discussed. First of a two-quarter sequence. Offered: A.

NURS 310 Pharmacotherapeutics in Nursing Practice II (-[2-3]) Emphasizes the principles of pharmacology, drug therapy, pharmacologic-therapeutic classes of drugs, clinically important prototype drugs, and drug information resources. Nursing issues related to drug administration are also discussed. Second of a two-quarter sequence. Offered: W.

NURS 401 Fundamentals of Nursing Practice for Illness Care I (6) Examines pathophysiological responses to illness. Introduces major concepts relevant to the experience of acute and chronic illness, including physiological, pathophysiological, behavioral and experimental human responses, assessment of functional health status and interdisciplinary therapeutics in common alteration across the lifespan. First of a two-quarter sequence. Offered: W.

NURS 404 Gerontological Nursing (2) Focuses on concepts and issues relevant to the nursing care of older adults across the care continuum. Major course themes include nursing assessment of the older adult, health promotion, patient safety, geriatric syndromes, gerontechnology and influence of payer systems on care for older adults. Prerequisite: NURS 310.

NURS 405 Fundamentals of Nursing Practice for Illness Care II (6) Examines pathophysiological responses to illness. Introduces major concepts relevant to the experience of acute and chronic illness, including physiological, pathophysiological, behavioral and experimental human responses, assessment of functional health status and interdisciplinary therapeutics in common alteration across the lifespan. Second course of a two-quarter sequence.

NURS 407 Culture, Diversity, and Nursing Practice (3) Analyzes the impact of cultural, social, and global factors on the health of multicultural and diverse

groups at the individual, population, and systems levels. Students gain knowledge and skills to effectively respond to the healthcare needs of multicultural societies through non-discriminatory and culturally appropriate nursing care practice. Offered: Sp.

NURS 410 Legal and Ethical Issues in Clinical Practice (3) Identification of ethical and legal issues and the ensuing dilemmas relevant to the profession of nursing and nurses as health professionals and citizens. Selected problems and dilemmas affecting nurses, nursing, and the delivery of healthcare analyzed using specific moral-ethical perspectives. Offered: AW.

NURS 412 Healthcare Systems (3) Introduction to healthcare systems with emphasis on the political economy of health; access to, utilization and quality of healthcare services; health inequities and the social determinants of health; health insurance and reimbursement; global health issues and innovations; leadership and teamwork; and community-engagement/activism to ensure the best health outcomes for all.

NURS 415 Nursing Care of Childbearing Families (3) Apply family and cultural competency concepts to nursing of childbearing families. Focus on family as context for care of individuals. Emphasizes use of physiological, psychological, developmental, cultural, and environmental concepts for health promotion, disease prevention, and nursing therapeutics. Uses current evidence-based research to guide best practices related to childbearing families. Offered: A.

NURS 417 Psychosocial Nursing in Health and Illness (4) Examines psychosocial disorders/issues of life transitions from integrated perspective of biological, social sciences, nursing, and humanities. Emphasizes utilizing psychosocial nursing and interpersonal therapeutics for assessment, intervention, health promotion with individuals/families/groups at risk for experiencing psychosocial disorders. Prerequisite: NCLIN 418, which may be taken concurrently.

NURS 419 Transition to Professional Practice (3-5) Focuses on critical examination, synthesis, and evaluation of professional nursing care. Emphasizes mastery, synthesis, and application of theory, research, and practice in relation to nursing

management, leadership, and nursing care of individual clients or groups of clients and populations. Offered: SpS.

NURS 420 Community and Public Health Nursing (3) DIV Community and public health nursing theory focused on populations. A synthesis of theory, practice, and research in relation to community/public health in informed by: 1) social justice framework, 2) social determinants of health, 3) community partnerships. and 4) culturally and linguistically appropriate population focused care. Theory class for NCLIN 420

NURS 425 Health Equity (3) This course focuses on understanding and addressing health inequities. Theoretical frameworks and the root causes for health disparity will be reviewed. Health inequities found among marginalized groups will be discussed. This course will also explore approaches, strategies and tools that can be used to address health inequity.

NURS 431 Child Health (2) Focuses on the core processes of growth and development from infancy to adolescence, highlighting the family as the context for care of individuals. Emphasizes use of physiological, psychological, developmental, cultural, and environmental theories for health promotion, disease prevention, and nursing therapeutics.

NURS 445 Special Topics in Nursing (1-10, max. 10) Guided seminar that focuses on selected professional nursing and patient care topics.

NURS 452 Care Coordination and Transition Management (3) Focuses on exploring the role, skills, and competencies related to care coordination and transition management across care continuum. Course themes include the role of the RN, models of care, evidence-based practice to support patient outcomes and cost savings, patient-centered care planning, collaboration and communication within and between settings/community, the role technology plays, and the structures for reimbursement for services. Prerequisite: NURS 412.

NURS 499 Special Electives (1-4, max. 15) Seminars on selected nursing issues of clinical problems, with independent study option, under supervision of nursing faculty. Credit/no-credit only. Offered: AWSpS.

NURS 500 Child Management II: Chronic Conditions

(3) *Kieckhefer, Magyary* Focuses on approaches to caring for children and adolescents with chronic physical, neurobiological, developmental, or psychosocial conditions. Emphasizes evidence-based, culturally-competent, family-centered, interdisciplinary, and comprehensive assessment, referral, management, and care-coordination strategies. Offered: S.

NURS 501 Child Mental Health Assessment and Interventions (3)

Developmentally based assessment and therapeutic approaches relevant for children with psychosocial health problems. Consideration to matching therapeutic approaches with specific nature of symptomatology and other child, family, cultural, and environmental characteristics, including social and educational systems. Individual and group evaluation research emphasized.

NURS 505 Selected Topics in Child, Family, and Population Health Nursing (2-10, max. 10)

In-depth exploration of the major theoretical issues in psychosocial nursing. Seminar with analysis and discussion of selected topics and readings and implications for research and healthcare. Offered: Sp.

NURS 507 Older Adult Mental Health Assessment and Intervention (2)

Examines the dynamics of mental health research and practice in normal, optimal, and pathological aging. Focuses on psychosocial and environmental influences on mental health of older adults. Topics include: models of aging, cognitive impairment, depression, severe mental illness, and successful strategies to enhance mental health in older adults.

NURS 509 Issues in Violence and Aggression for Health Professionals (3)

Focuses on research and theory of violent/aggressive behavior. Perspectives of victim, offender, family, community, society examined. Focus is recognition of violence against women. Designed to challenge students to clarify beliefs, values related to topics such as rape, homicide, domestic violence. Prerequisite: graduate nursing student or permission of instructor.

NURS 514 Physiologic Adaptations in Women and Children: Physiologic Adaptations During Pregnancy and Postpartum (1-3, max. 6)

Blackburn Analyzes

the physiologic adaptations in the maternal-fetal-neonatal unit, fetal development, and developmental adaptations in children from infancy to adolescence. Implications of normal and altered physiologic functions for nursing practice and examination of the basis for selected nursing intervention strategies.

NURS 515 Common Adolescent Health Problems (2-3)

Focuses on assessment, clinical decision making, and management of common adolescent problems. Concepts and theories of health promotion, adolescent development, and intervention strategies are explored to provide a broad framework for caring for adolescents in primary settings.

NURS 517 Pediatric Pulmonary Anatomy, Physiology, and Pathophysiology: Clinical Applications (2)

Content includes normal pediatric lung development infancy through adolescence and explores evidence for diagnosis, management, and follow up of commonly encountered respiratory problems. Emphasizes coordination of care with multiple disciplines when diagnosing and treating children with special health care pulmonary needs and family centered care and professional leadership role. Prerequisite: permission of instructor. Offered: Sp.

NURS 518 Child Management I: Acute Conditions (3)

Focuses on use of clinical decision making framework to develop theoretically and empirically sound individualized management plans for the young child, with physical and behavioral symptoms of common pediatric illness, in the primary care setting. Prerequisite: PNP or FNP specialty, or permission of instructor.

NURS 520 Evaluation of Clinical Performance in Nursing (3)

For graduate students preparing for faculty or staff development positions in nursing. Theory and principles of evaluation. Instruments to appraise clinical nursing performance developed as part of course requirements. Prerequisite: graduate standing or permission of instructor.

NURS 524 Conceptual Foundations for Healthcare Systems: Organizational Structure and Effectiveness (4)

Examines the healthcare delivery system and systems of care within it, including evolution and structure of organized healthcare in the United States, key drivers of organizational effectiveness,

components of care systems, and Innovations in care system design and adoption. Explores use of various types of information technology to monitor and increase organizational effectiveness. Prerequisite: graduate standing. Offered: A.

NURS 525 Managing Quality Improvement, Access and Utilization (5) Care-system practices for managing quality and process improvement, access, and utilization within health care systems. Emphasis on managing care systems with a focus on leadership, healthcare access and resource utilization among diverse populations, reimbursement models and team-based strategies, and impacts on healthcare delivery from policy, leadership, and practical perspectives.

NURS 526 Managing Organizational Effectiveness Within Care Systems (3) Analysis of management strategies for attaining effective and efficient organizational structures and processes within healthcare systems. Prerequisite: NURS 524 or permission of instructor.

NURS 527 Managing Effective Access and Utilization Within Care Systems (3-4) In-depth inquiry into healthcare access and resource utilization patterns among diverse populations, with emphasis on management strategies for establishing effective population-system fit. Additional credit for exploring access and utilization patterns within specific populations.

NURS 529 Childhood Common Developmental and Behavior Issues (2) Focus on common developmental and behavioral issues presented by children and their families in primary care setting. Emphasis on the developmental, family, and cultural aspects of assessment and management of the common issues.

NURS 534 Aging and Health in Contemporary Society (3) Explores demographic, cultural, psychological, theoretical, political, and ethical context of aging and health in contemporary society. Content is based on empirical data and policy statements on aging. Analyzes healthcare delivery at an individual, community, and systems level to support optimal functioning across the health continuum for older adults. Offered: Sp.

NURS 535 Pharmacotherapeutics for Acute/Critical Illness (3) Analysis of issues that impact the assessment, prescription, and evaluation of pharmacotherapeutic regimens for patients with acute/critical illness or injury. Current evidence together with pharmacotherapeutic principles are considered within the clinical context as the basis for decision-making in acute/critical care clinical practice. Prerequisite: PHARM 514 or equivalent Offered: Sp.

NURS 537 Symptom Science and Patient-reported Outcomes Research (3) Focuses on research to understand symptom development and trajectories, design of interventions to prevent and treat symptoms and improve function and quality of life across diverse populations. Recommended: Graduate Student Offered: Sp.

NURS 539 Management of Patients with Acute/Critical Illness and Injury I (4) Systematic inquiry into pathophysiology and management of the acute/critically ill or injured across the lifespan. Emphasizes evidence-based assessment, management, and evaluation strategies, including therapeutics and use of technology to support care. Highlights advanced practice provider role and multidisciplinary approach to management. Offered: W.

NURS 540 Special Topics in Biobehavioral Nursing and Health Systems (1-6, max. 12) Guided seminar that focuses on selected biobehavioral and health system topics.

NURS 541 Sexual and Reproductive Healthcare (2/3) Examines advanced practice sexual and reproductive healthcare issues including health maintenance, contraceptive care, and diagnosis, and treatment of sexual and reproductive health problems across the lifespan. Prerequisite: permission of instructor. Offered: W.

NURS 542 Theoretical Foundations of Advanced Practice Nursing: Childbearing I (1-4, max. 4) Analyzes and applies concepts of advanced practice nursing/nurse-midwifery care, specific to the normal childbearing woman, during preconception, antepartum, intrapartum, and postpartum. Examines primary care management of pregnant client within the context of the individual, family, socio-cultural environment, and healthcare system.

NURS 543 Theoretical Foundations of Advanced Practice Nursing: Childbearing II (3) Analyzes and applies concepts of advanced practice nursing/nurse-midwifery care, specific to at-risk childbearing woman, during preconception, antepartum, intrapartum, and postpartum. Examines primary care management of at-risk pregnant client within the context of the individual, family, socio-cultural environment, and healthcare system.

NURS 546 Interpersonal Therapeutics in Advanced Psychiatric Mental Health Nursing: Current Perspectives (3) Selected theories in relation to psychosocial development and adaptation across life span for individuals, families, and small groups and as explanatory models of major psychosocial disabilities. General and psychosocial nursing models evaluated for heuristic value for research and practice. Prerequisite: graduate standing or permission of instructor.

NURS 547 Neuroscience Basis of Advanced Practice Psychiatric/Mental Health (4) Focuses on the role of the neuroendocrine system in the integration of genetic and environmental domains as these pertain to mental health/mental illness. Emphasis will be placed on mental health disorders as these occur across the lifespan. Current research on the role of gene-environment interactions will be addressed. Prerequisite: graduate standing in nursing or permission of instructor.

NURS 549 Assessment in Psychosocial Nursing (3) Conceptual and clinical approaches to advanced-level data collection and diagnostic reasoning in psychiatric/psychosocial disorders. Synthesizes knowledge from psychosocial nursing and multiple allied fields to enhance learners' cognizance of principles for establishing accurate and comprehensive data bases and sound multifaceted diagnostic formulations. Emphasizes DSM diagnostic scheme.

NURS 552 Wellness, Health Promotion, and Disease Prevention (3) Covers theoretical perspectives and evidence for wellness, health promotion, disease prevention, and risk reduction through the lifespan for advanced practice nursing. Examines issues impacting individual, family, population, and community health related to context and culture. Includes strategies for health promotion and

behavior change at individual, family, population, and community levels.

NURS 554 Management of Psychiatric Disorders: Adult and Adolescent (3) Focuses on advanced nursing management strategies for psychiatric disorders and primary mental health conditions. Emphasizes the synthesis and integration of scientific evidence to formulate psychiatric diagnoses, and select appropriate interventions for individuals, families, and communities. Measures outcomes through practice inquiry at both system and policy levels. Prerequisite: NURS 549.

NURS 557 Health, Culture, and Community (3)
Chrisman A multidisciplinary approach to the development of leadership in personal and organizational cultural competence in community-based participatory research. Emphasizes understanding collaborative assessment, planning, and evaluation of health promotion and disease prevention programs to address the social determinants of health at the population level. Offered: jointly with HSERV 576; W.

NURS 560 Dynamics of Community Health Practice (3) Analysis of principles of community health as applied to the delivery of clinical services in order to improve public health, reduce disparities, provide leadership in delivery of care, and synthesize one's clinical role with public health. Examines environmental, social, cultural, and behavioral determinants of health. Includes family, aggregates, and populations. Offered: jointly with HSERV 508.

NURS 561 Selected Topics in Comparative Nursing Care Systems (2/3, max. 10) In-depth examination of the literature pertinent to major theoretical issues in cross-cultural nursing and healthcare systems. Seminar with analysis and discussion of selected topics and readings. Implications for research and healthcare stressed.

NURS 562 Clinically Applied Anthropology (3) Anthropology as it relates to interdisciplinary delivery of culturally relevant healthcare. Cultural variation in illness beliefs and behavior, types of healing practices, illness prevention, social support networks. Prerequisite: graduate standing, permission of instructor. Offered: jointly with ANTH 562.

NURS 564 Biological Intervention in Advanced Practice Psychiatric/Mental Health Nursing (3-4)

Biological and pharmacological interventions pertinent to practice of psychosocial nursing, including psychopharmacology, electroconvulsive therapy, and phototherapy. Emphasis on empirical neuroendocrine bases and then nursing management issues pertaining to these interventions. Legal and ethical issues pertaining to advanced practice and putative neurological mechanism are examined. Prerequisite: NURS 547 or permission of instructor.

NURS 566 Work Stress and Health (3) Delineates our understanding of the relationship between work-related stressors and worker health. Theoretical models of job-stress are considered and methodological issues examined. Uses social justice framework to explore worker stress and health disparities in immigrants and other disadvantaged populations. Offered: Sp.

NURS 569 Management of Patients with Acute/Critical Illness and Injury II (2/3) Continuing inquiry into pathophysiology and management of the acute/critically ill or injured patient across the lifespan. Emphasizes evidence-based assessment, management, and evaluation strategies, including therapeutics and use of technology to support care. The advanced practice provider role and multidisciplinary approach to management are emphasized. Prerequisite: NURS 539 or permission of instructor.

NURS 573 Foundational Seminar in Advanced Practice Nursing (1) Explores specific advanced practice nursing roles and populations within the healthcare system. Links historical development and analysis of health care trends with contemporary specialty practice. Exploration of current issues and trends in the specialty. Credit/No Credit only. Prerequisite: Credit/no-credit only.

NURS 576 Assessment and Collaboration with Communities and Systems (3) Examines, critiques, and applies theory in assessing communities, populations, and systems cross-culturally. Focuses on advanced practice, executive leadership/policy, and practice inquiry; broad definition of community includes organizations. Emphasizes team work in assessment implementation, i.e., survey, interview, focus groups, observation/participant observation to

advance understanding of social determinants of health.

NURS 579 Transcultural Nursing Practices (3)

Seminars examine four decades of nursing practice literature and other disciplines related to appropriate and competent care of diverse and multicultural populations. Concepts and methods from anthropology and other behavior sciences are considered in relationship with current health practice guidelines. Graduate standing or instructor permission.

NURS 580 Current Issues in Occupational and Environmental Medicine (2, max. 12)

Interdisciplinary seminar on current and emerging topics in the practice of environmental and occupational health. Faculty- and student-led presentations with an interdisciplinary focus, including occupational hygiene, nursing, and medical issues. Prerequisite: environmental health graduate student, occupational health nursing student, or permission of instructor. Offered: jointly with ENV H 596; AWSp.

NURS 581 Global Health Nursing (3) Reviews global health topics and the complex local and global conditions that affect the health and illness of individuals, communities, and populations. Emphasizes the multi-faceted roles of health care providers. Offered: jointly with G H 574; A.

NURS 582 Culture, Society, and Genomics (3) B.

MCGRATH Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with ANTH 574/PHG 521; Sp.

NURS 583 Emotions and Mental Health: From Adversity to Adaptation (3-4) Betrus, Elmore

Provides an understanding of nature and function of emotions as well as relationship of emotion to mental health/illness. Emphasizes adversity arising from individual and community sources and its impact on emotional health. Addresses implications for interpersonal and social policy interventions.

NURS 584 Critical and Interdisciplinary Approach to Health Policy (3)

Advanced seminar to critically

analyze various public health policies from a social justice framework.

NURS 587 Leadership Seminar (1, max. 3) Facilitates transition to successful doctoral study and future professional roles and serves to integrate content and experiences across core courses. Addresses leadership and future roles, cross-disciplinary teamwork, and scientific communication competencies. Topics include collaboration and facilitation, giving and receiving feedback, leadership and career development strategies to facilitate success in the doctoral program. Prerequisite: enrolled in PhD program in Nursing Science; recommended: PhD student in good standing. Credit/no-credit only. Offered: AWSp.

NURS 588 Philosophical Inquiry and Nursing Science (4) Focuses on the epistemological and ontological basis of forms of inquiry for generating knowledge in nursing. Emphasizes approaches to knowledge development as applied to phenomena in nursing. Includes critique of conceptual issues among schools of thought including but not limited to interpretive/postmodern, critical/feminist, and contemporary empiricist and how the philosophical underpinnings influence the generation of research questions. Prerequisite: matriculated student in PhD in Nursing Science Program. Offered: A.

NURS 589 Application of Theory and Evidence in Nursing Science (4) Addresses the role of theory in guiding scientific inquiry in nursing. Concept and theory development, analysis, and critique are examined as foundational to the scientific evidence that informs nursing inquiry, practice, and systems/contexts of health. Distinct approaches for synthesizing and representing knowledge about health phenomena are reviewed for their theoretical elements and contributions to the quality of evidence in nursing science. Prerequisite: NURS 588, or permission of instructor; recommended: matriculation in the PhD in Nursing Science Program Offered: W.

NURS 590 Ecology of Human Health (5) Provides conceptual foundation for the study of human health ecology within nursing science. Frameworks for understanding human health as an outcome of individual, family, and group interactions and transactions with environments are applied.

Provides the basis for evaluation and developing therapeutic approaches to improve health.

NURS 592 The Science of Therapeutics: Theoretical Foundations (4) Addresses the state of the science of nursing therapeutics. Students examine the practices of nursing to promote, maintain, and restore human health from an ecological perspective. Therapeutics considered from the perspectives of the individual, family, and community systems. Prerequisite: NURS 590 or equivalent with permission of instructor.

NURS 595 Synthesis of Nursing Science (3/4) Provides a forum for the development of a grant proposal in a focused area of nursing science including development of specific aims, background and significance, choosing a research design and method to answer research questions, choosing outcomes and measures, constructing the analysis plan, and addressing important human subject issues. Practice and participation in the peer review process via mock scientific reviews and written critiques. Prerequisite: completion of the year 1 core PhD curriculum; successful completion of preliminary examination. Credit/no-credit only. Offered: Sp.

NURS 597 Health in the Context of Culture (5-6, max. 24) Provides basic overview of health and healthcare challenges and opportunities in other countries. Examines socio-cultural, environmental, economic, political, and ecological factors that influence health, health promotion, illness, disability, and death. Address responses to health issues both within and outside the health sector. May include study abroad.

NURS 599 Selected Readings in Nursing Science (1-6, max. 18) Analysis of synthesis of selected readings with faculty mentor. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

NURS 610 Teaching Practicum (3, max. 6) Individualized project, under the direction of a faculty member, focused on issues of teaching/learning at the university level and designed to target specific teaching competencies enhancing the student's ability to make innovative contributions in teaching. Prerequisite: student in doctoral program; permission of faculty member Credit/no-credit only. Offered: AWSpS.

NURSING CLINICAL

NCLIN 301 Practicum: Health Assessment and Foundational Skills for Nursing Practice (6) Focuses on foundational nursing skills including health assessment, interviewing and communication, as well as psychomotor skills and critical thinking in the context of nursing care to individuals across the lifespan. Person-centered care and patient safety and are emphasized through use of simulation.

NCLIN 302 Practicum: Health Assessment (3) First in a series of clinical courses emphasizing beginning nursing skills. These skills will include health assessment of the individual and family, communication, and interviewing. Predominant themes include communication skills, physical and psychosocial assessment of the individual across the developmental life span. Offered: A.

NCLIN 306 Practicum: Foundational Skills for Professional Nurses ([1-3]-, max. 6) This laboratory-based course focuses on psychomotor skills and critical thinking in the context of nursing care to individuals across the lifespan. Patient safety and quality; person-centered care are emphasized through use of simulation. Prerequisite: NCLIN 302, which may be taken concurrently. Credit/no-credit only. Offered: AWSp.

NCLIN 403 Practicum: Pediatric Nursing (4) Provides supervised acute/chronic illness nursing care to pediatrics clients. Emphasizes beginning skills in systematic health and developmental assessment, including person/environment fit, basic competency in selected nursing therapies, and developing role as care agent for pediatrics clients and their families. Prerequisite: NURS 401, may be taken concurrently. Credit/no-credit only. Offered: WSp.

NCLIN 407 Practicum: Nursing Care of Ill Adults (5) Provides supervised nursing care to ill adults and their families. Emphasizes systematic assessment, including person/environment fit, developing competency in selected nursing therapies, and developing a role as a professional nurse. Prerequisite: NURS 401, which may be taken concurrently. Credit/no-credit only.

NCLIN 409 Population Health Through Community Health Nursing Partnerships (4) Analysis,

application, and evaluation of community partnership process for health. Analysis of nursing role in community/public health, including community building, collaboration, policy. Development and formulation of community interventions to maintain/promote biopsychosocial health, and to promote health/prevention of injury and disease. Credit/no-credit only.

NCLIN 411 Transition to Clinical Practice (7) Capstone clinical in a specialty focusing on critical examination, synthesis, and evaluation of professional nursing care. Client populations include individuals and/or groups reflecting diverse settings, ages, and ethnic communities. Emphasis on mastering theoretical concepts, applying theory and research findings, improving skill competency, and developing leadership capabilities in the clinical setting. Credit/no-credit only.

NCLIN 416 Practicum: Care of Childbearing Families (2) Provides the opportunity for supervised nursing of childbearing families and individuals. Emphasizes expanding nursing process skills, especially health promotion, with individuals and families during childbearing. Prerequisite: NURS 415, which may be taken concurrently. Credit/no-credit only. Offered: WSp.

NCLIN 418 Practicum: Psychosocial Nursing (3-4) Provides supervised psychosocial nursing care to individuals/families/groups/communities with threats to or alterations in psychosocial health. Emphasizes increasing skill in systematic assessment, developing competency in selected psychosocial nursing interventions, and evaluation of treatment outcomes. Credit/no-credit only. Offered: AW.

NCLIN 422 Practicum: Ambulatory Care (3) Provides opportunity for simulated and supervised nursing of individuals in a variety of ambulatory care settings. Discussion of organization of ambulatory care within the health care system and role of professional nursing. Emphasizes concepts of episodic care, triage, health promotion and education, interdisciplinary communication, care coordination, and resource and environmental management. Prerequisite: NCLIN 407. Offered: A.

NCLIN 475 Foundations of Interprofessional Practice ([0-1]-, max. 3) Team-based training in healthcare team functioning for professional nursing

students. Students work and co-learn with other health sciences students in applying knowledge of evidence-based practice, quality improvement principles, and informatics to patient-centered care situations. The course will provide careful attention to development of intra- and interprofessional roles and professional identity. Credit/no-credit only. Offered: AWSp.

NCLIN 490 Special Laboratory Elective (1-4, max. 4)

Provides supervised laboratory experience to enhance and document clinical skills and decision making. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 499 Clinical Practicum Elective (1-5)

Provides opportunities to develop nursing skills in the care of individuals, groups, communities, or care-systems. Individually arranged with faculty member for application of theory and principles to direct care, consultation, education, or care coordinator roles. Prerequisite: NCLIN 302; NCLIN 306; NCLIN 402; NCLIN 406.

NCLIN 500 Comprehensive Health Assessment (3)

Uses didactic and experimental learning to develop evidence-informed advanced assessment skills including systematic collection, organization, interpretation, and communication of data reflecting the health status of adolescents/adults/older adults. Emphasizes a holistic analysis of developmental, familial, physiological, psychosocial, occupational, environmental, functional, nutritional, and cultural aspects of health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWS.

NCLIN 501 Diagnostic Health Assessment (1-5, max. 5)

Examines evidence-informed clinical decision-making in the advanced assessment of symptoms experienced by adolescents/adults/older adults. Uses didactic and experimental learning in the systematic collection, integration, analysis, interpretation, and communication of focuses subjective and objective data, including formulation of diagnostic hypotheses. Prerequisite: NCLIN 500, which may be taken concurrently. Credit/no-credit only. Offered: AWS.

NCLIN 502 Pediatric Diagnostic Health Assessment ([1-4]-, max. 4)

Uses didactic and experimental learning to develop evidence informed advanced assessment skills including systematic collection,

organization, interpretation, integration, and communication of data reflecting health status of children from birth to adolescence. Emphasizes holistic analysis of development, familial, physiological, psychosocial, environmental, functional, nutritional, and cultural aspects of health. Prerequisite: permission of instructor. Credit/no-credit only. Offered: A.

NCLIN 503 Advanced Fieldwork Community Health Nursing (2-6, max. 12)

Guided experience in delineating nursing roles in community settings. Development of a philosophy of community health nursing. Application of core concepts pertaining to health, ethics, care, and community. A minimum of four hours of guided experience weekly. Prerequisite: graduate standing and permission of instructor.

NCLIN 505 Diagnostic Management and Decision Making (2-5)

P. CHRISTIANSON Examines diagnostics pertinent to adult and geriatric illnesses from individual and population perspectives in the context of evidence, risk/benefits, equity, cost, access and care quality. Case analyses integrate health assessment and differential diagnoses into selection of appropriate tests. Includes didactic and laboratory/simulation components. Prerequisite: NCLIN 501 or equivalent. Offered: W.

NCLIN 508 Seminar in Group Treatment (1)

Seminar on the theoretical basis for working with various treatment groups. Analysis of selected approaches to group treatment. Analysis of leader responsibilities and functions in the development of therapeutic group experiences.

NCLIN 510 Group Work with High-Risk Youth (3-6, max. 6)

Theory and application course in group counseling for high-risk youth. Central theme is group leader effectiveness in helping young people increase school performance, decrease drug involvement, and increase emotional well-being. Open to graduate students in nursing, education, and related human services professions.

NCLIN 511 Introduction to Perinatal Care for Advanced Practice (1)

Provides an introduction to women's health and prenatal care visit structure, documentation, and skill development necessary to be successful in advanced practice clinical practicum. Both didactic and experiential learning will be used

to prepare students for the systematic collection of subjective and objective data and clinical decision-making in the clinical setting. Intended for NM and PNS students. Prerequisite: permission of track lead. Credit/no-credit only. Offered: W.

NCLIN 512 Advanced Practicum in Family and Child Nursing I (2-12, max. 35) Clinical seminar and practicum provide opportunities to develop advanced nursing practice competencies in the care of women, families, children, and/or adolescents. Focuses on the application of theory and principles when providing direct patient care, patient education, and the collaboration of care with individuals and/or groups. Credit/no-credit only.

NCLIN 514 Seminar in Home Care for Chronic Illness (3) Home-care services as component of community health nursing. Understanding effects of direct nursing functions on care of chronically ill persons and their families. Selected field study experiences in community health settings. Prerequisite: NURS 563, graduate standing, and permission of instructor.

NCLIN 516 Advanced Clinical Practicum I (4-5) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals and groups. Credit/no-credit only. Offered: Sp.

NCLIN 517 Advanced Clinical Practicum II (5-7) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Credit/no-credit only. Offered: S.

NCLIN 518 Advanced Clinical Practicum III (5-7) Clinical practicum and seminar providing opportunities to develop advanced nursing practice competencies with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Credit/no-credit only. Offered: A.

NCLIN 519 Newborn Assessment for Advanced Practice (1) Credit/no-credit only.

NCLIN 520 Clinical Reasoning and Assessment Across the Lifespan (2) Provides the framework to begin evidence-informed clinical decision-making in the advanced assessment of patients across the lifespan. Includes didactic and experiential learning in systematic collection, integration, analysis, interpretation, and communication of focused subjective and objective data, including formulation of diagnostic hypotheses. Emphasizes a holistic approach. Credit/no-credit only. Offered: A.

NCLIN 521 Diagnostic Decision Making and Clinical Skills Laboratory (2) Designed to enhance student's knowledge, performance, and interpretation of various diagnostic tests and clinical procedures in multiple settings. Includes skills across the age span. Skill demonstration and validation occur in the lab classroom. Co-requisite: NCLIN 516; permission of instructor. Credit/no-credit only.

NCLIN 532 Advanced Practice in Community Health Systems Nursing: Overview (3) Seminar and practicum focusing on evidence-based approaches to community health systems nursing, integration and application of theories, and content related to social determinants of health and social justice. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: A.

NCLIN 533 Advanced Practice in Community Health Systems Nursing: Culture (3) Seminar and practicum focusing on evidence-based approaches to community health systems nursing, integration and application of theories, and content related to cultural issues affecting the health of individuals, populations, and communities. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: W.

NCLIN 534 Advanced Practice in Community Health Systems Nursing: Assessment (3) Seminar and practicum focusing on evidence-based approaches to community health-systems nursing. Includes integration and application of theories and content related to the assessment and appraisal of communities and populations. Emphasizes the development of advanced practice, leadership, and

practice inquiry competence. Credit/no-credit only. Offered: Sp.

NCLIN 535 Advanced Practice in Community Health Systems Nursing: Policy (4) Seminar and practicum focusing on evidence-based approaches to community health-systems nursing. Includes integration and application of theories and content related to health-related organizational and public policy that promotes health equity. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: A.

NCLIN 536 Advanced Practice in Community Health Systems Nursing: Health Systems (4) Seminar and practicum focusing on evidence-based approaches to community health-systems nursing. Includes integration and application of theories and content related to systems-level models of practice to service delivery among communities and populations. Emphasizes the development of advanced practice, leadership, and practice inquiry competence. Credit/no-credit only. Offered: W.

NCLIN 540 Infant Mental Health Practice: Parent Child Relationships and Intervention ([3-6]-, max. 18) Focuses on reflective practice, relationship-based consultation, and therapeutic interventions with infants/toddlers and caregivers. Students complete required clinical practicum at assigned community sites for three quarters. Prerequisite: admission to Infant Mental Health certificate program. Credit/no-credit only. Offered: AWSp.

NCLIN 541 Advanced Practice Specialist Clinical Practicum (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Emphasis is on specialization and role development. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 542 Advanced Practice Specialist Clinical Practicum II (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Fieldwork emphasizes greater depth/complexity/independence in specialization and role development. Seminars emphasize critical analysis of role-related issues.

Capstone experience for clinical practicum. Prerequisite: NCLIN 541. Credit/no-credit only.

NCLIN 543 Advanced Practice Specialist Clinical Practicum III (1-10, max. 10) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Role development within specialty context. Emphasis is on critical analysis of leadership-related issues. For students in final clinical, serves as capstone. Prerequisite: NCLIN 542. Credit/no-credit only.

NCLIN 544 Advanced Practice Specialist Clinical Practicum IV (1-10, max. 20) Apply, synthesize, evaluate, and communicate knowledge about a specific domain of advanced medical/surgical or forensics nursing practice. Fieldwork serves as capstone experience. Seminar emphasis is on consultation and collaboration. Prerequisite: NCLIN 543. Credit/no-credit only.

NCLIN 549 Nurse Practitioner Clinical Practicum I: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced nursing practice with individual/groups. Students practice under clinical preceptor supervision. Focuses on data collection/critical thinking related to health status and threats to health, incorporating knowledge from the biological, behavioral, and social sciences. Prerequisite: permission of instructor, or NCLIN 501 or equivalent. Credit/no-credit only.

NCLIN 550 Nurse Practitioner Clinical Practicum II: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced practice nursing. Builds on NCLIN 549, emphasizing critical thinking related to the differential diagnosis/management of health problems and human responses. Students practice under clinical preceptor supervision. Addresses selected role issues in advanced practice nursing. Prerequisite: NCLIN 549 or permission of instructor. Credit/no-credit only.

NCLIN 551 Advanced Practice Nursing Clinical Practicum III: Adults/Older Adults (1-10, max. 10) Clinical fieldwork and seminar in advanced practice nursing. Builds on NCLIN 550, emphasizing the integration and application of previous learning in the care of people with multiple health problems. Students practice under preceptor supervision. Addresses selected role issues in advanced practice

nursing. Prerequisite: NCLIN 550 or permission of instructor. Credit/no-credit only.

NCLIN 552 Nurse Practitioner Clinical Practicum IV: Adults/Older Adults (1-10, max. 10) Intensive clinical experience in which students integrate previous learning to assume responsibility for care of older adults and/or adults with multiple health problems. Students practice as an advanced practice nurse supervised by a preceptor, assuming increasing responsibility for planning/implementing therapies and for documenting/evaluating outcomes. Prerequisite: NCLIN 551. Credit/no-credit only.

NCLIN 562 Professional Interpersonal Styles of Communication with Families to Enhance Health Outcomes (3) Complex communication processes evaluated and applied to the family as unit of interaction within interdisciplinary context. Empirical based communication practices analyzed considering family variables adherence, satisfaction, health outcomes, and cost effectiveness. Engagement in experiential learning through challenging clinical scenarios. Emphasizes cultural competencies. Prerequisite: DNP nursing student or permission of instructor. Credit/no-credit only.

NCLIN 567 Advanced Practice Clinical Practicum (1-6, max. 22) Practicum used to expand, deepen, or enrich advanced practice skills relevant to area of specialty preparation. Uses clinical activities to reflect an integration of advanced practice, leadership, and practice inquiry. Emphasizes self-directed learning, in-depth clinical skill building and decision-making, continuity of care, and inter professional collaboration. Prerequisite: permission of instructor. Credit/no-credit only.

NCLIN 599 Independent Study Clinical Practicum (1-12, max. 25) Clinical practicum to develop advanced practice nursing skills in care of individuals, groups, communities, or care systems. Individually arranged with faculty member for application of theory and principles to direct care, consultation, education, or care coordinator roles. Prerequisite: matriculated MN, DNP students, or post-master's student, and permission of academic adviser and instructor. Credit/no-credit only. Offered: AWSpS.

NCLIN 798 Tripartite Immersion Practicum ([1-5]-, max. 5) Practicum to synthesize and expand

knowledge and skills in application of tripartite role of advanced practice, inquiry, and leadership. Analysis of practice issues including reflective practice, collaboration, health systems, technology, ethics, and policy. Prerequisite: permission of instructor and Supervisory Committee. Credit/no-credit only.

NCLIN 801 Advanced Clinical Practicum Immersion (6-9) Immersion clinical practicum and seminar providing opportunities to integrate advanced nursing practice competencies, leadership, professional role, and collaboration with targeted populations. Focuses on the application of theory and principles when providing care, education, and collaboration with individuals, groups, and systems. Credit/no-credit only. Offered: AW.

NURSING METHODS

NMETH 403 Introduction to Research in Nursing (1/3, max. 3) Introduction to concepts and processes of research used in investigating nursing problems.

NMETH 416 Methods for Research and Inquiry in Nursing I (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on appraising literature and methods for generating evidence. Offered: A.

NMETH 417 Methods for Research and Inquiry in Nursing II (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on searching evidence, appraising evidence, and classifying different types/levels of evidence. Offered: W.

NMETH 418 Methods for Research and Inquiry in Nursing III (2) Explores the generation of new knowledge and evidence base for nursing practice in health and illness. Focuses on identifying gaps in the literature/evidence, and formulating a plan to conduct research. Offered: Sp.

NMETH 419 Application of Methods for Research and Inquiry in Nursing (2) Apply methods for contributing to evidence relevant to nursing. In small groups identify, implement, and disseminate a plan for generating, evaluating, synthesizing, or translating evidence around health, healthcare, and/or nursing practice. Offered: Sp.

NMETH 450 Informatics, Patient Safety, and Quality Improvement (4) Explores concepts of the patient safety, quality and cost-effectiveness of health care, root cause analysis, and use of information technologies that promote quality and safety. Culminates in the design, implementation and evaluation of a small test of change with presentation of findings. Prerequisite: NMETH 403 or ABSN status; recommended: NMETH 403 ABSN status

NMETH 499 Undergraduate Research (1-5, max. 12) Supervised individual scholarly inquiry on a specific nursing problem. Credit/no-credit only.

NMETH 520 Scholarly Inquiry for Clinical Informatics Practice (5) Evaluation of completed research for scientific adequacy and applicability to clinical informatics practice. The student applies conceptual, theoretical, ethical, and empirical knowledge as a basis for posing clinical informatics research questions, identifying research designs, selecting sampling and data collection strategies and proposing analytic methods to answer a research question. Offered: Sp.

NMETH 522 Data Management for Research Professionals (4) Surveys industrial strength data management, using techniques applicable to multi-center, longitudinal research trials with survey instruments. Involves challenges research professionals face as they graduate from a student project to a study with hundreds of cases, variables, multiple survey instruments and a staggered, repeated sampling protocol. Credit/no-credit only.

NMETH 523 Project Management and System Analysis for Health Informatics (3) Application of methods of inquiry to develop a scholarly proposal through faculty-guided individual composition. Students select the project topic and complete the conceptual phase of proposal development to fulfill their project plan. Offered: A.

NMETH 524 Healthcare Information Systems and the Electronic Health Records (3) Overview and analysis of healthcare informatics issues, including patient safety and Information Technology (IT), infrastructure, clinical systems, definitions and functions of EHR systems, IT leadership in healthcare organizations, informatics change management,

including key user roles evaluating EHR and workflow changes. Offered: A.

NMETH 526 Patient-Centered Technologies (3) Current and emerging consumer-centric eHealth technologies. Theories and principles of health, communication, information, cognitive processing, and human-technology interaction. Experts from multiple disciplines and patient/consumers lead seminar presentations and discussions on select topics. Addresses ethical implications of these tools, including health disparities. Offered: Sp.

NMETH 527 Introduction to Clinical Informatics (3) Overview of the history, current efforts, and future challenges in designing, developing, and implementing information and communication technologies for healthcare. Examines how these technologies fulfill the Quadruple Aim: enhancing the patient experience, improving population health, reducing the overall cost of care, and improving the work life of health care providers. Offered: A.

NMETH 528 Computing Fundamentals for Health Professionals (3) Survey of applied computing concepts, including computer algorithms, operating systems, networking, databases, digital privacy and security, applied programming principles to enhance productivity, and data science opportunities and pitfalls in healthcare. Offered: W.

NMETH 529 Database Concepts and Applications in Clinical Informatics (3) Introduction to relational database theory and technology from a clinical informatics perspective. Focuses on transactional database theory, architecture, and implementation in a socio-technical context and analyzes database applications used in clinical environments. Introduces knowledge bases and data warehouses. Prerequisite: NMETH 528. Offered: Sp.

NMETH 530 Scholarly Proposal Development (3) Application of methods of inquiry to develop a scholarly proposal through faculty-guided individual composition. Students select the project topic and complete the conceptual phase of proposal development to fulfill their project plan. Prerequisite: NMETH 520. Offered: S.

NMETH 533 Appraisal and Translation of Evidence for Practice (5) Designed to enhance use of methods to critically appraise literature, design, and

implement processes to evaluate outcomes of practice, and promote patient-centered care. Applies relevant findings to improve practice, develop guidelines, and use information technology and research methods. Includes dissemination of findings. Prerequisite: either NMETH 535 or permission of instructor.

NMETH 535 Nursing Inquiry to Support Evidence-Based Practice (4) Works to understand and apply conceptual, ethical, and practical aspects of quantitative and qualitative research methods by design, sampling, data collection, measurement, and analysis, as a basis for evaluating and generating evidence for nursing practice. Develops skills in data management and statistical analysis to utilize in practice-based inquiry. Prerequisite: either NGS 555 or permission of instructor.

NMETH 536 Methods of Program Evaluation and Quality Improvement (4) Teaches principles and practice of program evaluation and quality assurance. Emphasizes current practices in designing, managing, evaluating, and disseminating finding for use in a variety of healthcare contexts. Includes content on use of informatics to improve healthcare delivery effectiveness, efficiency, and safety. Prerequisite: either NMETH 535, which may be taken concurrently, or permission of instructor. Instructors: Jarrett, Walsh

NMETH 570 Seminar in Clinical Research in Nursing (3) Philosophy, problems of design; use of criterion measures in terms of patient care.

NMETH 575 Methodological Issues in Family Research (3) Emphasizes research with the family as unit of analysis. Examines patterns of family functioning in relation to responses to heal situations. Reviews family units from generational and intergenerational perspectives. Critiques methods assessing dyadic and triadic relationships and therapeutic interventions on family outcomes. Prerequisite: permission of instructor.

NMETH 579 Quantitative Research Methods (5) Provides the foundation for appraising and designing quantitative research (non-experimental, quasi-experimental, and experimental), including research questions, hypothesis testing, methodological and analytic approaches for nursing and health-related sciences. Prerequisite: matriculated student in PhD

Nursing Science Program; recommended: epidemiology; and Advanced Nursing Science via Scholarly Inquiry, Translational methods. Offered: Sp.

NMETH 580 Methodological Perspectives in Nursing Inquiry (3) Allows students to translate philosophical and theoretical perspectives into research methodologies. Foci include the relationship of theoretical perspectives to methodologies; the methodological issues among and between varying schools of thought such as interpretive/postmodern, critical/feminist, and contemporary empiricist; and how the methodologies influence choices of research design and methods. Prerequisite: NURS 588 or permission of instructor.

NMETH 581 Observational Research Methods (2-6, max. 6) Examines observational methods for conducting verbal and nonverbal behavioral research. Emphasizes critical analysis and rigor in research question formulation, measurement decisions, coding scheme development, data collection, and analysis and interpretation of data. In-depth application of observational method optional. Prerequisite: graduate standing and basic research methods course or permission of instructor. Offered: W.

NMETH 583 Advanced Qualitative Research Methods (4) Advanced seminar and practicum focused on study design, analysis, and dissemination within a selected interpretive tradition. Demonstration of a selected research strategy and method is required. Prerequisite: prior introductory course about qualitative research; and completion of a pre-course survey to determine course preparation.

NMETH 584 Methods: Physiologic Measures (4) Exploration of the measurement of physiologic functioning in human and animal models. Examples include biochemical and biophysical measure. Students develop beginning skills with one physiologic measure. Prerequisite: physiology and chemistry and permission of instructor.

NMETH 588 Mixed Methods Research for Health Sciences (4) Focuses on understanding research designs that combine qualitative and quantitative data collection, analysis and integration to answer critical healthcare questions. Includes application of

analysis and synthesis of selected design approaches using real data. Prerequisite: graduate student standing. Foundational graduate level quantitative and qualitative research courses. Permission of instructor. Offered: A.

NMETH 590 Special Topics in Nursing Research (2-5, max. 9) Examination of a specific research method, with evaluation of appropriateness, efficiency, rigor of measurement, and potential for inference for nursing research. Prerequisite: minimum of 5 credits of basic nursing research methodology at graduate level and permission of instructor.

NMETH 591 The Science of Therapeutics: Design and Outcomes (4) Synthesizes advanced strategies to evaluate the short- and long-term outcomes of clinical therapeutics with special emphasis on feasibility, pilot studies, and randomized control trials. Includes analysis of completed studies as well as the design of a randomized control trial of a clinical therapeutic. Prerequisite: NMETH 579, NURS 592, or permission of instructor.

NMETH 592 Clinical Outcome Research II (2-4, max. 4) Application and evaluation of philosophical, methodological, and analytical concepts and issues examined in NMETH 591. Two modules are offered: a) case study and small-n studies and b) large-n studies. Students demonstrate application of decision-making process involved in development of clinical outcome study. Prerequisite: permission of instructor.

NMETH 594 Innovations in Health Systems Delivery: Implementation and Measurement (3) Overview of T3/T4 research focusing on translation of effective interventions into practice and the community. Innovations in health services research including frameworks, appropriate study designs, methods, modalities, strategies and tools (formative, implementation, dissemination and communication) . Introduces basic cost/comparative effectiveness. Prerequisite: graduate standing. Offered: W, odd years.

NMETH 595 Designing a Theory-Driven Behavioral Intervention (3) Focuses on design and development of a theory- and population-informed behavioral intervention to enhance health behavior and outcomes. Examines selected theories of health behavior, including potential contribution to framing

a behavioral intervention. Analytical process of "fitting" a theory onto an observed health related problem in a specific population is included as well as research designs and methods to evaluate interventions. Prerequisite: NURS 589 (or equivalent) , or permission of instructor; recommended: graduate-level standing.

NMETH 596 Application of Methods in Conduct of Research (5) Develops knowledge and skills related to practical implementation of research projects for PhD students. Areas include protocol development, IRB procedures and applications, standard operating procedures, data management, study staff composition, community advisory boards, budget management, and study oversight. Prerequisite: graduate standing in Nursing, or permission of instructor. Offered: Sp.

NMETH 598 Special Projects ([1-12]-, max. 12) Fulfills the requirements of the non-thesis option for Master's students in nursing. Projects involve scholarly inquiry with in-depth focused analysis, culminating in a written product/report for dissemination. Prerequisite: NMETH 520 or permission of instructor. Credit/no-credit only.

NMETH 600 Independent Study or Research (*-) Credit/no-credit only.

NMETH 610 Research Practicum (2-4, max. 8) Hands-on, practical experience as a member of a research team, supervised by graduate faculty in Nursing or related disciplines. Students will participate in team meetings, complete reflection assignments, and contribute to study activities. Possible areas of contribution include subject recruitment and screening; instrument development; data collection, management or analysis, interpretation of results; and dissemination or report writing. Prerequisite: PhD students in Nursing Science. Credit/no-credit only. Offered: AWSpS.

NMETH 700 Master's Thesis (*-) Credit/no-credit only.

NMETH 800 Doctoral Dissertation (*-) Prerequisite: permission of Supervisory Committee chairperson or Graduate Program Coordinator. Credit/no-credit only.

NMETH 801 Practice Doctorate Project (3-, max. 6)

Addresses a clinical or systems problem using an evidence-based, practice relevant approach.

Students engage in self-reflection, collaborative partnership building, and use of leadership

strategies. Analyzes implications of project for future practice and practice inquiry activities. Culminates in written and oral reports for dissemination.

Recommended: Student in final year of program

Credit/no-credit only. Offered: AW.

SCHOOL OF PHARMACY

MEDICINAL CHEMISTRY

MEDCH 327 The Science of Drugs (3) NW Libin Xu

Introduces students to medicinal chemistry and pharmaceutical sciences. Recommended for sophomore, junior and senior students majoring in chemistry, biochemistry, bioengineering, chemical engineering, public health and other health sciences, and related fields. Prerequisite: either CHEM 223, CHEM 237, or CHEM 335; recommended: basic knowledge in general chemistry and organic chemistry. Offered: jointly with PCEUT 327; Sp.

MEDCH 495 Special Studies in Medicinal Chemistry

(* , max. 6) Opportunity to expand the breadth and depth of understanding in specific areas.

Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 499 Independent Study/Research (* , max. 24)

Research problems in medicinal chemistry. Prerequisite: cumulative GPA of 2.50 and permission of instructor. Offered: AWSpS.

MEDCH 500 Fundamental Medicinal Chemistry (2)

Provides pharmacy students a working knowledge of different aspects of chemical and physical properties of drugs, such as chemical bonds, functional groups, acid and base properties, stereochemistry, ADME properties, and organic transformations in drug actions and metabolism. Recommended: completion of undergraduate organic chemistry series. Offered: A.

MEDCH 501 Medicinal Biochemistry (3) Abhinav

Nath Provides a working knowledge of biochemistry directly related to understanding disease and drug therapy in pharmacy practice. Areas of study include drug metabolism, principles of enzyme kinetics and receptor theory, signal transduction, lipids and membrane transport, structure and function of antibodies, and regulation of protein expression and modification. Recommended: completion of undergraduate biochemistry series. Offered: W.

MEDCH 520 Seminar (1, max. 30) Qingcheng Mao

Graduate students attend seminars and make one formal presentation per year while in residence;

maximum of three presentations. Credit/no-credit only. Offered: jointly with PCEUT 520.

MEDCH 521 Advanced Medicinal Chemistry (3)

Application of integrated data from the physical and biological sciences to problems of chemotherapy, including transport of drugs to site of action, biotransformation of drugs, interaction of drugs with enzyme systems, and recent advances in drug design. Prerequisite: CHEM 457, CHEM 531, and BIOC 442, or permission of instructor. Instructors: Atkins, Nelson Offered: Sp.

MEDCH 527 Drug Metabolism (4) A. RETTIE, K.

THUMMEL Considerations of the biochemical mechanisms for the biotransformation of drugs and foreign compounds. Includes reaction mechanisms, ultrastructural considerations, induction mechanisms, methodology, kinetics of inhibition and activation, steroid and amine metabolism. Offered: jointly with PHCOL 527; W, odd years.

MEDCH 528 Biophysical Enzymology and Bipharmaceuticals (2) Atkins, Catalano

Covers in-depth treatment of chemical catalysis and transition state theory as related to enzyme mechanisms; thermodynamics and kinetics of protein-ligand interactions, protein-protein-interactions and protein-lipid interactions, and methods for their study. Discusses therapeutically relevant examples, including viruses, therapeutic antibodies, and drug targets. Offered: W, even years.

MEDCH 529 Advanced Medicinal Chemistry (4)

Atkins, Kunze, Nelson, Rettie, Totah Covers the fundamental aspects of contemporary medicinal chemistry. Discusses the chemical characteristics of drugs and drug targets, pharmaceutical properties of drugs, drug metabolism, toxicology, and pharmacogenetics. Focuses on various drug classes; their biochemistry, pharmacology, mechanism of action, and toxicology. Offered: W.

MEDCH 530 Integrated Pharmacology (1) Atkins,

Beavo, Rettie Students present and discuss primary literature that integrates aspects of medicinal chemistry and pharmacokinetics with the physiology, pharmacology, and genetics of therapeutic drug

targets. Examples of targets discussed include ion channels and enzymes relevant to cardiovascular disease, and neurodegenerative disease. Credit/no-credit only. Offered: Sp.

MEDCH 531 Laboratory Methods in Protein Therapeutics (3) Hands-on experience with laboratory methods and data analysis used to characterize biophysical properties of therapeutic antibodies. Students measure functional protein interactions and stability of constructs currently used for anti-body-based therapeutics. Background lectures from industry and government scientists highlight the role of these analyses in development of protein-based therapeutics.

MEDCH 532 Chemical and Molecular Pharmacology I: Autonomic and Cardiovascular Drugs (5) Chemical and molecular properties of drugs, their mechanism of action, and adverse effects. Drugs that act on the autonomic nervous system, used to treat endocrine disorders and pathologic conditions that disrupt pulmonary or cardiovascular function, including diabetes and dyslipidemia. Prerequisite: MEDCH 500 and MEDCH 501. Offered: A.

MEDCH 533 Chemical and Molecular Pharmacology II: Blood, CNS, Endocrine and GI Drugs (4) Chemical and molecular properties of drugs, their mechanism of action and adverse effects. Focuses on drugs that act on the blood, in the brain, and are used to treat hematological disorders, inflammation, pathologic conditions that disrupt central nervous system function, and gastrointestinal disorders. Prerequisite: MEDCH 500 and MEDCH 501. Offered: W.

MEDCH 535 Diagnostic Medicinal Chemistry (3) *Catalano, Kunze* Examination of clinical diagnostic tests with regard to the chemical or biochemical rationale of the testing method, interpretation of test results, and major factors influencing test values with special emphasis on the effects of medications. Clinical laboratory data from patients considered in light of these factors. Offered: W.

MEDCH 541 Biological Mass Spectrometry (3) Covers the basics of modern ionization methods and mass analyzers; small molecule structure assignment, quantitative assay development by LC-MS and metabolomics; quantitative discovery-based proteomics and validation methods; and peptide

sequence determination, post-translational modification mapping, and protein structure determination methods. Prerequisite: permission of instructor. Instructors: Whittington Offered: Sp.

MEDCH 551 Flavin and Heme-Containing Monooxygenases (1) Discussion of research strategies and methodologies concerning the structure, function, and polymorphic expression of human monooxygenases, especially the cytochrome P450s and flavin-containing monooxygenases. Emphasis placed on experimental problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Rettie Credit/no-credit only. Offered: AWSpS.

MEDCH 552 Medicinal Chemistry Aspects of Drug Action and Drug Metabolism (1) Discussion of research strategies, methodologies, and literature concerning the mechanisms of drug action and drug metabolism, particularly as these apply to opiate drugs and beta blockers. Emphases placed on problem solving, data analysis, and presentation. Prerequisite: permission of instructor. Instructors: Nelson Credit/no-credit only. Offered: AWSpS.

MEDCH 553 Structure and Function of Macromolecular Protein Assemblies (1) Discussion of research strategies, methods, and current literature concerning macromolecular self-assembly processes and protein-protein interactions as they relate to biological specificity. Emphasis on experimental approaches used in current literature. Prerequisite: permission of instructor. Instructors: Atkins Credit/no-credit only. Offered: AWSpS.

MEDCH 554 Biophysical and Structural Virology (1) *Lee* Discusses current topics in virus research and literature. Weekly sessions led by all participating members of the research group. Prerequisite: permission of instructor Credit/no-credit only. Offered: AWSpS.

MEDCH 555 Biophysics and Pharmacology of Dynamic Proteins (1) Discusses current topics in protein dynamics, focusing on intrinsically disordered proteins and drug-metabolizing enzymes. Weekly sessions led by all participating members of the research group. Prerequisite: permission of instructor. Instructors: Nath Credit/no-credit only. Offered: AWSpS.

MEDCH 556 Clinical and Mechanistic Aspects of Drug Metabolism (1) Discussion of research methodologies and new approaches to elucidate chemical mechanisms and enzymology of reactions catalyzed by cytochrome P-450. Emphasis on clinical applications and predicting in vivo drug behavior and toxicity. Prerequisite: permission of instructor. Instructors: Totah Credit/no-credit only. Offered: AWSpS.

MEDCH 557 Antibody-Antigen Interactions (1, max. 10) *M. Guttman* Discussion of research strategies, methods, and current literature in characterizing the structures of antibody-antigen interactions with an emphasis on carbohydrate interactions. Weekly sessions are led by all participating members of the research group. Prerequisite: Permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 558 Human Cytochrome P-450 Biochemistry (1) Presentation and discussion of research strategies and methodologies related to current problems in human drug metabolism by cytochrome P-450 enzymes. Emphasis on hypothesis testing and experimental problem solving in the areas of enzyme kinetics and mechanism. Prerequisite: permission of instructor. Instructors: Kunze Credit/no-credit only. Offered: AWSpS.

MEDCH 559 Biosynthesis, Metabolism, and Analysis of Lipids (1) *L. XU* Covers recent advanced on oxidative metabolism of lipids, lipid biosynthesis, and application of advanced mass spectrometry to the analysis of lipids and oxidized lipids. Weekly sessions led by all participating members of the research group. Prerequisite: permission of instructor. Credit/no-credit only. Offered: AWSpS.

MEDCH 561 Immunizing and Antimicrobial Agents (3) *Rheem A. Totah, Kelly K. Lee* A course for pharmacy students focused on introducing the major classes of antimicrobial drugs for treatment of bacterial, viral, and fungal infections. For antimicrobial agents, the focus is on mechanisms of action and drug targets rather than for therapeutic applications. The course will also discuss the issue of antibiotic resistance. In the second half of the course the primary focus will be on vaccines for infectious disease. Prerequisite: MEDCH 501 or equivalent, PharmD major, or permission of instructor; recommended: completion of undergraduate Biochemistry series. Offered: Sp.

MEDCH 562 Medicinal Chemistry (3) *W. ATKINS, K. KUNZE, D. PORUBEK, A. RETTIE* Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Offered: A.

MEDCH 563 Medicinal Chemistry (3) Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Instructors: Nelson, Rettie Offered: W.

MEDCH 564 Medicinal Chemistry (3) Study of the various classes of medicinal compounds with particular emphasis on biological activity, mechanism of action, biotransformation, and the structural and physical properties governing absorption, distribution, and excretion. Prerequisite: MEDCH 400 or satisfactory completion of qualifying exam. Instructors: Atkins, Nelson Offered: Sp.

MEDCH 580 Current Trends in Pharmacy Science and Practice (1, max. 2) Current topics in active research relevant to professional pharmacy practice. Topics include drug metabolism, molecular mechanisms of diseases progression, large molecule drug development and analysis, or related to research within the Department of Medicinal Chemistry. Prerequisite: School of Pharmacy professional or graduate student standing. Undergraduate students with permission of instructor. Credit/no-credit only. Offered: A.

MEDCH 582 Topics in Medicinal Chemistry (1, max. 30) Discussion of pertinent articles from current literature. Credit/no-credit only. Offered: AWSp.

MEDCH 599 Cumulative Exams for Medicinal Chemistry (1) Quarterly cumulative examinations for graduate students. Credit/no-credit only. Offered: AWSp.

MEDCH 600 Independent Study or Research (*-) Credit/no-credit only. Offered: AWSpS.

MEDCH 700 Master's Thesis (*-) Credit/no-credit only. Offered: AWSpS.

MEDCH 800 Doctoral Dissertation (*-) Credit/no-credit only. Offered: AWSpS.

PHARMACEUTICS

PCEUT 327 The Science of Drugs (3) NW Libin Xu
Introduces students to medicinal chemistry and pharmaceutical sciences. Recommended for sophomore, junior and senior students majoring in chemistry, biochemistry, bioengineering, chemical engineering, public health and other health sciences, and related fields. Prerequisite: either CHEM 223, CHEM 237, or CHEM 335; recommended: basic knowledge in general chemistry and organic chemistry. Offered: jointly with MEDCH 327; Sp.

PCEUT 499 Undergraduate Research (1-6, max. 12)
Research problems in drug disposition, drug targeting, and drug development. Prerequisite: cumulative GPA of 2.50 and permission of instructor.

PCEUT 501 Pharmacometrics (3) Jashvant D Unadkat
Compartmental (rich and sparse data) pharmacokinetic/pharmacodynamic and physiologically-based pharmacokinetic models. Evaluates how well models fit data. Advantages and disadvantages of various modeling and simulation approaches. Prerequisite: PCEUT 506 and PCEUT 532. Offered: Sp, even years.

PCEUT 502 Drug Disposition Science (2) Introduction to drug metabolism and transport pharmacokinetics. Topics include basic processes of drug absorption, distribution and elimination, enzyme/transporter kinetics, associated experimental methodologies for generating kinetic parameter estimates, and principles of drug-drug interactions and other sources of inter-individual variability. Covers experimental rigor and reproducibility and research ethics. Recommended: biochemistry. Offered: A.

PCEUT 503 Drug Transport and Delivery (5) Provides advance knowledge of the physico-chemical and biological concepts underlying in vivo transport and delivery of drugs. Prerequisite: PCEUT 506. Instructors: Ho, Hu, Mao, Shen, Unadkat, Wang

PCEUT 505 Concepts in Pharmaceutical Sciences I (2) R. HO Provides the student with foundational knowledge of drug properties and interaction with physiology upon administration in vivo, and an understanding of pharmaceutical formulation which is a key disciplinary area within the pharmaceutical sciences and its application to small molecules and protein-based therapeutics. Offered: A.

PCEUT 506 Concepts in Pharmacokinetics (3) Jashvant D Unadkat, Nina Isoherranen Theory and practice. Includes principles of physiological basis of pharmacokinetics, a mechanistic understanding of pharmacokinetic parameters, and the ability to derive basic pharmacokinetic equations and concepts. Prerequisite: either PCEUT 505, PCEUT 531, or permission of instructor. Offered: W.

PCEUT 507 Advanced Pharmacokinetics (3) Yvonne S Lin Includes absorption kinetics, bioavailability, multi-compartment kinetics, non-linear clearance, pharmacokinetics of biologics, and animal and clinical study design. Prerequisite: either PCEUT 506 and PCEUT 532, or permission of instructor. Offered: Sp.

PCEUT 510 Drug Interactions (3) Covers common pharmacokinetic mechanisms underlying clinically important interactions between drugs, and patient- and drug-related factors that predispose a patient to adverse drug effects. Includes case-based discussion of approaches to identification, clinical evaluation, and clinical management of drug-drug interaction risk. Prerequisite: PHARM 558; PHARM 559; PHARM 560; PHARM 561; PHARM 563; PHARM 564, and PHARM 565. Instructors: Lin and Horn.

PCEUT 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) K. THUMMEL Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with ENV H 513/PHG 513; W.

PCEUT 520 Seminar (1, max. 30) Qingcheng Mao
Graduate students attend seminars and make one

formal presentation per year while in residence; maximum of three presentations. Credit/no-credit only. Offered: jointly with MEDCH 520.

PCEUT 531 Pharmaceutical Formulation: Principles and Dosage Forms (4) *Qingcheng Mao* Provides knowledge base for subsequent pharmacy courses and professional practice. Theory and problems involved in incorporating drugs into stable dosage forms suitable for human use and intended routes of drug administration. Fundamentals of safe and appropriate handling and use of dosage forms. Common dosage forms and basic compounding skills. Recommended: general chemistry. Offered: A.

PCEUT 532 Clinical Pharmacokinetics (4) *Nina Isoherranen* Covers basic principles of pharmacokinetics and their application to the clinical setting. Includes the design of an appropriate dosing regimen, such as single-dose intravenous and oral administration, multiple dosing, nonlinear pharmacokinetics, metabolite kinetics, pharmacodynamics, inter-individual variability and the physiological basis of pharmacokinetics. Prerequisite: PCEUT 531. Offered: W.

PCEUT 534 Principles of Precision Medicine (2) *Kenneth E Thummel* Variation in drug absorption, distribution, elimination, and response, with emphasis on pharmacokinetic-pharmacodynamic relationships. Includes pharmacogenetics, drug-drug interactions, as well as ontogenic and disease state effects and associated precision testing platforms. Uses case studies to integrate possible sources of variation and impact on individual therapeutic decisions. Prerequisite: MEDCH 501; PCEUT 531; and PCEUT 532; recommended: basic understanding of pharmacokinetics and principles of drug absorption, distribution and elimination and drug response. Offered: Sp.

PCEUT 537 Chemical and Molecular Pharmacology III: Cancer Treatments and Biotherapeutics (4) Cancer biology and agents used in cancer treatment and supportive care. Mechanisms of action and toxicities of agents. Formulating and optimizing dosage forms for small molecules and protein drugs. Major biopharmaceutical products (e.g., monoclonal antibodies, endogenous protein replacement) and their unique characteristics. Prerequisite: either PCEUT 531; PCEUT 532; and MEDCH 501, or permission of instructor. Offered: Sp.

PCEUT 570 Advanced Research Topics (1, max. 15) Combines a discussion of the practical aspects and experimental techniques used to address the questions relating to drug disposition with comprehensive theoretical treatment of pharmacokinetic principles. Prerequisite: permission of the instructor. Credit/no-credit only.

PCEUT 583 Topics in Pharmaceutics (1, max. 30) *Kenneth E Thummel, Nina Isoherranen* Discussion of pertinent articles from current literature and recent laboratory results. Credit/no-credit only.

PCEUT 586 Biotechnology and Biopharmaceutics (2-3) *Edward J Kelly* Current topics in pharmaceuticals and biotechnology focusing on transforming small molecules, proteins, and genes into therapeutic products. Includes new drug therapies, drug design, pharmacogenomics, molecular modeling, high throughput screen, production and stability considerations, and delivery systems of protein and gene therapeutics in relation to pharmacokinetic and therapeutic responses.

PCEUT 598 Independent Research (*, max. 24) Basic and clinical research problems in drug disposition and effect. Prerequisite: minimum grade of 2.50 GPA and permission of instructor.

PCEUT 600 Independent Study or Research (*-) Credit/no-credit only.

PCEUT 700 Master's Thesis (*-) Credit/no-credit only.

PCEUT 800 Doctoral Dissertation (*-) Credit/no-credit only.

PHARMACY (PHARM)

PHARM 301 Medications and Health: It's Not All About Drugs (3) I&S/NW *Dawson, Odegard, Weber* Covers personal health promotion, treatment of illness, and health care. Explores several medication-related topics, provides insight on drug development and efficacy, and serves as introduction to students contemplating careers in health sciences, especially in pharmacy. Credit/no-credit only.

PHARM 499 Undergraduate Research (1-6, max. 24) Research problems in clinical pharmacy or

pharmaceutical sciences, including preclinical and/or clinical drug development and effectiveness research, and participate in departmental research projects. Prerequisite: permission of instructor
Offered: AWSpS.

PHARM 500 Profession of Pharmacy (1) Introduces the new student to the profession of pharmacy. Provides both an historical and a modern context that assists student pharmacists begin to participate in the profession. Provides an overview of career opportunities. Prerequisite: professional PharmD class 1 student. Instructors: Kedzierski, Weber
Credit/no-credit only. Offered: A.

PHARM 501 Alternative and Complementary Medicines (2) Studies popular alternative and complementary medicines used in the United States. Focuses on herbal products with some coverage of other non-nutritional dietary supplements. Open to professional and graduate students in the Schools of Pharmacy, Nursing, Medicine, Dentistry, and Public Health, or by permission of instructor. Prerequisite: completion of first-professional year in PharmD program. Credit/no-credit only. Offered: AW.

PHARM 503 Senior Care Introductory Pharmacy Practice Experience (2) Under faculty supervision, provides clinical services for senior patients in various settings. Includes reviewing charts, interviewing patients, collaborating with other health care providers, and making recommendations on medication therapies to providers and patients. All students participate in an orientation/seminar workshop and in a weekly (for five weeks) clinical pearls workshop. Prerequisite: either successful completion of the first five quarters of the PharmD curriculum or permission of instructor. Instructors: Murphy, Plein
Credit/no-credit only. Offered: Sp.

PHARM 509 Principles of Evidence Based Medicine III: Critical Evaluation of Published Evidence (1) T. O'SULLIVAN Provides a critical evaluation of medical literature. Prerequisite: permission of School of Pharmacy.

PHARM 510 Contemporary Concepts in Clinical Nutrition Support (2) Addresses current topics and concepts in clinical nutrition support. Topics include assessment and management of patients requiring specialized nutrition support, enteral nutrition, and parental nutrition. Recommended: biochemistry,

anatomy and physiology, or permission of instructor. Credit/no-credit only. Offered: A.

PHARM 512 Timely Topics for Health Professionals (1, max. 4) Explores timely and inter-professionally relevant topics on social justice, health disparities, and health care; including the annual UW Health Sciences "Common Book". Involves active learning methods and group discussions where students and faculty can share thoughts and perspectives. Credit/no-credit only. Offered: AWSpS.

PHARM 513 Medical Devices for Home Healthcare (3) D. DOWNING Study of medical devices commonly provided by pharmacists to their patients, including their selection and adaptation for specific patient needs. Lectures include display and demonstration of actual devices.

PHARM 514 Pharmacotherapeutics for Advanced Nursing Practice (3) Hertig Application of principles of pharmacology as foundation for clinical decision making by advanced practice nurses for individuals and populations. Incorporates pharmacotherapy into advanced nursing therapeutics by addressing pharmacokinetics, pharmacodynamics, pharmacogenetics as well as patient-related factors that support selection of commonly used drugs. Selected drugs within categories are compared/contrasted.

PHARM 515 Pharmacotherapeutics for Acute/Critical Illness (3) Analysis of issues that impact the assessment, prescription, and evaluation of pharmacotherapeutic regimens for patients with acute/critical illness or injury. Current evidence together with pharmacotherapeutic principles are considered within the clinical context as the basis for decision-making in acute/critical care clinical practice. Prerequisite: either PHARM 514 or equivalent. Offered: Sp.

PHARM 516 Introduction to Biomedical Regulatory Affairs (3) Hazlet Surveys government oversight of drugs, devices, and biotechnology derived products; laws and regulations that apply to development, testing, and production; and responsibilities of a regulatory affairs specialist in the regulatory setting.

PHARM 517 Product Development and Manufacturing Systems (3) Hazlet Surveys government oversight of drugs, devices, and

biotechnology derived products; laws and regulations that apply to development, testing, and production.

PHARM 518 Product Testing, Evaluation, and Post-Market Issues (3) *Hazlet* Medical product post-marketing requirements; reporting and enforcement actions; inspections (internal and by regulators) preparation, conduct, and follow-up actions; surveillance and studies, reimbursement, and economics.

PHARM 519 Pharmacotherapeutics for Infectious Disease and Infection (2) *Black, Simpson* Analysis of pharmacotherapeutics to control infection and manage infectious disease through seminar discussion of cases, critical analysis of a pharmacotherapeutic regimen, and development of references to enhance students' clinical expertise. Emphasis on principles of anti-infective therapy, problem solving clinical cases with complex medication regimes, and identifying judicious pharmacotherapeutic plans.

PHARM 520 Introduction to Pharmacoeconomics and Outcomes Research (2) *Veenstra* Provides an introduction to economic evaluation and outcomes research related to pharmaceuticals and other healthcare technologies. Covers the methods of cost-effectiveness analysis and quality of life evaluation, and their use in real-world decision-making.

PHARM 521 Pharmacy Teaching Practicum (1-3, max. 6) *R. ALLEN, D. DOWNING, A. ELLSWORTH, T. HAZLET* Allows students the opportunity to apply learning about education in a mentored experiences. Students serve as assistant instructors in existing pharmacy courses or engage in other approved educational experiences. Prerequisite: PHARM 586, instructors permission. Credit/no-credit only. Offered: AWSp.

PHARM 525 Advanced Compounding Skills (1) Prepares the student to create unique, patient-specific pharmaceutical dosage forms used in contemporary pharmacy practice. Includes pre-readings and assignments, a didactic session and a laboratory session, and is offered over a weekend. Prerequisite: PCEUT 531. Instructors: Lawhorn, Needham Credit/no-credit only.

PHARM 526 Bayesian Biostatistics (3) Introduction to Bayesian methods for data analysis; Bayesian reasoning, prior elicitation, inference and decision making, and computation applied to biomedical research. Prerequisite: any course in statistics at the 400-level or higher or instructor's permission. Offered: jointly with BIOST 526/EPI 540; Sp.

PHARM 529 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with BIME 541/EPI 541/HSERV 529.

PHARM 531 Advances in the Diagnosis, Treatment and Management of Epilepsy (2) Complexity of epilepsy pathophysiology, classification, diagnosis, and treatment. Introduces principles of anti-seizure drug discovery and emerging opportunities for epilepsy research at UW. Five week condensed survey. Prerequisite: permission of Instructor. Offered: W.

PHARM 532 Methods in Pharmaceutical Policy Analysis (4) *Garrison, Hazlet* Introduction to the tools used in and the framework and dominant contexts for pharmaceuticals policy development and analysis. Methods reviewed in a series of sessions presenting a specific method and case analyses involving pharmaceuticals development. Project and in-class presentation required.

PHARM 533 Pharmacoepidemiology (3) Overview of pharmacoepidemiology including drug development and approval; application of epidemiologic methods to study drug safety and effectiveness; exploration of the interplay between research and public policy; introduction to resources for information about drugs; introduction to pharmacology principles pertinent to pharmacoepidemiology. Prerequisite: Health Sciences graduate student; either EPI 511 or both EPI 512 and EPI 513. Offered: jointly with EPI 533.

PHARM 534 Economic Evaluation in Health and Medicine (3) *J. Babigumira, L. Steuten* Methods and techniques for evaluating costs and cost-effectiveness of health, medical, and pharmaceutical interventions. Emphasis on economic evaluation, decision analysis, and modeling techniques for resource allocation and decision making. Applications to technology assessment, health policy, clinical practice, and resource allocation. Prerequisite: permission of instructor. Offered: jointly with HSERV 583.

PHARM 535 Assessing Outcomes in Health and Medicine (3) Concepts and methods for developing and using patient-reported outcomes in health and medicine. Emphasis on patient self-reported health status and quality of life. Qualitative research and psychometric methods applied to health outcomes assessment and all applications. Prerequisite: permission of instructor. Instructors: Devine, Edwards Offered: jointly with HSERV 584; W.

PHARM 536 Advanced Methods in Economic and Outcomes Evaluation in Health and Medicine (3) Covers advanced methods and techniques for evaluating costs, outcomes, and cost-effectiveness of health, medical, and pharmaceutical interventions. Topics include: network meta-analysis, Markov modeling, probabilistic sensitivity analysis, value of information analysis, utility mapping, conjoint analysis, and budget impact analysis. Prerequisite: either PHARM 534 and PHARM 535 or permission of instructor. Instructors: Carlson Offered: Sp.

PHARM 537 Chemical Dependency Concepts (2) *Kedzierski* Examines the development of therapeutic frame for working with patients with addictions. Includes the genesis of addiction harm reduction strategies, legal and ethical considerations, medication management in the substance-abusing population, impaired pharmacist rehabilitation, detection and dealing with substance abuse issues in pharmacy practice, community resources. Course offered to professional PharmD, class 2. Credit/no-credit only. Offered: A.

PHARM 538 Chemical Dependency Issues in Practice (3) Emphasis on drug classes, pharmacologic management of abstinence and withdrawal, drug testing, drug use in pregnancy, treatment options and recovery, codependency and legal and ethical

considerations. Prerequisite: PHARM 537. Instructors: Kedzierski Credit/no-credit only. Offered: W.

PHARM 539 Principles of Professional Practice Management (3) *Downing, Somani* Emphasizes the major issues and barriers of providing pharmaceutical care in institutional and community pharmacies. Topics include evaluating workflow and facility design, complying with legal and safety standards, managing drug distribution services, payment for pharmacist services, human resource management and marketing pharmaceutical care services.

PHARM 540 Systematic Reviews and Meta-Analysis (2) Provides students an overview of best practices to conduct a systematic review of an intervention; then analyzing data through meta-analytic methods. Classroom activities solidify topics covered in lectures and readings. Collaboration with another student to complete a systematic review. Recommended: a basic understanding of statistics and a background in evidence-based medicine. Offered: Sp.

PHARM 541 Pharmacy, Healthcare, and Society (3) *Sullivan* Introduction to health services and pharmacy practice designed for future healthcare practitioners. Examines the history, organization, and effectiveness of the U.S. healthcare system. Stresses the student's ability to adopt a broad perspective across healthcare disciplines and traditional boundaries.

PHARM 542 Managed Care Pharmacy: Principles and Practice (3) *Fullerton, Penna* Surveys the activities, tactics, and strategies used by managed care to deliver pharmacy services to their members. Includes: formulary development, clinical improvement programs, quality improvement measures, regulatory activities, contracting with pharmaceutical manufacturers, network management, financial issues, sales and marketing, and provider relations. class 2, 3, and 4 PharmD students.

PHARM 543 Pharmacy Laws and Ethics ([2-3]-, max. 5) *Hazlet* Studies the laws governing the practice of pharmacy, approaches to legal, and ethical dilemmas in the delivery of pharmaceutical care, and methods of statutory and regulatory reform.

PHARM 544 Survey of Pharmacy Laws (1) Hazlet Prepare, discuss, and present responses to assigned questions developed by faculty regarding laws governing pharmacy practice in the course of reviewing for the Multistate Pharmacy Jurisprudence Examination. Class meets for two consecutive Saturdays in February and March. Email and web access required. Open to fourth-year PharmD students; non-matriculated students by permission only. Credit/no-credit only.

PHARM 548 Current Topics in Geriatrics (1, max. 2) Case-based approach to principles of geriatric pharmacotherapy and medications commonly prescribed for older adults. Utilizes a "layered-learning model" in which more experienced students teach junior students under guidance of a faculty mentor. Credit/no-credit only. Offered: W.

PHARM 549 Pharmacotherapeutics for Older Adults (3-4) Applies pharmacologic knowledge to the assessment, individualized selection of therapy, and monitoring of treatment in older adults with multiple comorbidities; and age-related changes in pharmacokinetics and pharmacodynamics with emphasis on problem solving, using case examples. Prerequisite: either PHARM 561; PHARM 565 or permission of the School of Pharmacy. Instructors: Murphy Offered: Sp.

PHARM 550 Seminar in Geriatrics ([0-1]-, max. 1) L. MIKE Students facilitate a discussion with students/faculty about the management of an older adult with complex medication regimen. In addition, students critically review and appraise primary literature relevant to contemporary issues related to geriatric pharmacotherapy. Prerequisite: PHARM 549; permission of the instructor. Credit/no-credit only. Offered: AWSpS.

PHARM 552 Practice-Based Leadership and Project Development (2) J. Arnold, N. Murphy Strengthen skills necessary to develop, implement, and evaluate innovated programs that improve health, healthcare delivery, and the patient experience. In addition to actively participating in class discussions and group work, students are responsible for submitting weekly assignments, a final reflection paper, and a project proposal. Credit/no-credit only. Offered: W.

PHARM 557 Pharmacotherapeutics II (3) Peggy Soule Odegard Discusses the integration of and

applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge toward the management of common diseases. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of school. Offered: Sp.

PHARM 558 Pharmacotherapeutics I - Pharmacotherapy with Non-prescription (OTC) Drugs (3) Ellsworth Overview of common classes of nonprescription drug therapeutics with an emphasis on case examples, patient assessment, non-drug adjunct therapy, product selection, and patient advice. Oral presentation required. Computer (Internet) case discussion mandatory. Enrollment restricted to first-year PharmD students.

PHARM 559 Pharmacotherapeutics III (4) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy. Offered: Sp.

PHARM 560 Pharmacotherapeutics IV (6) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy Offered: A.

PHARM 561 Pharmacotherapeutics V (7) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy Offered: W.

PHARM 562 Pharmacotherapeutics VI (6) Discusses the integration of and applies epidemiology, pathophysiology, clinical diagnostics, and drug-related knowledge towards the management of common disease. Emphasizes problem-solving through the use of case examples. Prerequisite: permission of School of Pharmacy Offered: Sp.

PHARM 563 Applied Pharmacotherapeutics I (2) L. Mike Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific

care. Prerequisite: permission of School of Pharmacy. Offered: Sp.

PHARM 564 Applied Pharmacotherapeutics II (2) L. *MIKE* Develops a foundation of skills that enables a pharmacist to practice collaborative patient specific care. Prerequisite: permission of School of Pharmacy. Offered: A.

PHARM 565 Applied Pharmacotherapeutics III (2) L. *MIKE* Develops a foundation of skills that enables a pharmacist to practice collaborative patient-specific care. Prerequisite: permission of School of Pharmacy. Offered: W.

PHARM 566 Applied Pharmacokinetics (2) Pharmacokinetics of specific drugs. Influence of age, weight, sex, and disease states on patient-specific dosage regimens emphasized. Advanced kinetic concepts are discussed and put into applied context. Prerequisite: PCEUT 532. Instructors: Bauer

PHARM 567 Cancer Pharmacotherapeutics (2) Pharmacotherapy of cancer, covering supportive care therapeutics (antibiotics, antiemetics, analgesics,) to the antineoplastic agents. The pathophysiology, staging, and treatment of different cancers is discussed. Specialists from the different oncology practice areas serve as guest lecturers. Prerequisite: either PHARM 561; PHARM 565, or permission of the School of Pharmacy. Instructors: Gibson, Kwok, McQuary, Vincent Offered: Sp.

PHARM 568 Health Economics (3) Applies microeconomics principles and models to understand the nature of healthcare markets and systems. Includes a wide range of health sector activities and policy issues studied by applying rigorous economic analytical tools coupled with review of key econometric and empirical analysis. Prerequisite: introductory coursework in microeconomic principles and basic statistics. Instructors: Garrison Offered: W.

PHARM 569 Fluid and Electrolytes and Parenteral Nutrition (2) *Chan* Focuses on the principles of fluid electrolyte and nutritional management in patients requiring parenteral nutrition (PN) and infusion therapy. Topics include acid-base balance, macro- and micro-nutrient requirements, nutritional assessment, complications of PN and compounding and compatibility of PN solutions. Discusses

consideration in special populations (e.g., ICU) . Prerequisite: Prerequisite: either PHARM 561; PHARM 565, or permission of the School of Pharmacy.

PHARM 570 Critical Care Pharmacotherapeutics (2) Overviews pharmacotherapeutic topics for patients in the critical care setting. Discusses principles in hemodynamic monitoring, respiratory management, concepts in pathophysiology related to critical illnesses, and other timely topics reflecting current clinical practice. Prerequisite: third-year PharmD student, or approval of instructor. Instructors: Mike

PHARM 571 Current Topics in Acute Care Pharmacotherapy (1) Increases understanding and stimulates discussion in current topics related to acute care pharmacotherapy. Reviews the management of patients in the acute care setting through current cases presented by instructors. May be taken alone or concurrently with PHARM 570. Prerequisite: either PHARM 561 ;PHARM 565, or permission of the School of Pharmacy. Instructors: Chan

PHARM 572 Pharmacist Advocacy I: Legislative and Grassroots Affairs (1, max. 3) Increases student awareness and knowledge of local, state, and national healthcare issues that affect pharmacists and their patients. Prepares pharmacy students to knowledgeably represent their school, profession, and their patients during individual and organized-group pharmacy legislative and other advocacy activities. Credit/no-credit only. Offered: A.

PHARM 573 Pharmacist Advocacy II: Legislative and Grassroots Affairs (1, max. 3) *Downing* Prepares pharmacy students to knowledgeably represent their school, profession, and their patients during individual and organized-group pharmacy legislative and other advocacy activities. Students actively participate in off-campus legislative and advocacy activities while the Washington State legislature is in session. Credit/no-credit only. Offered: W.

PHARM 579 Current Topics in Pharmacy (1, max. 3) *Black, Murphy* Provides a forum for discussing late-breaking topics that impact current and future pharmacy research and practice. Credit/no-credit only. Offered: AW.

PHARM 581 Global Health Pharmacy: Medicines, Practice, and Policy (2) *Andy Stergachis* Introduces the critical role of pharmaceutical in addressing major diseases (such as HIV/AIDS, malaria, tuberculosis) affecting persons in resource-limited settings. Addresses the wide range of relevant issues, including burden of disease, human resource capacity, regulation, drug safety/pharmacovigilance, drug distribution, pharmacoconomics, financing, intellectual property, and drug trade policies. Offered: jointly with G H 543.

PHARM 582 Special Topics in Global Health Pharmacy and Medical Products ([1-3]-, max. 6) *Babigurmira, Garrison* Provides in-depth instruction on selected special topics relating to the use, access to, and impact of pharmaceuticals, vaccines, and diagnostics/medical devices in global health. Credit/no-credit only.

PHARM 584 Pharmacy Practice I - Introduction to Community Pharmacy Practice I (3) *R. ALLEN, J. BACCI, K. DAWSON* Introduction to development and practice of skills in drug information resources; prescription processing and problem solving; pharmaceutical calculations and compounding; patient information and counseling on over-the-counter and compounded medications. Offered: A.

PHARM 585 Pharmacy Practice II (3) *R. ALLEN, J. BACCI, K. DAWSON* Continued development and practice of skills in drug information resources; prescription problem solving; pharmaceutical calculations; and patient information and counseling. Emphasizes use of commonly prescribed prescription medication as well as patient-specific characteristics that impact their care. Prerequisite: PHARM 584. Offered: W.

PHARM 586 Pharmacy Practice III: Applications of Public Health Practice (3) *R. ALLEN, J. BACCI, K. DAWSON* Develops skills that enable public health screening and health promotion in community-based settings: administration of vaccines to adults and adolescents; practical application of community-based health screenings, counseling, and referral; and teaching self-monitoring techniques to patients. Emphasizes communication with members of special populations. Prerequisite: PHARM 585. Offered: Sp.

PHARM 587 Diabetes Prevention (2) Provides students with knowledge/skills to serve as Diabetes

Prevention lifestyle coaches. The knowledge/skills developed can be applied to promote health/wellness in the community. Prerequisite: PHARM 563. Instructors: Danielson, McKennon, Odegard Credit/no-credit only. Offered: A.

PHARM 588 Diabetes Care (2) Further develops foundations in the principles of diabetes management and provides practice in application of diabetes-care principles. Develops knowledge and ability to assess, manage, educate, and monitor patients with diabetes. Prerequisite: either PHARM 560; PHARM 564, or permission of the School of Pharmacy. Instructors: Danielson, Odegard Credit/no-credit only.

PHARM 591 Community Collaborations in Healthcare Practicum (2, max. 8) Collaboration with representatives from the Salvation Army Adult Rehabilitation Center and other community sites to improve health literacy and health outcomes of men and women beneficiaries (residents) in addiction treatment and recovery. Prerequisite: permission of instructor. Instructors: Kedzierski Credit/no-credit only. Offered: ASp.

PHARM 592 Pharmacy Practice IV: Design and Analysis of Medical Studies (3) Introduces the basic biostatistical concepts used in the medical literature, and the various study designs. Develops students' skills in critically evaluating the medical literature, with the goal of applying these skills to clinical practice. Prerequisite: PHARM 584; PHARM 585; PHARM 586. Instructors: Devine Offered: A.

PHARM 593 Pharmacy Practice V: Institutional Pharmacy Practice (3) *Somani* Includes discussion and skill development related to contemporary institutional pharmacy practice. Focuses on health information technology, the quality improvement process, MUE and cost management, medication order processing, counseling and medication reconciliation, interpersonal teamwork, and patient-oriented services. Students create and present mock proposals for new guidelines and practice protocols. Prerequisite: PHARM 592. Offered: W.

PHARM 594 Pharmacy Practice VI: Medication Quality and Safety (2) Introduces topics related to medication safety and quality improvement. Describes the role of information technology and the importance of organizational leadership and

teamwork in improving safety. Introduces topics of collaborative drug therapy management and managed care pharmacy practice. Prerequisite: PHARM 593. Offered: Sp.

PHARM 595 Special Studies in Pharmacy (1-6, max. 24) Special studies of professional topics in pharmacy. An opportunity to expand the breadth and depth of understanding in specific pharmaceutical areas. Students may undertake independent study under the individual direction of a faculty member.

PHARM 596 Seminars in Pediatric Pharmacotherapy (2) Explores therapeutic topics pertinent to the pediatric population. Emphasizes ambulatory pediatrics. Prerequisite: third-year PharmD student or permission of instructor. Instructors: Harvey
Credit/no-credit only. Offered: W.

PHARM 597 Graduate Seminar (1, max. 24)
Interactive discussion of topical issues, methods, or analytic techniques. Topics vary. Prerequisite: graduate program student. Credit/no-credit only.

PHARM 599 Independent Study/Research (1-6, max. 24) Applied pharmaceutical research problems. Credit/no-credit only.

PHARM 600 Independent Study or Research (*-)
Credit/no-credit only.

PHARM 700 Master's Thesis (*-) Credit/no-credit only.

PHARM 800 Doctoral Dissertation (*-) Credit/no-credit only.

PHARMACY (PHRMCY)

PHRMCY 501 Foundations of Being a Pharmacist I (3) First course of a two-quarter series providing a foundation in the knowledge, skills, and attitudes to be an effective patient-centered pharmacist provider. Content is designed to facilitate the development of a student's professional identity and leadership abilities. Offered: A.

PHRMCY 502 Foundations of Being a Pharmacist II: Teams and Systems (3) Second course of a two-quarter series providing a foundation in the

knowledge, skills, and attitudes to be an effective patient-centered pharmacist provider. Content is designed to facilitate the development of a student's professional identity and leadership abilities. Prerequisite: PHRMCY 501. Offered: W.

PHRMCY 503 Advanced Pharmacy Leadership (1) Provides a foundation in the knowledge, skills, and attitudes to be effective in creating and achieving shared goals through personal and professional leadership. Prerequisite: either PHRMCY 501 and PHRMCY 502, or permission of instructor.

PHRMCY 511 Introduction to Evidence-Based Practice (2) Introduces primary, secondary, and tertiary medical literature. Practiced skills include forming an answerable question, retrieving and summarizing credible biomedical literature, interpreting study results, and writing effectively for the public and for health professionals. Offered: A.

PHRMCY 512 Fundamentals of US Health Care, Pharmacy Safety and Law (3) Introduction to health care and pharmacy practice designed for future healthcare practitioners. Examines the organization and financing of the U.S. healthcare system, patient safety, and pharmacy law. Offered: A.

PHRMCY 513 Applied Patient Safety and Quality (2) Introduction to principles of patient safety and quality designed for future health care practitioners. Content is designed to facilitate the development of a student's ability to provide safe and quality care. Prerequisite: PHRMCY 511 and PHRMCY 512. Offered: Sp.

PHRMCY 514 Design and Analysis of Medical Studies (2) Provides basic understanding of the fundamental concepts of biostatistics and epidemiology as they relate to study designs and evaluation of the medical literature. Prerequisite: PHRMCY 511; recommended: undergraduate course in statistics. Offered: Sp.

PHRMCY 515 Population Health and Pharmacy Management (3) Examines the concept of population health and the pharmacist's role therein as well as pharmacy management for future healthcare practitioners. Offered: A.

PHRMCY 531 Pharmacotherapeutics I (4) First course in a 7-course series providing a foundation in

knowledge for patient-centered clinical case management. Includes introduction to pharmacotherapeutics and special populations, over-the-counter medications and self-care. Offered: W.

PHRMCY 532 Pharmacotherapeutics II (3) Second course in a 7-course series providing a foundation in knowledge for patient-centered clinical case management. Includes assessment and management of drug-related hypersensitivity and various bacterial, fungal, and viral infectious diseases. Prerequisite: PHRMCY 531. Offered: Sp.

PHRMCY 533 Pharmacotherapeutics III (4) Third course in a 7-course series providing a foundation in knowledge for patient-centered clinical case management. Includes assessment and pharmacotherapeutic management of diseases affecting the cardiovascular, pulmonary, renal, and endocrine systems. Prerequisite: PHRMCY 532. Offered: A.

PHRMCY 534 Pharmacotherapeutics IV (4) Fourth in a seven-course series. Patient-centered clinical case management. Includes assessment and pharmacotherapeutic management of diseases associated with hematological, neurological, psychiatric, and gastrointestinal systems. Prerequisite: PHRMCY 533. Offered: W.

PHRMCY 535 Pharmacotherapeutics V (3) Patient-centered clinical case management. Assessment and pharmacotherapeutic management of diseases associated with the hematological, gastrointestinal, and immune systems, as well as pharmacotherapeutics associated with cancer therapy, transplantation, and biological therapies. Prerequisite: PHRMCY 534. Offered: Sp.

PHRMCY 536 Pharmacotherapeutics VI (4) Provides a foundation in knowledge for patient-centered clinical case management. Includes assessment and pharmacotherapeutic management of issues related to gender-related health and care, reproductive health, geriatrics, rheumatological diseases, and diseases affecting the urological, dermatological and ophthalmic systems. Prerequisite: PHRMCY 535. Offered: A.

PHRMCY 537 Pharmacotherapeutics VII (4) Provides a foundation in knowledge for patient-centered

clinical case management. Covers pharmacotherapeutics in special patient populations, including children, critically ill patients, obese patients, patients requiring nutrition support, and those with multiple comorbidities. Prerequisite: PHRMCY 536. Offered: W.

PHRMCY 541 Pharmacist Provider Readiness I (2) Prepares students for practice as a pharmacist provider. Includes development and refinement of skills necessary for being successful in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Prerequisite: successful completion of on-boarding and compliance requirements for PharmD program. Credit/no-credit only. Offered: A.

PHRMCY 542 Pharmacist Provider Readiness II (2) Prepares students for practice as a pharmacist provider. Includes development and refinement of skills necessary for being successful in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Prerequisite: PHRMPR 511 and PHRMCY 541. Credit/no-credit only. Offered: W.

PHRMCY 543 Introductory Pharmacist Provider Readiness III (3) Prepares students for practice as a pharmacist provider. Includes development and refinement of skills necessary for being successful in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Prerequisite: PHRMCY 542 and PHRMPR 512. Offered: Sp.

PHRMCY 544 Pharmacist Provider Readiness IV (3) Delivery of care to patients with increasingly complex health care needs. Prepares students for practice as a pharmacist provider. Includes development and refinement of skills necessary for success in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Prerequisite: PHRMCY 543 and PHRMPR 513. Credit/no-credit only. Offered: A.

PHRMCY 545 Pharmacist Provider Readiness V (3) Development and refinement of skills necessary for success in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Emphasizes delivery of care to multiple patients with increasingly complex health

care needs. Prerequisite: PHRM CY 544 and PHRM PR 514. Credit/no-credit only. Offered: W.

PHRM CY 546 Pharmacist Provider Readiness VI (3)

Development and refinement of skills necessary for success in the Pharmacist Provider Experience course series and Introductory Pharmacy Practice Experiences (IPPEs) . Emphasizes delivery of care to multiple patients with increasingly complex healthcare needs. Prerequisite: PHRM CY 545 and PHRM PR 515. Credit/no-credit only. Offered: Sp.

PHRM CY 547 Pharmacist Provider Readiness VII (3)

Development and refinement of skills necessary for success in the Pharmacist Provider Experience course series; and Introductory Pharmacy Practice Experiences (IPPEs) ; and Advanced Pharmacy Practice Experiences (APPEs) . Prerequisite: PHRM CY 546 and PHRM PR 516. Credit/no-credit only. Offered: A.

PHRM CY 550 Readiness for Advanced Pharmacy Practice Experiences (5)

Capstone course preparing students for transition to Advanced Pharmacy Practice Experiences (APPE) . Involves applying and integrating skills acquired from both the didactic courses and experiential training. Credit/no-credit only. Offered: Sp.

PHRM CY 580 Current Trends in Pharmacy Science and Practice (1, max. 2)

Current topic areas pertinent to professional pharmacy practice. Emphasizes use of applied knowledge in pharmaceutical sciences for professional development in critical thinking, data analysis, and in-depth expertise in pharmacy-related research sciences and practice areas. Prerequisite: open to undergraduates with permission of instructor; recommended: general undergraduate science background. Credit/no-credit only. Offered: Sp.

PHARMACY PRACTICE (PHARMP)

PHARMP 511 Introductory Pharmacy Practice Experience in Community Pharmacy I (1)

Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Orients students to

community practice, fulfills requirements for entering patient care, and sets expectations for the course series. First in a series of four. Prerequisite: PHARM 584. Credit/no-credit only. Offered: W.

PHARMP 512 Introductory Pharmacy Practice Experience in Community Pharmacy II (1)

Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Emphasizes legal requirements for practice, fulfills requirements for entering patient care, and exposes student to leaders in community pharmacy practice. Second in a series of four. Prerequisite: PHARMP 511. Credit/no-credit only. Offered: Sp.

PHARMP 513 Introductory Pharmacy Practice Experience in Community Pharmacy III (1)

Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes patient safety, involvement in health/wellness screening, and exposes students to leaders in community pharmacy. Third in a series of four. Prerequisite: PHARMP 512 and PHARM 586. Credit/no-credit only. Offered: A.

PHARMP 514 Introductory Pharmacy Practice Experience in Community Pharmacy IV (1)

Introduces student to community pharmacy practice. Students process prescriptions, begin to manage drug therapy, communicate with patients, and provide public health activities in the patient care setting. Seminars allow for orientation, discussion/reflection, and progress assessment. Emphasizes reflection on and documentations of professional competency. Fourth in a series of four. Prerequisite: PHARMP 513. Credit/no-credit only. Offered: W.

PHARMP 521 Foundations of Interprofessional Practice I ([0-1]-, max. 1)

J. DANIELSON Team-based training and experiential immersion in healthcare team functioning for PY2 pharmacy students. work with medical, nursing, physician assistant, social work, dental and dietetics students in patient care situations to apply evidence-based practice and

quality improvement principles. Focuses on development of intra- and inter-professional roles and professional identity. Credit/no-credit only.

PHARMP 522 Foundations of Interprofessional Practice II ([0-1]-, max. 1) *J. DANIELSON, P. ODEGARD*

Team-based training and experiential immersion in healthcare team functioning for PY3 pharmacy students. Work with medical, nursing, physician assistant, social work, dental, and dietetic students in patient care situations to apply evidence-based practice and quality improvement principles. Focuses on development of intra and interprofessional roles and professional identity. Credit/no-credit only. Offered: AWSp.

PHARMP 531 Introductory Pharmacy Practice Experience in Institutional Pharmacy I (1)

Introduces institutional pharmacy practice. The role of pharmacists in the inpatient settings, participation in product distribution, provision of drug information, and exposure to quality assurance activities in hospitals. Orients students to institutional practice, exposes student to leaders in hospital practice, and introduces expectations for quality assurance activities. First in a series of three. Prerequisite: PHARMP 514. Credit/no-credit only. Offered: AWSpS.

PHARMP 532 Introductory Pharmacy Practice Experience in Institutional Pharmacy II (1)

Introduces institutional pharmacy practice. Students learn about the role of pharmacists in the inpatient settings, participate in product distribution, provide drug information, and gain exposure to quality assurance activities in hospitals. Quality assurance in hospital practice, reflects on medication reconciliation, and orients students to subsequent IPPE coursework. Second in a series of three. Prerequisite: PHARMP 531. Credit/no-credit only. Offered: AWSpS.

PHARMP 533 Introductory Pharmacy Practice Experience in Institutional Pharmacy III (1) *J. DANIELSON*

Introduces students to institutional pharmacy practice. Students learn about the role of pharmacists in the inpatient setting, participate in product distribution, provide drug information, and gain exposure to quality assurance activities in hospitals. Seminars allow for orientation, discussion, and progress assessment. Third in a three-part

series. Prerequisite: PHARMP 532. Credit/no-credit only. Offered: AWSpS.

PHARMP 541 Introductory Pharmacy Practice Experience in Clinical Skills (1)

Students interview and assess a patient in the practice setting, present the patient case and an oral seminar in a small group setting, and complete other requirements for beginning advanced pharmacy practice experience. Prerequisite: PHARMP 533. Instructors: O'Sullivan. Credit/no-credit only. Offered: Sp.

PHARMP 571 Advanced Pharmacy Practice Experience in Inpatient/Acute Care General Medicine (6, max. 36) *O'Sullivan*

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a general medicine care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 572 Advanced Pharmacy Practice Experience in Hospital or Health-System Pharmacy (6, max. 36) *O'Sullivan*

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in an acute care or other inpatient setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 573 Advanced Pharmacy Practice Experience in Ambulatory Care (6, max. 36) *O'Sullivan*

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a clinic-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and provide drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 574 Advanced Pharmacy Practice Experience in Community Pharmacy (6, max. 36) *O'Sullivan*

Advanced pharmacy practice experience

focusing on providing patient-centered care to patients in a community-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 575 Advanced Pharmacy Practice Experience in Patient Care (6, max. 30) *O'Sullivan* Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a non-required setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Credit/no-credit only. Offered: AWSpS.

PHARMP 576 Advanced Pharmacy Practice Experience in Non-Patient Care (6, max. 24) *O'Sullivan* Advanced pharmacy practice experience focusing on providing pharmacy services in a variety of non-patient care settings. Credit/no-credit only. Offered: AWSpS.

PHARMP 577 Advanced Pharmacy Practice Experience in Senior Care (6, max. 12) *O'Sullivan* Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a senior or geriatric care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 578 Advanced Pharmacy Practice Experience Elective (1-6, max. 12) *O'Sullivan* Advanced pharmacy practice experience in patient or non-patient care settings. Credit/no-credit only. Offered: AWSpS.

PHARMP 580 Preparation for Global Health Experience in Low-resource Countries (3) Prepares students to safely and fully engage in clinical healthcare experiences in low-resource countries. Helps students understand common barriers to healthcare access and to appreciate the communicable and non-communicable health issues

that individuals and communities experience in these countries. Credit/no-credit only. Offered: Sp.

PHARMP 581 Advanced Pharmacy Practice Experience in Inpatient/Acute Care General Medicine (9, max. 36) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a general medicine care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 582 Advanced Pharmacy Practice Experience in Hospital or Health-System Pharmacy (9, max. 36) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in an acute care or other inpatient setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 583 Advanced Pharmacy Practice Experience in Ambulatory Care (9, max. 36) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing patient-centered care in a clinic-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 584 Advanced Pharmacy Practice Experience in Community Pharmacy (9, max. 36) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in community-based setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 585 Advanced Pharmacy Practice Experience in Patient Care (9, max. 27) *O'Sullivan* Six

week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a non-required setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMP 586 Advanced Pharmacy Practice Experience in Non-Patient Care Settings (9, max. 18) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing pharmacy services in a variety of non-patient care settings. Offered: AWSpS.

PHARMP 587 Advanced Pharmacy Practice Experience in Senior Care (9, max. 18) *O'Sullivan* Six week advanced pharmacy practice experience focusing on providing patient-centered care to patients in a senior or geriatric care setting. Applies therapeutic knowledge to assess and develop therapeutic plans in collaboration with other healthcare professionals, taking medication histories, monitoring patient progress, and providing drug information to professionals and patients. Offered: AWSpS.

PHARMACY PRACTICE (PHRMPR)

PHRMPR 511 Pharmacist Provider Experience I (2) Prepares students for practice as a pharmacist provider. Emphasizes application of classroom learning in a patient care setting. This is part of the (WIP) Wednesdays in Practice course series. Prerequisite: successful completion of on-boarding and compliance requirements for PharmD program. Credit/no-credit only. Offered: A.

PHRMPR 512 Pharmacist Provider Experience II (2) Prepares students for practice as a pharmacist provider. Emphasizes application of classroom learning in a patient care setting. This is part of the Wednesdays in Practice course series. Prerequisite: PHRMPR 511 and PHRMCY 541. Credit/no-credit only. Offered: W.

PHRMPR 513 Pharmacist Provider Experience III (2) Prepares students for practice as a pharmacist provider. Emphasizes application of classroom

learning in a patient care setting. This is part of the Wednesday in Practice (WIP) course series. Prerequisite: PHRMCY 542 and PHRMPR 512. Credit/no-credit only. Offered: Sp.

PHRMPR 514 Pharmacist Provider Experience IV (2) Delivery of care to patients with increasingly complex health care needs. Prepares students for practice as a pharmacist provider. Emphasizes application of classroom learning in a patient-care setting. Part of the Wednesday in Practice (WIP) course series. Prerequisite: PHRMCY 543 and PHRMPR 513. Credit/no-credit only. Offered: A.

PHRMPR 515 Pharmacist Provider Experience V (2) Application of classroom learning in a patient-care setting. Emphasizes delivery of care to multiple patients with increasingly complex healthcare needs. Prerequisite: PHRMCY 544 and PHRMPR 514. Credit/no-credit only. Offered: W.

PHRMPR 516 Pharmacist Provider Experience VI (2) Application of classroom learning to a patient-care setting. Emphasizes delivery of care to multiple patients with increasingly complex healthcare needs. Prerequisite: PHRMCY 545 and PHRMPR 515. Credit/no-credit only.

PHRMPR 517 Pharmacist Provider Experience VII (1-, max. 2) Prepares students for practice as a pharmacist provider. Emphasizes application of classroom learning in a patient care setting. This is part of the Wednesday in Practice course series. Emphasizes the delivery of care to multiple patients with increasingly complex healthcare needs. Prerequisite: PHRMCY 546 and PHRMPR 516. Credit/no-credit only. Offered: ASp.

PHRMPR 541 Introductory Pharmacy Practice Experience in Institutional Health-System Setting ([1-3]-, max. 3) *Jennifer M Danielson* Prepares students for practice in institutional health-system setting. Students learn about the role of pharmacists in inpatient setting; medication use and patient safety; pharmacists' patient care process; medication knowledge; calculations; ethical, legal and professional behavior; general communication; patient education; drug information; insurance/prescription drug coverage; quality improvement. Prerequisite: PHRMCY 542. Credit/no-credit only. Offered: ASp.

PHRMPR 542 Introductory Pharmacy Practice Experience in Community Practice Settings ([1-2]-, max. 3)

Prepares students for practice in the community practice setting; medication use and patient safety; pharmacists' patient care process; medication knowledge; calculations; ethical, legal and professional behavior; general communication; patient education; drug information; insurance/prescription drug coverage; and health and wellness. Students will spend the majority of class time for this course at a practice site. Prerequisite: PHRMCY 545 and PHRMPR 515. Credit/no-credit only. Offered: ASp.

PHRMPR 561 Core Community Pharmacy Advanced Pharmacy Practice Experience (7)

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a community pharmacy care setting. Each experience will be six weeks in length and will primarily involve patient care activities. Prerequisite: successful completion of all didactic and laboratory coursework in the UW School of Pharmacy professional curriculum. Credit/no-credit only. Offered: AWSpS.

PHRMPR 562 Core Ambulatory Care Advanced Pharmacy Practice Experience (7)

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a primary or specialty care clinic setting. Each experience will be six weeks in length and will primarily involve patient care activities. Prerequisite: successful completion of all didactic and laboratory coursework in the UW School of Pharmacy professional curriculum. Credit/no-credit only. Offered: AWSpS.

PHRMPR 563 Core General Medicine Acute Care Advanced Pharmacy Practice Experience (7)

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a general medicine acute care setting. Each experience will be six weeks in length and will primarily involve patient care activities. Prerequisite: successful completion of all didactic and laboratory coursework in the UW School of Pharmacy professional curriculum. Credit/no-credit only. Offered: AWSpS.

PHRMPR 564 Core Health System Pharmacy Advanced Pharmacy Practice Experience (7)

Advanced pharmacy practice experience focusing on providing patient-centered care to patients in a health system acute care setting. Each experience

will be six weeks in length and will primarily involve patient care activities. Prerequisite: successful completion of all didactic and laboratory coursework in the UW School of Pharmacy professional curriculum. Credit/no-credit only. Offered: AWSpS.

PHARMACY REGULATORY AFFAIRS**PHRMRA 524 Introduction to Clinical Trials (3) D.**

Hammond, E. Hayashi Introduces the major concepts under which clinical trials are designed to run. Focuses on the phases of clinical trials, the role of the Food and Drug Administration, Institutional Review Boards, the Code of Federal Regulations and ethical principles. Addresses study design and statistical concepts. Offered: A.

PHRMRA 525 Implementation and Conduct of Clinical Trials (3) D.

Hammond, E. Hayashi Outlines the work of carrying out a clinical trial including the complex work of study initiation, issues of site and data managements, preparation of the final report and study close out, as well as the details that control the study conduct. Offered: W.

PHRMRA 526 Project Management and the Business of Clinical Trials (3) D.

Hammond, E. Hayashi Addresses the business dimension of clinical trials, including the principles of project management, planning, analysis, contingency and follow-up within the context of clinical trials that involve a large number of tasks and people responsible for parts of the overall study. Offered: Sp.

PHRMRA 527 International Regulatory Affairs (3)

Develops an understanding of international differences in the regulation of design, manufacture, and post-marketing surveillance of medical products relative to U.S. Food and Drug Administration requirements. Prerequisite: PHARM 504. Instructors: Hammond Offered: A.

PHRMRA 528 Medical Risk Analysis and Management (3) Karp

Examines the principles and application of risk management methods in the design, manufacture, and marketing of medical products. Offered: A.

PHRMRA 536 Skills for the Regulatory Affairs Professional (2) Rose

Covers essential skills in

regulatory affairs and includes an overview of local medical products companies. Offered: A.

PHRMRA 545 Statistical Topics for Biomedical Regulatory Affairs Professionals (3) Applies statistical techniques to meet medical product regulatory commitments including biosimilars, product comparability, design and continued process verification. Prerequisite: introductory statistics. Offered: W.

PHRMRA 546 Technical Writing for the Medical Products Industries (3) *Teal* Presents up-to-date information and strategies for effective technical communication within the medical product industries. Addresses the appropriate and correct use of the English language, information design, and the use of computer technology in producing professional documents. Emphasizes communicating technical information to a variety of stakeholders. Offered: A.

PHRMRA 548 Biomedical Regulatory Affairs Practicum ([1-9]-, max. 9) *Feagin* Provides a practical experience to ensure that participants are able to shepherd new medical products (drug, device, biologic) through regulatory, clinical, and quality

assurance aspects. Includes a project and final report. Offered: AWSpS.

PHRMRA 550 Advanced Technical Writing for Biomedical Regulatory Affairs (2) Further examines communications with attention to best written practices. Provides an intensive review of common editing and advanced strategies for crafting highly reliable and effective documentation. Prerequisite: PHRMRA 546 or permission of instructor. Instructors: Teal Credit/no-credit only. Offered: Sp.

PHRMRA 554 Advanced Medical Products Regulation I (2) *Hammond* Provides an in-depth exploration of regulatory issues primarily related to non-clinical and clinical aspects of medical product development. Offered: W.

PHRMRA 560 Short Course in Multinational Biomedical Regulatory Affairs (2, max. 30) *Hazlet* Presents three medical products registration countries or groupings (for instance, European Union, World Health Organization) . Locale based on program impact, unique features, or recent or controversial regulatory issues.

PHRMRA 595 Special Topics in Regulation (1-6, max. 24) Offered: AWSpS.

EVANS SCHOOL OF PUBLIC POLICY AND GOVERNANCE

PUBLIC AFFAIRS EXECUTIVE MPA

PA EX 502 Executive Decision Making (3) Examines multiple ways in which analysis can support good decision making by leaders. Examines the normal heuristics managers and leaders use and looks at the role of data analysis, modeling, and expert judgment in management and leadership.

PA EX 503 Strategic Financial Management I (4) Introduction to state and local public finance and nonprofit financial management and analysis; political context and economic forces causing fundamental shift in resources and types of financing for public service; fundamental concepts of financial statements, their nature, and use in the public and nonprofit sectors.

PA EX 504 Executive Economics (3) Explores basic principles of economics needed by executives to become critical consumers of economic analysis, recognizing when and how it is pertinent to decision-making.

PA EX 505 Strategic Financial Management II (3) Focuses on strategic financial management; alternative forms of organizational financial structure; analytic skills and managerial applications of financial accounting and budgeting, techniques of financial analysis, performance budgeting, and debt management; strategic finance linked to contracting, multiple forms of privatization, social enterprise, and managing multiple revenue streams.

PA EX 506 Improving Organizational Performance (3) Integrates organizational mission with the culture using effective communications, outcomes assessments, and other tools for a citizen-oriented approach that relies on modern marketing methods.

PA EX 507 Values and Integrity (3) Provides a personal and value context from which to use the framework and methods to sustain a personal and institutional mission. Examines ranges of intelligence

and learning styles to create a foundation of self understanding for leadership strength and integrity.

PA EX 508 Managing People (3) Focuses on how to build a humane and fair workplace consistent with the laws that govern modern employment. Examines critical moments of building a strong culture through evaluation, promoting, firing, discrimination, work force succession, and intergenerational leadership.

PA EX 509 Leading Across Boundaries (3) Examines the modern challenges of leading across complex networks of institutions and stakeholders, examining institutional, national, sectoral, and cultural boundaries. Examines these challenges in the context of globalization and the emergence of multi-sectoral and multi-cultural networks of governance.

PA EX 510 Strategic Negotiations (4) Explores a theoretical framework for negotiations with an equal emphasis on developing negotiation skills through role-plays. Focuses on techniques and nuances of negotiation that are most useful for a manager working in a complex, dynamic environment with multiple stakeholders.

PA EX 511 Strategic Communication (3) Focuses on effective communication, highlighting the advocacy and motivation facet of leadership. In order to understand elements of persuasive communication, emphasizes concepts of negotiation analysis; power and dependence, perceptions of conflict, and finding mutual gains.

PA EX 512 Strategic Policy-Making (4) Examines how managers can expertly function at the intersection of politics, policy, and the wishes of the public.

PA EX 513 Leading for a Legacy (3) Explores the nature of human culture and values and how they relate to human legacy by impacting the quality of humans in an organization and how legacy grows from the values of the trusteeship and stewardship.

PUBLIC POLICY

PUBPOL 201 Introduction to Public Policy and Governance (5) I&S Provides an introduction to policy analysis, governance, and public service. Students learn how individuals organize for common purposes, and design, implement, analyze, and evaluate policy. Students examine how policy decisions emerge and how the values of public, nonprofit, and private sector leaders and institutions affect decisions and implementation.

PUBPOL 301 Truth, Evidence, and Public Policy Analytics (5) I&S, QSR Sound public policy and governance decisions rely on having evidence to support conclusions, as well as having an understanding of the extent of certainty regarding the available evidence. Students will learn qualitative, statistical, experimental, and mixed methods to evaluate: the origins of policy; the management, implementation, and administration of public programs; and the intended and unintended impacts of public policies. Prerequisite: PUBPOL 201; and one of the following: STAT 220, STAT 221/CS&SS 221/SOC 221, or STAT 311.

PUBPOL 313 Evidence-Based Policy Implementation (5) I&S Explores the multidimensional challenge of turning policy and program intentions into valued results on the ground. Understanding why implementation can fall short of expectation requires an understanding of how public/nonprofit organizations work; including their mission, resources, collaborators, and results measurement. Examines the role that evidence can play in service of democratic governance and policy effectiveness. Recommended: PUBPOL 201

PUBPOL 321 Decision-making, Behavior, and Policy Design (5) I&S Provides a foundation in the application of decision theory and behavioral science to study public policy problems. Students learn how cognition, heuristics, biases, emotion, and social dynamics interact in decision-making, and how context and framing shape decisions. Students learn how decision-making influences the effect of public policies on the equity and efficiency of the production and distribution of goods and resources. Prerequisite: PUBPOL 201.

PUBPOL 355 Special Topics in Nonprofits (3-4, max. 12) Covers various topics regarding nonprofit essentials.

PUBPOL 403 Professional Leadership (4) Cultivates practical skills required to lead within various organizational contexts: managerial strategies for public, nonprofit, and business organizations are developed through case studies and guest speakers. Focuses on analytical and ethical approaches to problem solving and the communication skills needed for effective leadership in any career.

PUBPOL 499 Topics in Public Policy (3-5, max. 6) I&S Examines selected issues of importance in all areas of public policy. Focus on in-depth analysis of vital public policy issues and the integration of economic, political, and administrative perspectives on them. Offered: jointly with POL S 404.

PUBPOL 501 Legislative Relations (4) Studies role of legislative bodies in American public policy making. Builds on case studies and focuses on tactics, constraints, and options involved in working within a legislative process to achieve public policy goals.

PUBPOL 502 Strategy for Public Leaders (4) Explores the design and execution of strategy in public life. Covers concepts and practical tools for making strategy, including situational assessment, strategy design, implementation, and reassessment and revision.

PUBPOL 503 Executive Leadership (4) Cultivate the practical skills required to lead within various operational contexts. Managerial strategies for addressing problems in public, not-for-profit and business organizations will be examined through case studies, general readings, class-exercises, presentations by practitioners, and self-reflection. Throughout this course, students will practice the core skills required for their success as future leaders.

PUBPOL 504 Leadership Ethics in the Public Interest (4) Addresses the moral challenges facing leaders in the public and nonprofit sectors. Examines the values and virtues important to sustained ethical leadership as well as strategies to build strong institutional cultures and support ethical practices in institutions.

PUBPOL 505 The Law of Public Administration (3)

Legal framework of public administrative action in the United States, emphasizing constitutional requirements; operation of the administrative process; management of personnel, funds, and contracts; and judicial review of administrative activity.

PUBPOL 506 Ethics and Public Policy (3/4) Teaches students to identify moral issues in public life.

Special focus on the integration of moral concerns into public discussion in a manner which contributes to good policy and does not polarize issues. Discusses moral and political theory by focusing on contemporary cases and issues.

PUBPOL 507 Mediation and Negotiation (4)

Possibilities offered by mediation and negotiation methods using a mixture of cases, readings, discussions, lectures, and guest speakers. Use of negotiation and mediation techniques to resolve disputes and disagreements over public-policy issues.

PUBPOL 509 Managing People in Public and Nonprofit Agencies (4) Explore the fundamentals of managing people with a specific emphasis on managing people in nonprofit and public agencies.

Covers theoretical and practical aspects of management such as: learning how to motivate a team for results; understanding key aspects of human resource law and practice; exploring how lean management can be utilized in nonprofit and government agencies; managing a diverse workforce, and managing in a union environment.

PUBPOL 510 Foundations of American Democracy (4) Examines the fundamental values such as equality, liberty, dignity, freedom, and autonomy that individuals justify and shape American political culture and institutions. Focuses upon the philosophical and religious foundations of these values and examines the relations among them as well as how they influence American political culture, institutions, and conflict.
PUBPOL 511 Managing Politics and the Policy Process (4) Examines broad aspects of organizational life and orients students to key internal and external challenges and opportunities of managing public and nonprofit organizations. Main topics include organizational mission, values, communication,

culture, organizational environment and the policy process.

PUBPOL 512 Managing Organizational Performance (4) Addresses questions of organizational design, personnel, and operations management to equip students with skills to perform effectively in mission-driven organizations. Core topics include organizational design, inter-organizational networks, human resources and staff management, improving service delivery and production flows, measuring and managing for performance, and ethical leadership. Prerequisite: permission of instructor; recommended: PUBPOL 511
PUBPOL 513 Public Policy Analysis (4) Equips students to rigorously assess policy responses to public problems, through defining problems, devising alternative solutions, clarifying stakes in choices, predicting impacts of choices. Skills developed by working on specific policy problems. Assumes familiarity with statistics, microeconomic theory, and institutions and processes of American government. Prerequisite: permission of instructor; recommended: PUBPOL 516 , PUBPOL 517
PUBPOL 514 Psychology for Policy Analysis (4) Examines basic concepts in social psychology, judgment and decision making, and behavioral economics. Explores how these concepts can be applied to the design, implementation, and evaluation of successful policy.
PUBPOL 515 Decision Making for Public Managers (3) Considers decision making from normative, prescriptive, and descriptive perspectives. Emphasizes individual decision making, with some discussion of organizational decision practice. Focuses on decision analysis; presents tools for structuring decisions; and considers the role of analysis as a basis for negotiation.
PUBPOL 516 Economics for Policy Analysis and Management I (4) Examines the use of microeconomics in policy analysis. Includes a review of supply, demand, and how government actions (e.g., taxes, subsidies) affects economic efficiency in a competitive market. Develops a deeper understanding of consumer choice as a function of preferences and constraints - the building blocks of demand - and examine how changes in constraints

or opportunities via public policy affects choices.
Recommended: elementary economics

PUBPOL 517 Economics for Policy Analysis and Management II (4) Serves to deepen student understanding of microeconomic theory with a focus on understanding the economic analysis of market failures and on developing policies to address them. Prerequisite: PUBPOL 516 or permission of instructor.

PUBPOL 518 Applied Cost Benefit Analysis (4) Explores the use of benefit-cost techniques for analyzing policy, regulatory, and public investment decisions. Topics to include discounting, estimating demand in primary and secondary markets, risk and uncertainty, and nonmarket valuation. This widely-used applied economics tool will be mastered through lecture, applied problem-solving and a benefit-cost analysis project. Prerequisite: PUBPOL 516 and 517, or permission of instructor.

PUBPOL 519 Law and Economics (2-4, max. 4) Examines the applications of Law and Economics to: torts, property, contract, and criminal law; intellectual property, tobacco litigation, employment law, human organ sales, and U.S. regulatory design. Offered: jointly with LAW A 561.

PUBPOL 520 Intergovernmental Relations (4) Comparative study of the issues involved in implementing government programs across multiple jurisdictions. Issues of accountability, feasibility, politics, and constitutional limits are examined by focusing upon various methods used to implement programs across federal, state, regional, and international jurisdictions.

PUBPOL 521 Managing Public Grants and Contracts (4) Public organizations are increasingly reliant on partners and contractors for the delivery of public services, using a variety of means to engage these partners, including grants and contracts. This course explores how to best design, manage, and evaluate contracts/grants to improve performance, including the process through which contracts and grants are managed, and how to effectively evaluate performance to inform future partnerships.

PUBPOL 522 Financial Management and Budgeting (4) An introduction to financial and management accounting, and an overview of public and nonprofit

budgeting systems. Covers tools and techniques for budget analysis and the use of financial information in managerial decision making.

PUBPOL 523 Advanced Budgeting in the Public Sector (4) Covers more advanced topics in governmental budgeting. Provides an overview of the functions, expenditures, and revenues of federal, state, and local governments. Recommended: PUBPOL 522, or instructor permission. Recommended: PUBPOL 522

PUBPOL 524 Public Sector Financing (4) Covers financial management in public agencies, with the primary focus on state and local government. Prerequisite: PUBPOL 522, or instructor permission.

PUBPOL 525 Qualitative Field Methods and Analysis (4) Provides a review of qualitative field research methods, exposure to writing from the field, and opportunities to try practicing fieldwork. Emphasizes study design, case selection, interviewing techniques, survey design, and field notes. Addresses coding, analysis, writing, and presenting findings.

PUBPOL 526 Program Evaluation (4) Introduction to the theory, practice, and politics of program and policy evaluation. Covers the major types of evaluation, including theory of change, implementation and process evaluation, and impact evaluation, as well as quantitative and qualitative data collection techniques, the ethics of evaluation, and engaging stakeholders in evaluation.

PUBPOL 527 Quantitative Analysis I (4) Two-quarter sequence explores how to formulate research questions, gain experience with conducting research, and learn how to assess which statistical tools or research methods are appropriate to answer different types of policy or management questions. Covers probability, descriptive statistics, hypothesis testing, and confidence intervals.

PUBPOL 528 Quantitative Analysis II (4) Second quarter of a two-quarter sequence aimed at helping students become informed users and critical consumers of research and statistical analysis. Combines material on research design and causal inference methods with tools for multivariate analysis. The multivariate analysis methods include correlation and an introduction to multivariate

regression. Prerequisite: permission of instructor; recommended: PUBPOL 527

PUBPOL 529 Advanced Quantitative Methods for Policy Analysis (4) Teaches students more advanced quantitative methods applied to program evaluation and policy analysis. Students develop ability to do independent research by developing skills in assessing data qualities, research design, and appropriate application of a variety of quantitative methods. Prerequisite: permission of instructor; recommended: PUBPOL 527, PUBPOL 528

PUBPOL 531 Development Management and Governance (4) Addresses the connections linking governance systems, the management and implementation of public policies, and policy and program outcomes, with focus on capacities and strategies of a broad array of actors engaged in international development. Covers management challenges faced by government bureaucracies and civil society actors, the changing landscape of development assistance, public sector reforms, and human rights in development context.

PUBPOL 532 International Development Capstone (2) Provides students the opportunity to interact with professionals in the field during panel discussions. Students produce a short summative paper as a final project. Students will have completed the preceding International Development Certificate Program (IDCP) core courses: PUBPOL 531 and PUBPOL 533.

PUBPOL 533 Economics of International Development (4) Economics of International Development critically examines the validity and reliability of most common economic development indicators of poverty, growth and inequality, and provides an overview of, and basic literacy around, international macroeconomic topics including debt, aid, trade and financial markets.

PUBPOL 534 Food and Agricultural Policy in Developing Countries (4) Provides an understanding of the role of agriculture in economic development. Examines frontier policy issues in developing countries related to food security and agricultural production. The emphasis is on developing a nuanced understanding of contemporary food and agricultural policy issues, with a firm grounding in theory and history.

PUBPOL 535 American Foreign Policy (4) Examines how the U.S. foreign policy process works, emphasizing formation, content, and implementation of post-Cold War U.S. foreign and national security policy, with emphasis on current foreign and national security policy.

PUBPOL 536 Diagnosing and Reforming Corrupt Systems (4) Corruption - one of the greatest obstacles to social, economic, and political development around the world - has become a focal point for efforts to improve public sector performance. This course explores strategies for the prevention and mitigation of corruption across a range of contexts and takes an action-oriented approach, drawing lessons from corruption cases and focusing on what approaches might be undertaken under different circumstances.

PUBPOL 537 Topics in International Affairs (3-5, max. 20) Examines selected topics of interest and import in foreign policy and international affairs or development. Focuses on an in-depth analysis of policy issues considering economic, institutional, and political dimensions.

PUBPOL 538 International Organizations and Ocean Management (3) Survey of the manner in which international regimes and organizations attempt to manage and regulate the uses of the ocean. Primary emphasis is on the analysis of the effectiveness of regimes and of processes that support or constrain these organizations. Prerequisite: SMEA 500 or permission of instructor. Offered: jointly with SMEA 507.

PUBPOL 539 Values in International Development (4) Examines and clarifies international development values, including underlying theories of justice on which they seem to be built, the ways in which they are justified to stakeholders, the general public, and impacts they have upon people, especially the poorest and most vulnerable.

PUBPOL 540 Advanced Policy Analysis (4) Provides a more critical view of policy analysis by taking a deep dive into topics related to policy analysis and questioning underlying assumptions while conceptualizing policy analysis within societal structures. Recommended: PUBPOL 513.

PUBPOL 541 The Role of Nongovernmental Organizations in International Development (4)

Explores issues faced by nongovernmental organizations (NGOs) working in developing and transition countries, including perspectives from international and indigenous NGOs and community-based organizations. Topics covered include relationships between NGOs and the state, the market, intended beneficiaries, and funder relationships. Key issues discussed include the challenges of funding, participation, advocacy humanitarianism, and social change.

PUBPOL 542 Computational Thinking for Governance Analytics (4) Combines data science and computational social science in a policy studies structure. Introduces algorithmic thinking and develops good practices in reproducibility for professional work in policy research.

PUBPOL 543 Visual Analytics for Policy and Management (4) Provides students with visualization tools to show insights to political or scientific communities, while presenting different strategies to avoid biased interpretations. Emphasis on the building of templates to produce information.

PUBPOL 544 Tax Policy and Analysis (4) Provides theoretical and empirical tools to analyze current tax policy and proposed tax reforms. Prerequisite: either PUBPOL 517 and PUBPOL 528, or permission of instructor

PUBPOL 547 Water Resource Economics (4) Explores the economics of water resources, including static and dynamic efficiency for consumers and producers and other topics concerned with water quality. Explores effects of climate change on water resources, and economic approaches to mitigate these effects.

PUBPOL 550 Managing Nonprofit and Philanthropic Organizations (4) Focuses on the roles and practices of nonprofit and philanthropic organizations. Provides an overview of topics relevant to nonprofit and social sector organizations, including theoretical foundations, legal forms, governance and leadership, cross-sector relationships, revenue streams and fundraising, and policy advocacy.

PUBPOL 551 Measuring Social Impact: Advanced Program Design and Evaluation (4) Topics covered

include applying theory of change and design thinking to evaluation; formative and process evaluation; qualitative and participatory approaches; new approaches in quasi-experimental and experimental methods, and evaluating advocacy and collective impact. Prerequisite: instructor permission; recommended: PUBPOL 526

PUBPOL 552 Philanthropy and Society (4) Provides students a holistic background of the philanthropic sector. Begins with an in-depth analysis of history and context and ends with a discussion of current strategies and approaches to giving by foundations. Builds in sequence: history, context, sub-sectors, accountability, and results.

PUBPOL 553 Nonprofit Financial Management (4) Provides an understanding of the financial framework on nonprofit organizations. Focuses on the financial principles of management of nonprofits, with an emphasis on financial reporting, strategic financial planning, managerial decision-making and budgeting.

PUBPOL 554 Nonprofit Organizations and Public Policy (3) Examines the changing role of nonprofit organizations in American society. Selected policy topics include privatization, for-profit/nonprofit competition, public-private partnerships, tax policy, and new sources of revenues.

PUBPOL 555 Topics in Nonprofit Management, Philanthropy, and Social Enterprise (3-5, max. 20) Covers a range of topics applied to nonprofit, philanthropic, and social enterprise organizations.

PUBPOL 556 Public-Private Partnerships (4) Provides a comprehensive overview and examination of partnerships and their implications for public policy and nonprofit and public management. Examines the diverse array of partnerships in the UW and abroad and the management challenges involved in the development and implementation of different partnership strategies.

PUBPOL 557 Financial Modeling for the Public Sector (4) Covers financial modeling concepts at the core of public sector finance including: cash flow (or revenue) forecasting and proforma financial statements, capital life-cycle cost analysis, portfolio

valuation and risk management, debt sizing, structure, and refinancing.

PUBPOL 558 Collaboration and Management Across Sectors (4) Organizations from different sectors (public, business, nonprofit) increasingly work together to achieve unique, collaborative outcomes. Managing cross-sector relationships presents dynamic process and governance challenges that go well beyond the difficulties of managing within an organization. Explores the opportunities and risks involved in working across organizational boundaries.

PUBPOL 559 Advanced Performance Management: Quadruple Bottom Line Lab (4) Examines the Quadruple Bottom Line as a conceptual framework and emerging set of tools for a more comprehensive and balanced accounting of organizational and institutional behavior and outcomes related to economic efficiency, social equity, environmental sustainability, and creative cultural vitality.

PUBPOL 560 Inequality, Governance, and Policy in the Metropolitan Region (3/4) Explores national/local urban policy concerning the major problems confronting cities and metropolitan regions today. Economic globalization, income inequality, and metropolitan decentralization shape the urban agenda, the context for urban policy, and the analytic focus of the course. A project allows the exploration of strategies for intervention. Offered: jointly with URBDP 560.

PUBPOL 561 Urban Economics and Public Policy (4) Examines the rationale for and consequences of public intervention in urban land, housing, and transportation markets through land use regulations such as zoning and growth management, infrastructure investments, and fiscal policies to manage urban development and traffic. Prerequisite: successful completion of an introductory microeconomics course or permission of the instructor. Offered: jointly with URBDP 561.

PUBPOL 562 Immigration Policy (4) Builds foundational knowledge of American immigration policy, providing students with the conceptual and analytical tools required to critically evaluate any and all arguments made in current policy debates, and to move toward making unique and original contributions to those debates.

PUBPOL 563 Intergroup Relations and Public Policy (4) Explores how social psychological research on intergroup relations is pertinent to various aspects of public policy. Includes historical and current perspectives. Examines how the literature describes how individuals perceive, judge, and feel about individuals from various social groups. The groups discussed ranges from minimal groups to classic social groups.

PUBPOL 564 Housing and Social Policy (4) Provides an overview of the field of housing policy and its interrelationships with social problems in the United States. Explores various dimensions of housing problems with an emphasis on housing affordability and examines the primary policy tools used to respond to housing problems.

PUBPOL 565 Topics in Urban Affairs (3-5, max. 20) Examines various topics of public importance in urban policy. Integrates the political, managerial, economic, and technical dimensions of these issues.

PUBPOL 566 Community Economic Development (4) Explores the relationship between local community economic development, environmental sustainability, cultural vitality, and trend in regional and national economics, with specific focus on how to make community and economic investments that yield development outcomes that contribute to economic, equitable, environmental, and cultural vitality.

PUBPOL 567 Community Engagement and Urban Governance (4) Investigates interactions between citizen participation and efforts to measure and improve policy and program performance in large cities. Develops analytic frameworks and practical strategies for sustaining and enhancing participation and performance.

PUBPOL 568 Social Justice and Public Policy (3/4) Examines the values of social justice that motivate action in the public arena; thinks about how those values create concerns and solutions; and explores issues of equity and liberty, of balancing the rights of the individual, the common good, and redistribution.

PUBPOL 569 Race and Public Policy (3-4) Analyzes the way in which the persistent problem of race is expressed in the formation and implementation of social and public policy.

PUBPOL 570 Foundations of Social Policy (3)

Examines major institutions and programs in social policy including: income maintenance, social services, education, and healthcare. Focuses on American social policy with some attention to comparative welfare state development. Includes extensive discussion of different policy strategies to address social policy problems.

PUBPOL 571 Education, The Workforce, and Public Policy (4)

Examination of policy issues involving education, training, the economy, and the development of the nation's human resources. Relationship between education, training, and work, and among the various levels of the education system, underutilized workers, race and gender issues, and the role of education and training in economic development. Offered: jointly with EDLPS 563.

PUBPOL 572 Race and Equity in Policy and Governance (2, max. 4)

An introduction for understanding race and equity in policy and governance. Power, privilege, and disadvantage are distributed based on race, skin color, and ethnicity. Develop the ability to identify and critique racist or racialized policies and management practices; examine your own experience of race, privilege, and oppression; and learn to use tools for increasing racial equity and inclusion in public, nonprofit, and private sectors. Credit/no-credit only.

PUBPOL 573 Topics in Education and Social Policy (3-5, max. 20)

Examines various issues of public importance in the areas of education and social policy. Focuses on in-depth analysis of relevant issues and the integration of the economic, administrative, and political dimensions of these issues.

PUBPOL 574 Economics of Race and Inequality in the United States (3/4)

Covers the history of racial inequality over the past century, theories of the causes, wage determination and discrimination in employment and pay, inequalities in education and human capital development, and residential segregation and its consequences. Discusses the effectiveness and limitations of policy response to racial inequality.

PUBPOL 575 Taxes and Social Policy (4) Examines major areas of social policy that interact with the tax

system. Prerequisite: either PUBPOL 517 and PUBPOL 528, or permission of instructor.

PUBPOL 576 Poverty and Anti-Poverty in the United States (4)

Examines the nature and extent of poverty in the United States, its causes and consequences, and the antipoverty effects of public policies.

PUBPOL 577 Economics of Health Policy (4)

Uses an economic perspective to examine a variety of issues related to the provision of medical care in the United States. Topics include medical care demand, the role of health insurance, the health and financial consequences of being without insurances, health care spending, and the Affordable Care Act. Prerequisite: instructor permission; recommended: PUBPOL 517

PUBPOL 578 Asset Building for Low Income Families (4)

Explores assets and finances for low income families primarily in the United States. Identifies programs and policies targeted toward asset building and looks at evidence of their efficacy. Uses a multi-disciplinary perspective to examine the economic, social, and political contexts for these policies.

PUBPOL 579 Child Well-being and Public Policy (4)

Covers the contexts of child well-being, the arguments for government intervention during childhood, and 4-5 specific topics in child policy. Integrates theory and evidence from Developmental Psychology, Economics, Sociology, and Social Neuroscience. Focuses on US Federal, state, and local policies.

PUBPOL 582 Communicating Climate Change (4)

Surveys climate change communications and their role in achieving climate change policy goals. Assesses the ethics and science of climate change communication. Explores theories and frameworks to evaluate and improve climate change communications. Examines the role of climate change communication as a policy tool.

PUBPOL 583 Science, Technology, and Public Policy (4)

Examines the relationship between the advancement of technical knowledge, the pace of technological change, and public policies designed to induce or respond to these development. Issues of policy formulation, administrative design, and future trends; applications include biotechnology, energy,

information technology, global warming, robotics, national security, homeland security, and space exploration.

PUBPOL 585 Topics in Science, Technology, and Public Policy (3-5) Examines relationship between advancement of technical knowledge and pace of technological change, and public policies to induce or respond to these trends. Generic issues of government research, development, and personnel training programs are addressed. Applications of policy issues involving biomedical, communications, energy, environmental, transportation, and weapons technologies.

PUBPOL 587 Native Nations, Native Lands, Native Waters (4) Examines the ways that Native Nations in the US function as self-governing sovereigns and the ways that Native Nations govern their lands and waters. Considers how Native Nations interact with other governments and the consequences of those interactions.

PUBPOL 589 Risk Assessment for Environmental Health Hazards (4) Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEWA 560/ENV H 577; A.

PUBPOL 590 Environmental Policy (4) Presents background to establish the need for environmental policy. Explores in a comparative manner, examining both successes and failures, various strategies that have been used or proposed to protect the environment. Explores different policy tools for environmental protection, including command-and-control regulation, market-based incentives, third-party certifications, and collaborative partnerships.

PUBPOL 592 Resource Policy and Administration (4) Study based on understanding of the actors, arenas, issues, and policy communities that form the context for policy development and implementation. Exploration of approaches to policy inquiry. Consideration of implications for both policy and management. Students develop a study design for course project. Offered: jointly with SEFS 571.

PUBPOL 593 Climate Change and Energy Policy (4) Energy policy formulation and implementation with emphasis on post-1973 developments. Energy conservation programs; changing roles of oil, coal, gas, nuclear, and solar energy; institutional, environmental, and equity considerations; government research and development programs.

PUBPOL 594 Economic Approaches to Environmental Management (4) Examines the economic tools relevant to natural resource and environmental management. Tools are developed in the context of a series of resource problems, with an eye towards building intuition useful for addressing complex policy problems that do not fit neatly into textbook examples. Prerequisite: PUBPOL 516; PUBPOL 517; PUBPOL 527; PUBPOL 528

PUBPOL 595 Topics in Environmental Policy and Management (3-5, max. 20) Examines various topics of public importance in environmental policy and management. Integrates the political, managerial, and economic dimensions of these issues.

PUBPOL 596 Environmental Risks and Values (4) Explores a range of sources of risk to human health and the environment, and the values that color communication, perception, and decision making about risk. This topic lies at the core of an ongoing conversation between communities, governments, scientists, the media, and others. Topics include energy, climate, water supply, emerging technology, and environmental justice.

PUBPOL 597 Environmental Decision Analysis (4) Examines how science contributes to decisions that involve the natural environment; how science and scientists help frame debates and decisions; how scientific findings are incorporated into decision-making processes; how scientists and non-scientists deal with uncertainty about scientific questions.

PUBPOL 598 Administrative and Policy Professional Skills Workshop (1-3, max. 12) Teaches practical administrative, leadership, and analytic skills commonly required of managers and analysts in the public and nonprofit sectors. The workshops emphasize hands-on problem resolution, simulations, and actual practice. Credit/no-credit only.

PUBPOL 599 Special Topics (1-6, max. 28) Study and analysis of special topics in public affairs. Topics vary each quarter depending on curricular needs and interests of students and faculty.

PUBPOL 600 Independent Study or Research (*-) Evans School MPA students only. By arrangement with instructor. See current Time Schedule for link to application. Refer to Evans School MPA Student Handbook for details.

PUBPOL 605 Degree Project ([1-8]-) Evans School MPA students only. By arrangement with instructor. See current Time Schedule for link to application. Refer to Evans School MPA Student Handbook for details.

PUBPOL 608 Capstone Project Seminar ([4-8]-) Meets the capstone project requirements as part of the Evans School MPA curriculum. Students work in a supportive seminar environment facilitated by peers and faculty to complete team-based capstone degree projects.

PUBLIC POLICY AND MANAGEMENT

PPM 500 Proseminar in Public Policy and Management (1, max. 9) Engages students with faculty to discuss research in public policy and management. Provides an effective means to become familiar with research agendas and opportunities in this field, and other aspects of socialization into the academic process, including teaching, grant writing, and publishing. Credit/no-credit only.

PPM 502 Research Design (4) Provides a rigorous foundation for interdisciplinary research design. Introduces iconic types of theory (predictive, interpretive, and explanatory) and the philosophical foundations underlying these. Reviews a range of methodological approaches to research: experimental and quasi-experimental, ethnographic, comparative case-study, statistical, meta-analytic, simulations, and triangulation.

PPM 504 Perspectives on Institutions (4) Prepares doctoral students for careers in research and teaching public policy, management, and leadership by introducing foundational scholarship on the major institutional forces that influence the policy

process. Examines key critiques as well as integration and application of the perspectives to public policy and management challenges.

PPM 506 Advanced Microeconomics for Policy Analysis (4) Introduction to advanced economic theory. Covers core models in consumer theory, producer theory, and public economics. Topics include: consumer choice, the theory of the firm, choice under uncertainty, neoclassical and behavioral models of inter-temporal choice, basic game theory, externalities, public goods, and an introduction to welfare economics. Recommended: multivariate calculus; intermediate microeconomic theory.

PPM 508 Public Policy Processes (4) Political science frameworks, approaches, and theories concerning development and implementation of public policies within American and other democratic political systems. Governmental behaviors and processes, including rational, political, and bureaucratic models of governmental decision making; agenda-building processes; and the role of institutions in constraining and enabling policy change.

PPM 510 Public Policy Analysis (4) Reviews public policy analysis and evaluation building on prior study of microeconomics, policy processes, research design, and statistics. Covers theoretical and interdisciplinary frameworks and applications of empirical methods to policy problems and solutions, and considers regularities in incidence, and effects of the use of alternative policy tools.

PPM 512 Data Analysis Practicum (4) Develops the methodological capacity to undertake independent research. Includes reading, critiquing, and replicating portions of selected empirical papers from a range of scholarly areas. Provides opportunities to deal with issues of research design, data limitations, measurement, model specification, and interpretation.

PPM 514 Organizations, Management, and Theory (4) Explores key theories of organizations and management employing perspectives from sociology, political science, economics, and public management. Theories are applied in the context of private, nonprofit, and public sector organizations. The course builds on the required course PPM 504 Institutional Perspectives. Recommended: PPM 504

PPM 599 Topics in Public Policy and Management (1-6, max. 16) Examines various research topics of importance in public policy and management.

PPM 600 Independent Study or Research (*) Evans School PhD students only. By arrangement with instructor. See current Time Schedule for link to application. Refer to Evans School PhD Student Handbook for details.

PPM 603 Teaching Mentorship (2, max. 50) Evans School PhD students only. By arrangement with instructor. See current Time Schedule for link to application. Refer to Evans School PhD Student Handbook for details. Credit/no-credit only.

PPM 800 Doctoral Dissertation (*) Evans School PhD students only. See current Time Schedule for link to application. By arrangement with doctoral dissertation supervisor. Refer to Evans School PhD Student Handbook for details.

SCHOOL OF PUBLIC HEALTH

BIOSTATISTICS

BIOST 111 Lectures in Applied Statistics (1) NW

Weekly lectures illustrating the importance of statisticians in a variety of fields, including medicine and the biological, physical, and social sciences. Credit/no-credit only. Offered: jointly with STAT 111; Sp.

BIOST 290 Introduction to Biomedical Research: Study Design and Interpretation (3) NW

Introduces biostatistical concepts necessary for the interpretation, evaluation, and communication of biomedical research. Includes biomedical study design, randomization, graphical data displays, control bias, variability, confounding, interaction, and ethics of human experimentation. Students participate in group and individual projects, group discussions, and oral presentations.

BIOST 302 Forensic Genetics (3) I&S/NW, QSR Bruce

S Weir Introduces the field of forensic genetics through discussion of genetic and statistical issues emerging since the introduction of DNA profiling. Students develop the skills to interpret the evidence of matching genetic profiles; to perform calculations relevant for parentage determination; the identification of remains; and to consider the implications of familial searching of DNA databases. Prerequisite: either BIOST 310, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311, Q SCI 381, or Q METH 201. Offered: jointly with PHG 302; W.

BIOST 310 Biostatistics for the Health Sciences (4)

QSR Introduction to statistics for students who plan to major in health sciences. Uses case studies from popular and scientific literature to study topics such as data description, study design, estimation, hypothesis testing, regression. Emphasizes concepts and interpretation rather than computation. Students should be able to interpret graphs and use concepts covered in 2nd-year algebra, including linear equations, logarithms, summation notation. Offered: AWSp.

BIOST 311 Regression Methods in the Health Sciences (4) QSR Introduces regression methods for analysis of continuous, binary, and time-to-event

(survival) data. Covers linear regression; logistic regression; and proportional hazards regression, all at an introductory level. Makes use of examples drawn from the biomedical and health sciences literature. Prerequisite: BIOST 310.

BIOST 401 Computational and Applied Genetic Epidemiology (5) QSR Alison Fohner

Advanced topics in genetic epidemiology for undergraduate students, focusing on hands-on introduction to computational analysis of population genetics and individual health data using R programs. Students will investigate how genes and environment interact to cause disease and health-states and to inform public health interventions. Recommended: PHG 301 or prior background in basic genetics and statistics. Offered: jointly with EPI 410/PHG 401; Sp.

BIOST 405 Introduction to Health Data Analytics (3)

Covers the process of and tools used in evaluating data using analytical and logical reasoning to examine each component of the health data. Offered: jointly with HIHIM 405.

BIOST 406 Research Design and Statistics for HIHIM (3)

Explores healthcare and research statistics. Addresses hospital statistics, used to calculate usage levels of healthcare resources and outcomes of clinical operations, and research statistics, used to summarize and describe significant characteristics of a data set, and to make inferences about a population based on data collected from a sample. In addition, principles of research are described, including the Institutional Review Board process. Offered: jointly with HIHIM 425/STAT 406.

BIOST 425 Introduction to Nonparametric Statistics

(3) NW Overview of nonparametric methods, such as rank tests, goodness of fit tests, 2 x 2 tables, nonparametric estimation. Useful for students with only a statistical methods course background. Prerequisite: Either STAT 311 and STAT 340, STAT 390, or STAT 391. Offered: jointly with STAT 425.

BIOST 499 Undergraduate Research (1-10, max. 30)

Supervised reading programs; library and field research; special projects.

BIOST 502 Introduction to Statistics in Health Sciences (4) Description and examples of common concepts in biostatistics. Probability, point and confidence interval estimation, hypothesis testing including two-sample and paired t and chi-square tests, introduction to simple linear regression. Emphasizes applications in health sciences. Offered: W.

BIOST 503 Application of Statistics to Health Sciences ([0-3]-, max. 3) Standard statistical techniques presented with examples drawn from the health sciences literature. Critical interpretation of research results, and introduction to the computer for data processing and statistical analysis. Prerequisite: BIOST 502 or equivalent. Offered: Sp.

BIOST 504 Foundations of Public Health for Biostatistics (2) Introduces students to key foundational concepts in Public Health and highlights the role of biostatistical methods and applications. Prerequisite: BIOST 522 or STAT 512; and BIOST 514 or BIOST 517 (can be taken concurrently) Credit/no-credit only. Offered: A.

BIOST 505 Writing, Presentation, and Collaboration Skills for Biostatistics (2) Develops communication and collaboration skills for biostatisticians working as part of a biomedical research team. Topics include effective dialogue with collaborators; summarizing scientific ideas and questions and translating these to targets of inference; collaborating to develop appropriate study designs and statistical analyses; communicating statistical analysis methods and results in clear written summaries and graphical displays. Prerequisite: BIOST 514; and BIOST 515, which may be taken concurrently; recommended: at least one quarter of both mathematical statistics and applied Biostatistics at the graduate level. Credit/no-credit only. Offered: W.

BIOST 507 Health Data Analytics (3) *Ken White* Healthcare organizations generate a large number of clinical performance metrics. Extracted data from different data systems is used to display relevant metrics in dashboards that are meaningful to senior leadership. Statistical tools may determine if differences in performance are significant and what factors are associated with the differences. Predictive models may then be built and inputs varied to obtain performance improvements.

Recommended: beginner Excel skills. Offered: jointly with HIHIM 524; Sp.

BIOST 508 Biostatistical Reasoning for the Health Sciences (4) Provides a broad overview of biostatistical methods. Students are introduced to the data summaries and presentation, statistical inference (including hypothesis testing, p-values, and confidence intervals), sample size calculation, and modeling approaches such as linear regression analysis. Includes hands-on data analysis. Prerequisite: EPI 511 or instructor's permission Offered: W.

BIOST 509 Introduction to R for Data Analysis in the Health Sciences (2) Introduction to R for data analysis. Covers installing R; scripts; reading in data and writing output; using help files; using functions; writing functions; graphics; R packages; data manipulation; loops; permutation tests; bootstrapping; and fitting models. Prerequisite: upper-division course in statistics or permission of instructor.

BIOST 510 Biostatistics in Dentistry (3) Introduction to concepts and methods of descriptive and inferential statistics with applications in dentistry emphasized. Topics include comparison of means and proportions, hypothesis testing, confidence intervals, non-parametric methods, linear regression, and correlation. Prerequisite: enrollment in School of Dentistry or permission of instructor. Instructors: Spiekerman Offered: jointly with OHS 568; S.

BIOST 511 Medical Biometry I (4) Presents the principles and methods of data description and elementary parametric and nonparametric statistical analysis. Examples from the biomedical literature, and real data sets are analyzed by the students after a brief introduction to the use of standard statistical computer packages. Statistical techniques covered include description of samples, comparison of two sample means and proportions, simple linear regression and correlation. Offered: A.

BIOST 512 Medical Biometry II (4) Multiple regression, analysis of covariance, and an introduction to one-way and two-way analyses of variance: including assumptions, transformations, outlier detection, dummy variables, and variable selection procedures. Examples drawn from the

biomedical literature with computer assignments using standard statistical computer packages.

Prerequisite: either BIOST 511, BIOST 517, PHI 512, or equivalent. Offered: W.

BIOST 513 Medical Biometry III (4) Analysis of categorical data including two sample methods, sets of 2 x 2 tables, R x C tables, and logistic regression. Classification and discrimination techniques. Survival analysis including product limit estimates and the Cox proportional hazards model. Prerequisite: BIOST 512 or permission of instructor. Offered: Sp.

BIOST 514 Biostatistics I (4) Presentation of principles and methods of data description; graphics; point, confidence interval estimation; hypothesis testing; relative risk; odds ratio; Mantel-Haenszel; chi-square test. Examples drawn from biomedical literature; real-data sets analyzed using statistical computer packages. Prerequisite: biostatistics majors or permission of instructor. Offered: A.

BIOST 515 Biostatistics II (4) Introduction to linear models; multiple regression, correlation; residual analysis; dummy variables; analysis of covariance; one-, two-way analysis of variance; randomized blocks; fixed, random effects (repeated measure, factorial designs) ; multiple comparisons . Real biomedical data sets analyzed. Prerequisite: BIOST 514, biostatistics major, or permission of instructor. Offered: W.

BIOST 516 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with EPI 535/PHG 519.

BIOST 517 Applied Biostatistics I (4) Introduction to the analysis of biomedical data. Descriptive and inferential statistical analysis for discrete, continuous, and right-censored random variables. Analytic methods based on elementary parametric and non-parametric models for one sample; two sample (independent and paired) , stratified sample, and simple regression problems. Offered: A.

BIOST 518 Applied Biostatistics II (4) Multiple regression for continuous, discrete, and right-censored response variables, including dummy variables, transformations, and interactions. Introduction to regression with correlated outcome data. Model and case diagnostics. Computer assignments using real data and standard statistical computer packages. Prerequisite: BIOST 517 or permission of instructor. Offered: W.

BIOST 519 Advanced Epidemiologic Methods I (3) *Steve Mooney* First in a series of 2 courses. Increases knowledge of epidemiological principles by introducing methodological approaches to handling common problems in epidemiologic research that extend beyond the scope of traditional methods. Prerequisite: EPI 512 and EPI 513 Offered: jointly with EPI 515.

BIOST 520 Advanced Epidemiologic Methods II (4) *Brandon L Guthrie* Second of a series of 2 courses whose objective is to deepen students' knowledge of epidemiological principles by introducing methodological approaches to handling common problems in epidemiologic research that extend beyond the scope of traditional methods. Prerequisite: EPI 515. Offered: jointly with EPI 516.

BIOST 522 Statistical Inference for Biometry I (4) This is the first in a two-course sequence that introduces the theory of statistical inference that provides foundations to common biostatistical methods. Topics of the sequence include basic concepts of probability, parametric distributions, exact and asymptotic sampling distribution of statistics, maximum likelihood estimation, unbiased estimating equations, theory of hypothesis testing and Bayesian inference. Prerequisite: either STAT 395, STAT 421, STAT 423, STAT 504 or BIOST 514 (can be taken concurrently) Offered: A.

BIOST 523 Statistical Inference for Biometry II (4) This is the second in a two-course sequence that introduces the theory of statistical inference that provides foundations to common biostatistical methods. Topics of the sequence include basic concepts of probability, parametric distributions, exact and asymptotic sampling distribution of statistics, maximum likelihood estimation, unbiased estimating equations, theory of hypothesis testing and Bayesian inference. Prerequisite: BIOST 522, or permission of instructor. Offered: W.

BIOST 524 Design of Medical Studies (3) Design of medical studies, with emphasis on randomized controlled clinical trials. Bias elimination, controls, treatment assignment and randomization, precision, replication, power and sample size calculations, stratification, and ethics. Suitable for graduate students in biostatistics and for research-oriented graduate students in other scientific fields.

Prerequisite: BIOST 511 or equivalent, and one of BIOST 513, BIOST 518, STAT 421, STAT 423, STAT 512, or EPI 512; or permission of instructor. Offered: jointly with STAT 524; Sp.

BIOST 525 Advanced Methods for Global Health III (4) *Brad Wagenaar* Focuses on applying advanced non-randomized methods to quantitatively evaluate global health implementation science questions, including a specific focus on applying difference-in-differences, interrupted time-series, and regression discontinuity designs. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with EPI 556/G H 537/HMS 537; Sp.

BIOST 526 Bayesian Biostatistics (3) Introduction to Bayesian methods for data analysis; Bayesian reasoning, prior elicitation, inference and decision making, and computation applied to biomedical research. Prerequisite: any course in statistics at the 400-level or higher or instructor's permission. Offered: jointly with EPI 540/PHARM 526; Sp.

BIOST 527 Nonparametric Regression and Classification (3) Covers techniques for smoothing and classification including spline models, kernel methods, generalized additive models, and the averaging of multiple models. Describes measures of predictive performance, along with methods for balancing bias and variance. Prerequisite: either STAT 502 and STAT 504 or BIOST 514 and BIOST 515. Offered: jointly with STAT 527; Sp.

BIOST 528 Advanced Methods for Global Health II (4) Presents applications of the cluster-randomized trial design to estimate the impact of interventions for a global health and implementation science audience. Covers trial design and implementation, reviews methods commonly used for analysis.

Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with EPI 553/G H 536/HMS 536; W.

BIOST 529 Sample Survey Techniques (3) Design and implementation of selection and estimation procedures. Emphasis on human populations. Simple, stratified, and cluster sampling; multistage and two-phase procedures; optimal allocation of resources; estimation theory; replicated designs; variance estimation; national samples and census materials. Prerequisite: either STAT 421, STAT 423, STAT 504, QMETH 500, BIOST 511, or BIOST 517, or equivalent; or permission of instructor. Offered: jointly with CS&SS 529/STAT 529.

BIOST 531 Statistical Methods for Analysis with Missing Data (3) Covers statistical methods for the analysis of missing data, including likelihood-based, weighted GEE, multiple imputation, and Bayesian approaches. Uses computational tools such as EM algorithm and Gibbs' sampler. Covers both ignorable and non-ignorable missing-data mechanisms as well as cross-sectional and longitudinal study designs. Primarily uses data arising from epidemiologic studies. Offered: jointly with EPI 531.

BIOST 532 Research Ethics in the Data Sciences (2) *E. Sheppard* Exposes students to ethical issues in the conduct of biomedical research, particularly the computation, interpretation, and communication of statistics. Provides the knowledge and resources needed to practice statistics ethically in this domain. Helps students formulate justified responses to ethical challenges, and nurtures a sense of professional responsibility to take action. Credit/no-credit only. Offered: Sp, even years.

BIOST 533 Theory of Linear Models (3) Examines model structure; least squares estimation; Gauss-Markov theorem; central limit theorems for linear regression; weighted and generalized least squares; fixed and random effects; analysis of variance; blocking and stratification; and applications in experimental design. Prerequisite: STAT 421 or STAT 423 or BIOST 515; and STAT 513; and a course in matrix algebra. Offered: jointly with STAT 533; Sp.

BIOST 534 Statistical Computing (3) Introduction to scientific computing. Includes programming tools, modern programming methodologies, (modularization, object oriented design), design of data structures and algorithms, numerical computing and graphics. Uses C++ for several substantial scientific programming projects. Prerequisite: experience with programming in a high level language. Offered: jointly with STAT 534; Sp.

BIOST 536 Categorical Data Analysis in Epidemiology (4) Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic and health sciences data using multiplicative models. Experience at interpretation; familiarity with available software programs gained by analysis of bona fide data and critiques of published analyses appearing in literature. Prerequisite: BIOST 515; EPI 513 and either BIOST 513 or BIOST 518; or permission of instructor. Offered: jointly with EPI 536; A.

BIOST 537 Survival Data Analysis in Epidemiology (4) Introduction to multivariate analysis of survival data using multiplicative models. Application to epidemiologic and health sciences studies. Familiarity with interpretation and available software computer programs gained by analysis of bona fide sets of data and critiques of published analyses appearing in the literature. Prerequisite: BIOST 536 or EPI 536. Offered: jointly with EPI 537; W.

BIOST 540 Longitudinal and Multilevel Data Analysis (3) Introduction to regression modeling of longitudinal and clustered data from epidemiology and health sciences. Interpretation and familiarity with software gained by analysis of data and critiques of published analyses. Prerequisite: either BIOST 513, BIOST 515, BIOST 518, BIOST 536, or permission of instructor. Offered: Sp.

BIOST 544 Introduction to Biomedical Data Science (3/4) Provides an introduction to biomedical data science with an emphasis on statistical perspectives, inducing the process of collecting, organizing, and integrating information toward extracting knowledge from data in public health, biology, and medicine. Prerequisite: either BIOST 511 or equivalent; either BIOST 509 or equivalent; or permission of instructor. Offered: A.

BIOST 545 Biostatistical Methods for Big Omics Data (3) This "hands-on" course introduces statistical methods for high-dimensional omics data, as well as the R programming language and the Bioconductor project as tools to extract, query, integrate, visualize, and analyze real world omics data sets. Prerequisite: BIOST 512, 514, or 517. Offered: jointly with GENOME 545/PHG 545.

BIOST 546 Machine Learning for Biomedical and Public Health Big Data (3) Provides an introduction to statistical learning for biomedical and public health data. Intended for graduate students in SPH/SOM. Prerequisite: BIOST 511 or BIOST 512 and familiarity with R. Offered: W.

BIOST 550 Statistical Genetics I: Mendelian Traits (3) Mendelian genetic traits. Population genetics; Hardy-Weinberg, allelic variation, subdivision. Likelihood inference, information and power; latent variables and EM algorithm. Pedigree relationships and gene identity. Meiosis and recombination. Linkage detection. Multipoint linkage analysis. Prerequisite: STAT 390 and STAT 394, or permission of instructor. Offered: jointly with STAT 550; Sp.

BIOST 551 Statistical Genetics II: Quantitative Traits (3) Statistical basis for describing variation in quantitative traits. Decomposition of trait variation into components representing genes, environment and gene-environment interaction. Methods of mapping and characterizing quantitative trait loci. Prerequisite: STAT/BIOST 550; STAT 423 or BIOST 515; or permission of instructor. Offered: jointly with STAT 551; A.

BIOST 552 Statistical Genetics III: Design and Analysis (3) Overview of probability models, inheritance models, penetrance. Association and linkage. The lod score method. Affected sib method. Fitting complex inheritance models. Design mapping studies; multipoint, disequilibrium, and fine-scale mapping. Ascertainment. Prerequisite: STAT/BIOST 551; GENOME 371; or permission of instructor. Offered: jointly with STAT 552; W.

BIOST 555 Statistical Methods for Spatial Epidemiology (3) Motivates the need for, and describes methods for the analysis of spatially indexed epidemiological data. Covers four major topics: clustering and cluster detection, disease mapping, spatial regression, and an introduction to

geographical information systems. Considers both point-references and spatially aggregated data. Offered: jointly with EPI 555/G H 534.

BIOST 556 Introduction to Statistics and Probability

(5) Overview of probability; conditional probability and independence; Bayes Theorem; discrete and continuous random variables including jointly distributed; key distributions including the normal and its spin offs; properties of expectation and variance; conditional expectation; covariance and correlation; Central Limit Theorem; law of large numbers; Parameter Estimation. Offered: jointly with DATA 556/STAT 556; A.

BIOST 557 Applied Statistics and Experimental

Design (5) Inferential statistical methods for discrete and continuous random variables including tests for difference in means and proportions; linear and logistic regression; causation versus correlation; confounding; resampling methods; study design. Prerequisite: STAT/BIOST/DATA 556 or instructor's permission. Offered: jointly with DATA 557/STAT 557; W.

BIOST 558 Statistical Machine Learning for Data

Scientists (5) Bias-variance trade-off; training versus test error; overfitting; cross-validation; subset selection methods; regularized approaches for linear/logistic regression: ridge and lasso; non-parametric regression: trees, bagging, random forests; local regression and splines; generalized additive models; support vector machines; k-means and hierarchical clustering; principal components analysis. Prerequisite: STAT/BIOST/DATA 557, or permission of instructor. Offered: jointly with DATA 558/STAT 558; Sp.

BIOST 561 Computational Skills for Biostatistics I

(1/2) Provides an introduction to statistical computing with R. Emphasizes good programming techniques useful in statistical analysis. Prerequisite: biostatistics and statistics graduate student. Credit/no-credit only. Offered: A.

BIOST 562 Computational Skills for Biostatistics II

(1) Provides an introduction to statistical computing with R. Emphasizes good programming techniques useful in statistical analysis. Prerequisite: either BIOST 561 or permission of instructor. Credit/no-credit only.

BIOST 563 Computing and Research (2) Provides an introduction to statistical computing with R. Emphasizes good programming techniques useful in statistical analysis. Prerequisite: either BIOST 562 or permission of instructor. Credit/no-credit only.

BIOST 565 Statistical Evaluation of Biomarkers (3)

Covers evaluation of biomarkers for diagnosis; decision-theoretic assessment tools; measures of the incremental value of a new biomarker; evaluation of risk prediction models; evaluation of biomarkers for prognosis or for guiding therapy; statistical learning for developing a diagnostic/prognostic score; and clinical trial designs for biomarker guided decisions. Prerequisite: BIOST 515; either BIOST 518 or both BIOST 512 and BIOST 513; or equivalent.

BIOST 570 Advanced Regression Methods for Independent Data (3)

Covers linear models, generalized linear and non-linear regression, and models. Includes interpretation of parameters, including collapsibility and non-collapsibility, estimating equations; likelihood; sandwich estimations; the bootstrap; Bayesian inference: prior specification, hypothesis testing, and computation; comparison of approaches; and diagnostics. Prerequisite: STAT 512 and STAT 513;BIOST/STAT 533 or STAT 421/STAT 502 and STAT 423/STAT 504; a course in matrix algebra. Offered: jointly with STAT 570; A.

BIOST 571 Advanced Regression Methods for Dependent Data (3)

Covers longitudinal data models, generalized linear and non-linear mixed models; marginal versus conditional models; generalized estimating equations, likelihood-based inference, REML, BLUP, and computation of integrals; Bayesian inference: Markov chain Monte Carlo; covariance models, including models for split plot designs; comparison of approaches; and diagnostics. Prerequisite: BIOST570/STAT 570. Offered: jointly with STAT 571; W.

BIOST 572 Advanced Regression Methods: Project

(3) Student presentations and discussion on selected methodological research articles focusing on regression modeling. Prerequisite: STAT 571. Offered: jointly with STAT 572; Sp.

BIOST 576 Statistical Methods for Survival Data (3)

Statistical methods for censored survival data arising from follow-up studies on human or animal

populations. Parametric and nonparametric methods, Kaplan-Meier survival curve estimator, comparison of survival curves, log-rank test, regression models including the Cox proportional hazards model, competing risks. Prerequisite: STAT 581 and either BIOST 515, STAT 473, or equivalent. Offered: jointly with STAT 576.

BIOST 578 Special Topics in Advanced Biostatistics (*, max. 30) Advanced-level topics in biostatistics offered by regular and visiting faculty. Prerequisite: permission of instructor. Offered: jointly with STAT 578; AWSpS.

BIOST 579 Data Analysis and Reporting (2/3, max. 12) Analysis of real data to answer scientific questions. Common data-analytic problems. Sensible approaches to complex data. Graphical and tabular presentation of results. Writing reports for scientific journals, research collaborators, consulting clients. Graduate standing in statistics or biostatistics. Credit/no-credit only. Offered: jointly with STAT 579; SpS.

BIOST 580 Seminar in Biostatistics (*, max. 30) Presentation and discussion of special topics and research results in biostatistics. Speakers include resident faculty, visiting scientists, and advanced graduate students. Offered: AWSp.

BIOST 581 Statistical Genetics Seminar (1, max. 30) Presentations and discussion of special topics and research results in statistical genetics. Students, postdocs, and faculty present their work and papers from the literature. Credit/no-credit only. Offered: AWSp.

BIOST 582 Student Seminar (1, max. 30) Student seminar series for collaboration, exchange of ideas, and exposure to different stages of performing independent research. Encourages both students and faculty to give presentations including RA work, extended class projects, master's theses, dissertation progress, data analysis, practice talks, and journal articles. Credit/no-credit only. Offered: AWSp.

BIOST 588 Special Topics in Biostatistical Practice (1-10, max. 30) Selected topics in biostatistical practice.

BIOST 590 Biostatistical Consulting (3, max. 6) Training in consulting on the biostatistical aspect of

research problems arising in the biomedical field. Students, under the supervision of a faculty member, participate in discussions with investigators leading to the design and/or the analysis of a quantitative investigation of a problem. With experience, independent associations of student and research worker are encouraged, with subsequent review by faculty of resulting design and analysis. Prerequisite: permission of instructor. Offered: AWSpS.

BIOST 595 Biostatistics Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how biostatistics is applied in a public health setting and in the formation of public health policy. Prerequisite: BIOST 514; BIOST 515; BIOST 536; BIOST 537.

BIOST 596 Biostatistics Capstone I - Project Planning (3) Project sponsors introduce students to health data analytics challenges. Students form collaborative teams, each of which writes, presents and revises a project proposal that outlines the approach and methods the group plans to use. Prerequisite: BIOST 504; BIOST 514; BIOST 515; BIOST 522; BIOST 523; BIOST 561; and BIOST 579, or permission of instructor. Credit/no-credit only. Offered: A.

BIOST 597 Biostatistics Capstone II - Project Implementation (3) Student teams implement their project proposals. At the end of the course, teams share their results in oral and written form, and prepare materials for individual portfolios. Prerequisite: BIOST 596, or permission of instructor. Credit/no-credit only. Offered: W.

BIOST 598 Techniques of Statistical Consulting (1) Seminar series covering technical and non-technical aspects of statistical consulting, including skills for effective communication with clients, report writing, statistical tips and rules of thumb, issues in survey sampling, and issues in working as a statistical consultant in academic, industrial, and private-practice settings. Prerequisite: entry code. Offered: jointly with STAT 598; ASp.

BIOST 600 Independent Study or Research (*-) Offered: AWSpS.

BIOST 700 Master's Thesis (*-) Offered: AWSpS.

BIOST 800 Doctoral Dissertation (*-) Offered: AWSps.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES

ENV H 105 Toxic Tales: Building Skills for Academic Success through the Study of Poisons (2) *T. MAR* Designed to help first-year undergraduate students develop the study skills necessary for success through an exploration of the environmental health sciences and toxicology. Through a series of lectures, readings, case studies, group discussions, and student presentations, students are introduced to, master, and demonstrate a variety of learning strategies. Offered: Sp.

ENV H 111 Exploring Environment and Health Connections (3) *I&S/NW* Introduction to environmental health concepts. Examines current events to illustrate and better appreciate the relationship between environment and health and to explore whether an environmental condition is or is not an important threat to health. Emphasizes the roles of environmental scientists and related professionals. Offered: AW.

ENV H 205 Environmental Health in Media (3) *I&S* Explores how the perspective of filmmakers and documentaries can influence the public's interpretation of environmental health issues, and examines the science and cultural norms that support both sides of the argument. Offered: Sp.

ENV H 220 Global Environmental Change and Public Health (3) *I&S Kristie L Ebi* Humans are the primary drivers of global environmental changes that are changing the planet on the scale of geological forces. Students will be introduced to these changes and their consequences for human health and well-being, with a focus on climate change and its consequences. Offered: jointly with G H 220.

ENV H 305 Environmental Poisons and Public Health (3) *I&S/NW* Introduces concepts and tools that help students think critically about how environmental toxicants can impact human health. Covers basic principles and core concepts from toxicology, epidemiology, exposure assessment, risk assessment and risk management through a case-based approach that focuses on a selection of

representative toxicants of current public health relevance. Offered: A.

ENV H 306 Health and Sustainability (3) *I&S/NW, DIV H. Frumkin* Focuses on the intersection of human health and environmental sustainability. Introduces core concepts of sustainability (for health sciences students) and public health (for environmental studies students) and explores the intersections of health and sustainability in specific domains including energy, transportation, the built environment, food systems, and chemicals. Emphasizes a systems thinking approach to formulating solutions. Prerequisite: any of the following: BIOL 118, BIOL 180, CHEM 120, CHEM 142, or CHEM 145. Offered: Sp.

ENV H 310 Green Chemicals, Green Products, Green Processes: Crafting a Less Toxic World (3) *I&S/NW D. KALMAN* Presents green chemistry in the context of social impact and public health. Focuses on the relationship between the science and application of chemistry, and the conditions of life that affect everyone's health, particularly in the developed world. Prerequisite: CHEM 142 or CHEM 120; recommended: either CHEM 220 or CHEM 237; either one ENV H or SPH course.

ENV H 311 Introduction to Environmental Health (3) *I&S/NW* Relationship of people to their environment, how it affects their physical well-being and what they can do to influence the quality of the environment and to enhance the protection of their health. Emphasis on environmental factors involved in transmission of communicable diseases and hazards due to exposure to chemical and physical materials in our environment. Offered: ASp.

ENV H 320 Introduction to Technical Communication in Environmental Health (5) Written and oral communication for environmental health professionals. Principles of effective writing for technical articles, proposals, and reports with attention to structure, clarity, style, and language usage. Students learn to translate complex technical information for broader audiences. Offered: W.

ENV H 405 Toxic Chemicals and Human Health (3) Examines the basic principles of toxicology and the effects of chemicals on human health. Includes mechanisms; dose/response relationships; toxicity testing, disposition in the body; modifiers of

response; chemicals and cancer; birth defects; exposures in the home, workplace, and environment; and risk assessment and government regulation. Prerequisite: minimum grade of 2.0 in BIOL 220; and a minimum grade of 2.0 in either CHEM 220, CHEM 224, CHEM 238, or CHEM 336. Offered: Sp.

ENV H 406 Disasters and Public Health (3) I&S/NW

Introduces students to the public health and environmental health consequences of common domestic disasters, and the role of public health agencies and practitioners. Students will describe and evaluate the public health community's role in preparing for and responding to disasters through case studies, discussions, debates, course lectures and readings. Offered: A.

ENV H 409 Microbiome and Environmental Health (3) NW

Introduces the current science of microbiome impacts on environmental public health. Defines human, animal, and environmental microbiomes, describes the methods used to characterize these microbiomes, and discusses the impact of microbiomes on the health of human and animal populations. Factors that have been suggested to modulate microbial populations, host-microbe interactions, and the dynamics of microbiome populations are also examined. Offered: Sp.

ENV H 417 Case Studies in Children's Environmental Health Disparities (3) DIV

Introduces students to the ways in which children are disproportionately affected by environmental health hazards. Through a series of engaging case studies, student learn the core scientific concepts of children's environmental health while exploring the social, cultural, regulatory, political, and economic factors that lead to children's health disparities. Offered: Sp.

ENV H 418 Understanding and Managing the Health Risks of Climate Change (3) *Kristie L Ebi*

The health risks of climate change are multiple and range across the public health space. Addresses current and projected health risks of climate change and the policies and measures to manage these risks as the climate continues to change. Offered: jointly with G H 418; W.

ENV H 426 Leadership in Public Health I (1) I&S, DIV

Designed for students who are serving on the School

of Public Health Dean's Advisory Council of Students (DACs) . Focuses on development of personal leadership skills and acumen. Credit/no-credit only. Offered: A.

ENV H 427 Leadership in Public Health II (1) I&S, DIV

Designed for students who are serving on the School of Public Health Dean's Advisory Council of Students (DACs) . Focuses on leading others in academic settings. Credit/no-credit only. Offered: W.

ENV H 428 Leadership in Public Health III (1) I&S, DIV

Designed for students who are serving on the School of Public Health Dean's Advisory Council of Students (DACs) . Focuses on leading others in practice/community settings. Credit/no-credit only. Offered: Sp.

ENV H 431 Environmental and Occupational Sampling and Analysis I (3) NW

Laboratory and lecture on sampling. Field and laboratory analysis of chemical and physical agents found in the occupational and ambient environments. Prerequisite: CHEM 162 ; PHYS 114 ; and ENV H 311, may be taken concurrently. Offered: A.

ENV H 432 Chemical Sampling and Analysis (5) NW

Laboratory and lecture on chemical sampling and analysis. Field and laboratory analysis of chemical and physical agents found in the occupational and ambient environments. Prerequisite: CHEM 152 Offered: Sp.

ENV H 433 Microbiological Sampling and Analysis (5) NW

Laboratory and lecture on microbiological sampling and analysis. Field and laboratory analysis of microbiological agents found in the occupational and ambient environments (water, food and air) . Prerequisite: MICROM 301 or MICROM 410; and MICROM 302 or MICROM 402. Offered: W.

ENV H 439 One Health: Human and Animal Health in a Changing Environment (3) I&S/NW *P. RABINOWITZ*

Case based exploration of the One Health concept, connecting human, animal, and environmental health. Topics include emerging zoonotic infectious diseases transmitted between humans and animals, animals as sentinels of environmental hazards, the human-animal bond, and the comparison of spontaneous diseases between human and animals. Includes two optional field trips. Prerequisite: BIOL 180. Offered: Sp.

ENV H 440 Water, Wastewater, and Health (3)

Review of water supply, water quality, and water/wastewater treatment as they relate to human health. Includes water law and regulations, source water protection, basic treatment technologies for water and waste, chemical and microbial contaminants, and recreational water. Offered: A.

ENV H 441 Food Protection (3) Study of identification and characteristics of chemicals and biological agents implicated in foodborne disease outbreaks and conditions or circumstances by which food contamination occurs. Examination of food protection activities conducted by local and state government at the retail level. Prerequisite: either CHEM 120, CHEM 142, MICROM 301, or MICROM 410. Offered: W.

ENV H 442 Zoonotic Diseases and Their Control (3)

Examines the transmission and control of zoonotic and vector-borne diseases of public health importance in the United States and globally. Pays attention to identification, surveillance, and control methods. Prerequisite: minimum grade of 2.0 in BIOL 220. Offered: W.

ENV H 443 Housing and Health (3) I&S/NW C.

TRESER Explores healthy and safe homes as a crucial element in public health. Review of federal, state and local approaches to housing-related programs under the banner of healthy homes. Students completing this course will understand the relationship between housing and human health and well-being. Offered: A.

ENV H 444 Antibiotic Resistant Bacteria/Genes Impact on the Environment and Public Health (4)

Marilyn C Roberts Explores how the global use and abuse of antibiotics has profound consequences on the health of humans, animals, and the environment. Addresses issues of antibiotic resistant bacteria and genes through an interdisciplinary "One Health" approach that integrates human, animal, and environmental health. Offered: A.

ENV H 445 Solid Waste Management (3)

Examination of the public health, environmental, economic, and materials conservation aspects of solid wastes management; amounts and sources of solid wastes, waste reduction and recycling, methods of storage, transportation and disposal,

integrated waste management, identification of present problems and future needs. Offered: Sp.

ENV H 446 Hazardous Waste and Public Health (3)

Characterization of hazardous wastes and introduction to pertinent federal and state regulations. Discussion of exposure pathways and description of management options at pre-generation, pre-release, and post-release stages. Emphasis on public health significance. Supplemented with case studies. Prerequisite: CHEM 152 or CHEM 220; and MATH 124 or Q SCI 291. Offered: W.

ENV H 447 Environmental Change and Infectious Disease (3) G. CANGELOSI

Uses multidisciplinary approach to address the impacts of environmental change (including climate change) on infectious disease. Concepts include categories of environmental change; infectious disease emergence/re-emergence; environmental aspects of infectious disease exposure, acquisition, and progression; pathogen growth/survival in the environment; historical and societal perspectives; surveillance; and strategies for control. Offered: Sp.

ENV H 448 Community Air Pollution (3)

Offers a comprehensive overview of community air pollution including: air pollution sources, chemistry, and meteorology; human health and environmental effects; global warming; air quality standards, monitoring, control, and management; indoor air; and local air quality management. Offered: Sp.

ENV H 451 Ecology of Environmentally Transmitted Microbiological Hazards (3)

Focuses on the transmission of infectious microorganisms by air, food, water, and other environmental media. Provides an introduction to environmentally transmitted pathogens, and discusses factors affecting their environmental fate, transport, and persistence. Offered: A.

ENV H 452 Detection and Control of Environmentally Transmitted Microbiological Hazards (3)

Focuses on the detection and control of infectious microorganisms in air, food, water, and other environmental media. Provides a discussion on sample collection, processing, and detection for infectious microorganisms. Provides coverage of engineered controls and

disinfection/decontamination processes for infectious microorganisms. Offered: W.

ENV H 453 Industrial Hygiene (3) Introduction to the principles and scientific foundation of industrial hygiene. Examines the anticipation, recognition, evaluation, and control of work place hazards to health and safety. Focuses on the first three functions, but includes some consideration of control methods. Offered: A.

ENV H 460 Occupational Safety Management (3) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Offered: Sp.

ENV H 461 Air-Pollution Control (4) Fundamental concepts of air pollution Control including emission sources, atmospheric dispersion, ambient concentrations, and emission standards, with emphasis on processes and equipment for controlling emissions. Offered: jointly with CEE 490; ASp.

ENV H 462 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, students receive an OSHA 510 30-hour Construction Safety and Health certification. Offered: W.

ENV H 465 Geographic Information Systems (GIS) in Public Health (3) NW/I&S Applications of Geographic Information Systems (GIS) in public health. Practical experience using the principles, methods, and techniques of spatial analysis to solve practical public health problems within a variety of sub-disciplines, focusing on environmental health, but also exploring infectious diseases, health services and community health. Spatial data representation and management, visualization of spatial data, and exploratory analyses. Offered: A.

ENV H 472 Environmental Risk and Society (3) I&S Examines scientific determinations of environmental risks and explores how such determinations are

evaluated by affected communities and society. Employs risk analysis to integrate technical knowledge in hazard identification and exposure assessment to provide a more rational basis for environmental policies. Role of public participation in risk-based decision making discussed. Offered: A.

ENV H 473 Environmental Health Policy and Practice (4) I&S Explores how environmental health problems are controlled in the United States. Examines both the policies and practices of environmental health. Looks at how various government programs are established, organized, and operated to prevent or control hazards in the community. Also examines the legal and regulatory framework. Offered: A.

ENV H 480 Undergraduate Seminar (1, max. 6) Covers career exploration and planning within the environmental health major through presentation of current environmental and occupational health issues. Offered: A.

ENV H 482 Environmental Health Internship (2-15, max. 15) Assignment to an environmental health or environmental protection agency for supervised observation and experience in environmental health technology, program planning, and utilization of community resources. Prerequisite: minimum grade of 2.5 in ENV H 311. Credit/no-credit only. Offered: AWSpS.

ENV H 490 Selected Topics in Environmental Health (1-6, max. 20) In-depth study of a current environmental health topic. Offered: Sp.

ENV H 497 Environmental Health Special Electives (*, max. 35) Offered: Sp.

ENV H 499 Undergraduate Research (*, max. 35) Individual research on a specific topic in environmental health upon which specific conclusions, judgments, or evaluation can be made or upon which facts can be presented. Offered: AWSpS.

ENV H 501 Foundations of Environmental and Occupational Health (4) Covers the foundational environmental and occupational public health knowledge domains. Provides a comprehensive overview of an environmental and occupational public health framework and a One Health systems

model for assessing and managing environmental health risks on a local and global scale. Offered: A.

ENV H 502 Assessing and Managing Risks from Human Exposure to Environmental Contaminants (4)

Exposure science provides quantitative data needed to inform risk assessments and apply regulatory standards to a wide range of hazards. Introduces techniques such as hazard identification, dose response estimation, fate and transport modeling, statistical exposure and dose estimation, exposure biomarkers and toxicological risk characterization as applied in both occupational and community environments. Offered: W.

ENV H 503 Adverse Health Effects of Environmental and Occupational Toxicants (4)

Principles governing the effects of toxicants on health, including: acute, sub-acute and chronic toxicity; dose response modeling; derivation of potency; response modifiers; adverse health effects including cancer, birth defects and damage to major organ systems; regulation of toxicants in the home, workplace and general environment. Focus on human health impacts of toxicants in a public health context. For non-toxicology majors. Offered: Sp.

ENV H 506 Disasters and Public Health (3) I&S/NW

Introduces students to the public health and environmental health consequences of common domestic disasters, and the role of public health agencies and practitioners. Students will describe and evaluate the public health community's role in preparing for and responding to disasters through case studies, discussions, debates, course lectures and readings. Offered: A.

ENV H 509 Microbiome and Environmental Health (3)

Introduces the current science of microbiome impacts on environmental public health. Defines human, animal, and environmental microbiomes, describes the methods used to characterize these microbiomes, and discusses the impact of microbiomes on the health of human and animal populations. Factors that have been suggested to modulate microbial populations, host-microbe interactions, and the dynamics of microbiome populations are also examined. Offered: Sp.

ENV H 510 Global Environmental and Occupational Health (4)

Provides an overview of environmental and occupational health, with major focus on

developing countries. Examines a variety of environmental hazards and influential factors, interactions with human health and well-being, and relevance to public health. Considers workplace, community, home, regional, and global problems. Offered: W.

ENV H 511 Environmental and Occupational Health (4-) J. HESS

Provides a graduate-level overview of the multidisciplinary field of environmental and occupational health. Environmental, occupational, and nutritional problems in different settings (e. g. the workplace, community, and home) and at varying scaled (local, regional, and global) are considered, with special emphasis on considerations related to food systems and nutrition. Offered: Sp.

ENV H 512 Environmental and Occupational Health for Public Health Practitioners (3)

Introduces students in professional degree programs in Public Health to basic concepts from environmental and occupational health sciences, to the methods used to study the links between the environment and health, to the health impacts of various environmental exposures, and to the environmental public health approach to controlling or managing risks and promoting health. Offered: W.

ENV H 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) K. THUMMEL

Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with PCEUT 513/PHG 513; W.

ENV H 514 Fundamentals of Toxicology (3)

Covers major fundamentals and core areas of toxicology, including dose response, absorption, distribution, metabolism, and excretion of toxicants, toxicity testing, interpretation of toxicological data; and biochemical, cellular, and physiological mechanisms by which chemicals produce toxic responses. Also explores mechanisms and fate of chemical interaction with biological systems. Prerequisite: BIOL 212, BIOC 405, or permission of instructor. Offered: A.

ENV H 515 Organ System Toxicology (3) T.

KAVANAGH Focuses on organ system toxicology. Emphasizes the pathophysiology of toxicant-induced organ injury, including adaptive responses to toxicant exposure, inflammation, and tissue repair pathways. Prerequisite: ENV H 514 or permission of instructor. Offered: W.

ENV H 516 Toxic Agents: Effects and Mechanisms (3)

Focuses on the toxic effects and the underlying mechanisms of the principal classes of toxicants: pesticides, metals, solvents, air pollutants, persistent organic pollutants, radiation, as well as on food safety and occupational/clinical/eco toxicology. Prerequisite: ENV H 515 or permission of instructor. Offered: Sp.

ENV H 517 Children's Environmental Health (3)

Discussion of environmental health issues as they pertain to children's health. Topics include historical perspective of public health research and policies directed at protecting children's health and emerging scientific and public health issues such as the risks and benefits of seafood consumption during pregnancy; use of pesticides on food and in the home; air pollution and childhood asthma, and childhood injuries and the built environment. Offered: Sp.

ENV H 518 Understanding and Managing the Health Risks of Climate Change (3)

Kristie L Ebi The health risks of climate change are multiple and range across the public health space. Addresses current and projected health risks of climate change and the policies and measures to manage these risks as the climate continues to change. Offered: jointly with G H 518; W.

ENV H 520 Advanced Technical Communication in Public Health (3)

Covers written and oral communication for environmental health and public health professionals, with particular emphasis on three main areas: conveying information more effectively to technical audiences, translating that information for general audiences in the public arena, and crafting effective commentary relating to topics of professional interest.

ENV H 521 Effective Communication Strategies for Environmental Public Health Professionals (2)

Introduces students to the science of and best practices in science communication. Covers how and

why to use narrative structure, how to identify and emphasize important messages, how to influence behavioral change, identifying common mistakes in messaging, and how to interact with the media. Prepares students to present at conferences, interact with the media, engage with diverse communities, and write high impact papers and competitive grants. Credit/no-credit only. Offered: Sp.

ENV H 526 Leadership in Public Health I (1)

Designed for students who are serving on the School of Public Health Dean's Advisory Council of Students (DACs) . Focuses on development of personal leadership skills and acumen. Credit/no-credit only. Offered: A.

ENV H 527 Leadership in Public Health II (1)

Designed for students who are serving on the School of Public Health Dean's Advisory Council of Students (DACs) . Focuses on leading others in academic settings. Credit/no-credit only. Offered: W.

ENV H 528 Leadership in Public Health III (1)

Designed for students who are serving on the School of Public Health Dean's Advisory Council of Students (DACs) . Focuses on leading others in practice/community settings. Credit/no-credit only. Offered: Sp.

ENV H 530 Research Proposal Preparation for Biological Sciences (3)

Provides first-hand experience for doctoral students in the biological sciences on proposal writing and the review process. Focuses on hypothesis-driven, laboratory benchwork based research following the NIH pre-doctoral fellowship format, and aims to prepare students for their pre-doctoral fellowship submissions and general qualifying exams. Offered: A.

ENV H 531 Neurotoxicology (3)

Advanced discussions of the principles and methodological approaches to neurotoxicology (including behavioral toxicology) , classes of neurotoxic agents, types and mechanisms of neurotoxic effects, as well as the role of neurotoxicology in toxicology and public health. Prerequisite: ENV H 514, ENV H 515, ENV H 516 or ENV H 405 or permission of instructor. Offered: W, even years.

ENV H 532 Reproductive and Developmental Toxicology (3)

Investigates chemicals that can induce

adverse reproductive and developmental outcomes. Discussion topics include identification and characterization of specific classes of toxic agents, mechanisms of action of these agents at the molecular and cellular level, and risk assessment and regulatory issues. Prerequisite: ENV H 514 and ENV H 515 or ENV H 405 or permission of instructor. Offered: W, odd years.

ENV H 533 Molecular Toxicology (3) Advanced discussion of molecular mechanisms whereby chemical and biological agents produce their harmful effects on biological tissues. Topics include the role of xenobiotic biotransformation enzyme expression in chemical susceptibility, toxicogenomics, chemical-induced oxidative stress, alternative models, species differences, and dietary anti-carcinogens. Prerequisite: prior coursework in toxicology and biochemistry, or permission of instructor. Offered: Sp, odd years.

ENV H 534 Biochemical Toxicology of the Puget Sound (3) Advanced discussion of effects of pollutants on aquatic organisms at the molecular, biochemical, and physiological levels, and in the context of Puget Sound case studies. Topics include assessing toxicant-induced cell injury in aquatic organisms, biotransformation and detoxification pathways, toxicogenomics, assessing chemical diseases in fish, biomarkers, and zebrafish models. Prerequisite: prior coursework in toxicology and biochemistry or permission of instructor. Offered: W, even years.

ENV H 536 Health Impact Assessment (2) Examines the use of Health Impact Assessment as a public health tool for informing decision-makers about the potential health impacts of proposed projects and policies. Students learn the steps for conducting HIAs, review case studies, and conduct an HIA of a current local proposed project. Offered: jointly with URBDP 536.

ENV H 538 Public Health and the Built Environment (2) Examines how the design of communities and land use and transportation decision have positive and adverse effects on health. Considers built environment impacts on physical activity, obesity, air quality, injuries, mental health, social capital, and environmental justice; and explores interventions to promote healthy community design. Offered: jointly with URBDP 538.

ENV H 539 One Health: Human and Animal Health in a Changing Environment (3) *P. RABINOWITZ* Case based exploration of the One Health concept, connecting human, animal, and environmental health. Topics include emerging zoonotic infectious diseases transmitted between humans and animals, animals as sentinels of environmental hazards, the human-animal bond, and the comparison of spontaneous diseases between human and animals. Includes two optional field trips. Offered: Sp.

ENV H 541 Ecology of Environmentally Transmitted Microbial Hazards (3) Focuses on the transmission of infectious microorganisms by air, food, water, and other environmental media. Provides an introduction to environmentally transmitted pathogens, and discusses factors affecting their environmental fate, transport, and persistence. Offered: A.

ENV H 542 Detection and Control of Environmentally Transmitted Microbial Hazards (3) Focuses on the detection and control of infectious microorganisms in air, food, water, and other environmental media. Provides a discussion on sample collection, processing, and diction for infectious microorganisms. Provides coverage of engineered controls and disinfection/decontamination processes for infectious organisms. Offered: W.

ENV H 543 Quantitative Microbial Risk Assessment (3) Focuses on the principles of quantitative risk assessment as applied to infectious microorganisms. Covers hazard identification, exposure assessment, health effects assessment, risk characterization, and risk communication. Offered: Sp, even years.

ENV H 544 Antibiotic Resistant Bacteria/Genes Impact on the Environment and Public Health (4) *M. ROBERTS* Explores how the global use and abuse of antibiotics has profound consequences on the health of humans, animals, and the environment. Addresses issues of antibiotic resistant bacteria and genes through an interdisciplinary "One Health" approach that integrates human, animal, and environmental health. Prerequisite: either EPI 320, BIOL 220, or MICROM 301. Offered: A.

ENV H 545 Water, Wastewater, and Health (4) Review of water supply, water quality, and water/wastewater treatment as they relate to

human health. Includes water law and regulations, source water protection, basic treatment technologies for water and waste, chemical and microbial contaminants, and recreational water. Offered: A.

ENV H 546 Hazardous Waste and Public Health (3)

Characterization of hazardous wastes and introduction to pertinent federal and state regulations. Discussion of exposure pathways and description of management options at pre-generation, pre-release, and post-release stages. Emphasis on public health significance. Supplemented with case studies. Offered: W.

ENV H 547 Environmental Change and Infectious Disease (3)

G. CANGELOSI Uses multidisciplinary approach to address the impacts of environmental change (including climate change) on infectious disease. Concepts include categories of environmental change; infectious disease emergence/re-emergence; environmental aspects of infectious disease exposure, acquisition, and progression; pathogen growth/survival in the environment; historical and societal perspectives; surveillance; and strategies for control. Offered: Sp.

ENV H 548 Community Air Pollution (3) Offers a comprehensive overview of community air pollution including: air pollution sources, chemistry, and meteorology; human health and environmental effects; global warming; air quality standards, monitoring, control, and management; indoor air; and local air quality management. Prerequisite: SPH graduate student or permission. Offered: Sp.

ENV H 549 Research Methods in Human Factors (3)

Includes fundamental guidelines for survey design, controlled experiments, quasi-experimental, and observational studies. Focus on safety, productivity, functionality, and usability. Review of journal articles on research methods and design issues, given functional, psychological, physiological, and environmental constraints. Recommended: introductory class in human factors. Offered: jointly with IND E 549; Sp.

ENV H 550 Occupational and Environmental Disease

(3/4) *J. SPECTOR* A case-based introduction to occupational and environmental diseases, focusing on disease epidemiology, pathophysiology, diagnostic testing basics, and aspects of population

management such as disease surveillance, policy development, and health protection programs. A four credit option offered to clinically-oriented students additionally covers diagnostic test interpretation, differential diagnosis, and clinical management. Offered: Sp.

ENV H 552 Environmental Chemistry of Pollution (4)

Chemical and physical processes determining distribution and fate of chemical hazards, detection of low levels of hazardous compounds, and environmental evaluation and prediction. Fundamental chemical concepts and measurable properties of individual compounds to interpret and relate measurements. Prerequisite: admission to graduate program or permission of instructor. Offered: W.

ENV H 553 Environmental Exposure Monitoring Methods (4)

Provides an in-depth understanding of current monitoring methods for occupational, residential, and community exposures to hazardous chemical agents. Examines the technical basis for sampling strategies and sampling and analytical methods for chemicals in air, water, food, and soil, and for biological markers of exposure and effect in humans and other biota. Prerequisite: ENV H 453 or permission of instructor. Offered: W.

ENV H 554 Biological Monitoring for Chemical Exposure (2)

Advanced seminar on biological monitoring for assessment of chemical exposure and health risks from environmental agents. Considers applications and interpretation of results from analysis of biological specimens taken from persons exposed to chemicals in the work place and the general environment. Prerequisite: ENV H 551 or permission of instructor. Credit/no-credit only. Offered: Sp, odd years.

ENV H 555 Instrumental Methods for Industrial Hygiene Measurement: Laboratory (3)

Utilizes typical instrumental techniques and analytical methods for the evaluation of potential occupational exposures. Prerequisite: ENV H 453 and ENV H 553 or permission of instructor. Offered: Sp.

ENV H 556 Quantitative Exposure Assessment (3)

Offers statistical skills and examples to conduct analysis of occupational and environmental exposure data in order to understand the nature of airborne exposures in the environment, and their

interpretation for human health. Focuses on reading and discussion of primary exposure assessment literature and statistical analysis and interpretation of real datasets. Prerequisite: either BIOST 508, BIOST 511, or BIOST 517. Offered: W, odd years.

ENV H 557 Exposure Controls (3/4) Presents engineering concepts for selecting exposure controls for chemical, physical, and biological agents. Topics include regulatory mandates, hazard rating strategies, protective clothing, respiratory protection, chemical safety management, building ventilation, local exhaust ventilation, chemical and biohazards controls, airflow measurements, and ventilation troubleshooting. Offered: W.

ENV H 559 Applied Occupational Health and Safety (3) Application of occupational safety and health principles. Student teams perform evaluations, assess production methods/processes and exposures, health and safety procedures and programs, and develop engineering and administrative controls. Students perform on a consulting project with a local company including budgeting, project reporting, and presentation. Offered: jointly with IND E 567/NSG 505; Sp, even years.

ENV H 560 Occupational Safety Management (4) Explores industrial organization and methods of integrating safety and industrial hygiene programs with industrial operations. Investigates philosophic issues related to industrial safety and health such as responsibility for safety, dependency on safe practice, and hierarchy of prevention. Contains numerous case problems and student involvement opportunities. Offered: jointly with NSG 506; Sp.

ENV H 562 Technical Aspects of Occupational Safety (3) Reviews federal OSHA (Occupational Safety and Health Administration) and state WISHA (Washington Industrial Safety and Health Act) standards. Explores the impact of these regulations on industry, particularly construction. Upon completion of the course, student receive an OSHA 510 30-hour Construction Safety and Health certificate. Offered: jointly with NSG 507; W.

ENV H 564 Recognition of Health and Safety Problems in Industry (2) Develops skills in occupational health and safety hazard recognition in a variety of important Northwest industries. Focuses

on process understanding and hazard recognition skills during walk-through inspections of several local facilities, stressing a multidisciplinary approach. Offered: jointly with IND E 564; A.

ENV H 565 Geographic Information Systems (GIS) in Public Health (3) Applications of Geographic Information Systems (GIS) in public health. Practical experience using the principles, methods, and techniques of spatial analysis to solve practical public health problems within a variety of sub-disciplines, focusing on environmental health, but also exploring infectious diseases, health services and community health. Spatial data representation and management, visualization of spatial data, and exploratory analyses. Offered: A.

ENV H 566 Introduction to Ergonomics (3) Basic principles of ergonomics in work environment applied to problems of worker and management. Topics include measurement of physical work capacity, problems of fatigue and heat stress, applied biomechanics, worker-machine interactions and communication, design of displays and controls. Prerequisite: basic human physiology or permission of instructor. Offered: jointly with IND E 566/NSG 508; W.

ENV H 569 Occupational Biomechanics (4) Lectures and laboratories address human occupational biomechanical and physiological limits and measurement, analysis, and modeling techniques that are used by ergonomists for design of safe, healthful, and productive physical work. Prerequisite: ENV H 566 or permission of instructor. Offered: jointly with IND E 569; Sp, even years.

ENV H 570 Occupational and Environmental Epidemiology (3) Research in occupational and environmental determinants of disease. Defining exposed populations, characterizing exposure levels, estimating disease risks relative to exposure. Cohort, case-control, cross-sectional designs for various health outcomes. Applications to exposure standard setting and risk assessment. Prerequisite: EPI 511 or EPI 512, EPI 513 or permission of instructor. Offered: jointly with EPI 570.

ENV H 571 Neuroepidemiology and Environmental Risk Factors (3) *Walter A Kukull* Focuses on neurologic diseases and etiology. Presentation of descriptive epidemiology, clinical features, and risk

factors, including stroke, Parkinson's disease, Alzheimer's disease, multiple sclerosis, and other disorders. Discussion of NIH grantsmanship. Guest experts present some topics. Psychiatric disorders e.g. schizophrenia, autism spectrum disorders, and depression will not be discussed. Offered: jointly with EPI 571.

ENV H 572 Environmental Risk and Society (3)

Examines environmental health risk assessments and explores how such assessments are viewed by affected communities. Reviews scientific risk assessment methods, risk perception, risk communication, and public participation processes. Examines the influence of advocacy and special-interest publications on risk assessment debates. Offered: A.

ENV H 573 Methods and Issues in Using Biological Measurements in Epidemiologic Research (3)

Schwartz Introduction to use of measurements from biological specimens in epidemiologic studies. Prepares epidemiology and laboratory science students for conduct of interdisciplinary human studies. Evaluation of biomarkers, preliminary studies, methodologic issues, quality control. Brief review of molecular biology. Applications and current literature discussed. Prerequisite: EPI 511 or EPI 512. Offered: jointly with EPI 573.

ENV H 574 Probabilistic Exposure Analysis (3)

Examination of probabilistic (in contrast to deterministic) approaches to prediction of human exposure to environmental contaminants including explicit separation of population variability from uncertainty due to ignorance. Discussion of data needs, pitfalls, policy ramifications, and current state of development and regulatory acceptance. Examples from real world. Student project required. Offered: Sp, odd years.

ENV H 576 Clinical Occupational Medicine (2)

For clinicians in training, comprehensive overview of occupational disease principles, occupational history-taking, and the provider's role in workers' compensation. Epidemiologic evidence and pathophysiologic basis for occupational diseases reviewed, emphasizing organ system approach to diagnosis and management. Prerequisite: occupational medicine or preventive medicine residents/fellows, nursing students, or permission of instructor. Offered: S.

ENV H 577 Risk Assessment for Environmental Health Hazards (4)

Examines context, methodologies, data, uncertainties, and institutional arrangements for risk assessment. Qualitative and quantitative approaches to identification, characterization, and control of environmental hazards to health emphasized through didactic and case studies. Offered: jointly with CEWA 560/PUBPOL 589; A.

ENV H 580 Environmental and Occupational Health Sciences Seminar (1, max. 21)

Presentation of current environmental and occupational health research and issues. Credit/no-credit only. Offered: AWSp.

ENV H 581 Environmental Health Reading (1)

Critical reading of selected basic and applied research publications on environmental health problems and programs.

ENV H 583 Thesis Research Proposal Preparation (1)

Includes reviewing components of research proposals and practicing writing and developing effective aims, hypotheses, background materials, and analytic strategies for writing theses and presenting at scientific meetings. Offered: Sp.

ENV H 584 Environmental Health Policy and Practice (4)

Explores how environmental health problems are controlled in the United States by examining the policies and practices of environmental health. Covers how various government programs are established, organized, and operated to prevent or control hazards in the community, and the legal and regulatory framework behind them. Offered: A.

ENV H 586 Current Issues in Occupational Health at the Human Animal Interface (2, max. 8)

Problem-based seminar about the occupational health issues faced by workers with animal contact, including animal agriculture workers, veterinary workers, wildlife workers, and laboratory animal workers. Anchoring course for trainees in the Occupational Health at the Human Animal Interface (OHHA) training grant. Offered: ASp.

ENV H 590 Selected Topics (1-6, max. 20)

In-depth study of a current environmental health topic.

ENV H 591 Current Topics in Toxicology (2, max. 12)

T. KAVANAGH, Z. XIA Provides in-depth examination of current topics in environmental and occupational toxicology taken from journal articles and seminars. Consists of presentations led by outside speakers, students, post-doctoral fellows, and faculty. Students expected to participate actively in discussion. Assigned weekly readings given according to the schedule of seminar speakers and topics.

ENV H 592 Current topics in Occupational Health Sciences (1/3)

Weekly discussion of current research on a broad range of topics relevant to occupational and environmental health including exposure assessment, occupational epidemiology, occupational hygiene, and control of environmental hazards. Presentations and discussion sessions designed to help students organize and prepare a critical analysis of research findings. Credit/no-credit only. Offered: A.

ENV H 593 Current Topics in Risk Assessment (2, max. 24)

Examines current topics in risk assessment and risk communication with a focus on issues in environmental health. Consists of presentations led by students, postdoctoral fellows, and faculty. Students expected to participate actively in discussion. Offered: AWSp.

ENV H 594 Current Topics in Environmental Health (1, max. 2)

Critical review and discussion of current scientific literature of particular relevance to the Environmental Health program. Primary presentations rotate among faculty and students. Credit/no-credit only. Offered: W.

ENV H 595 Research Rotation (3, max. 9)

Research laboratory rotation for pre-doctoral graduate students. Students commit at least 10 hours per week to a laboratory research project aimed at introducing the student to current methods of laboratory research, and to familiarize the student with specific faculty research interests. Prerequisite: graduate standing and permission of program director.

ENV H 596 Current Issues in Occupational and Environmental Medicine (2, max. 12)

Interdisciplinary seminar on current and emerging topics in the practice of environmental and occupational health. Faculty- and student-led presentations with an interdisciplinary focus,

including occupational hygiene, nursing, and medical issues. Prerequisite: environmental health graduate student, occupational health nursing student, or permission of instructor. Offered: jointly with NURS 580; AWSp.

ENV H 597 Case Studies in Environmental and Occupational Health (1, max. 12)

Discusses clinical cases, recent journal articles, and global environmental health scenarios relevant to the clinical practice of environmental and occupational health. Explores collaborative management of environmental and occupational health-related illnesses and navigation of complex environmental health scenarios through real-world cases and critical analysis of published literature. Offered: AWSp.

ENV H 598 Degree Program Project/Portfolio ([1-9]-, max. 18) Supervised project work on a topic related to student's concentration in graduate study that results in a project paper. Offered: AWSpS.

ENV H 599 Field Studies (2-6, max. 6)

Assignment to an environmental research or service program to develop field research and evaluation skills. Credit/no-credit only. Offered: AWSpS.

ENV H 600 Independent Study or Research (*-)

Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 700 Master's Thesis (*-)

Prerequisite: permission of departmental adviser. Offered: AWSpS.

ENV H 800 Doctoral Dissertation (*-)

Prerequisite: permission of departmental adviser. Credit/no-credit only. Offered: AWSpS.

EPIDEMIOLOGY

EPI 201 Outbreak Investigation and Response (5)

I&S/NW, QSR J. BASEMAN Provides an introduction to infectious disease outbreaks of both domestic and global significance. Students learn about outbreak detection, investigation and response activities and methodologies through a combination of lecture, case studies, homework, and popular media. Offered: Sp.

EPI 220 Sexually Transmitted Infections: Causes and Consequences (5) I&S/NW, QSR L. MANHART

Examines the causes and consequences of sexually transmitted infections (STI). Discusses strategies to prevent STI with a focus on sexual and reproductive health. Explores new advances in STI epidemiology, treatment, and public health control. Offered: A.

EPI 221 Maternal and Child Health-a Population Health Approach (5) NW D. Enquobahrie

Provides a public health perspective of maternal and child health. Includes information on indicators of maternal, infant, and child health; risk factors for pregnancy complications, infant and child morbidity and mortality; and impact of maternal and child health on life course disease risk. Offered: A.

EPI 320 Introduction to Epidemiology (4) NW For the undergraduate student wishing to devote only one quarter to a course in epidemiologic methods. Description of ways in which variation in disease occurrence is documented and how that variation is studied to understand causes of disease. Offered: AWSp.

EPI 330 Analyzing Epidemiologic Data: Basic Methods (4) I&S, QSR Application of concepts to real data using basic epidemiologic analysis methods. Prerequisite: EPI 320; and either BIOST 310, QMETH 201, Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 211, or STAT 311. Offered: Sp.

EPI 360 Exploring the HIV/AIDS Pandemic (5) I&S/NW, QSR Jen Balkus Presents a comprehensive overview of the historical, public health, clinical, and biological aspects of HIV infection. Covers impact of AIDS on community and global health care and prospects for prevention and control. Offered: W.

EPI 410 Computational and Applied Genetic Epidemiology (5) QSR Alison Fohner Advanced topics in genetic epidemiology for undergraduate students, focusing on hands-on introduction to computational analysis of population genetics and individual health data using R programs. Students will investigate how genes and environment interact to cause disease and health-states and to inform public health interventions. Recommended: PHG 301 or prior background in basic genetics and statistics. Offered: jointly with BIOST 401/PHG 401; Sp.

EPI 499 Undergraduate Research (*) Offered: AWSpS.

EPI 502 Physical Activity in Health and Disease (3)

Impact of physical activity on individual and public health. Overview of physiological adaptations to activity, exercise prescription, exercise epidemiology, and prevention of chronic diseases. Public health recommendations for activity in the U.S. population, and the effects of the built environment on activity. Recommended: human physiology. Offered: jointly with NUTR 505.

EPI 505 Preventing Healthcare Associated Infections (1)

Multidisciplinary approach to understanding, measuring, and developing policy to prevent healthcare associated infections. Credit/no-credit only. Offered: jointly with MED 540.

EPI 506 Surveillance Systems and Decision Making in Public Health (2)

This course will introduce students to public health surveillance systems and decision-making based on surveillance data. A range of surveillance system types will be covered (e.g. foodborne illness, newborn screening, lead, emerging infectious diseases). Credit/no-credit only.

EPI 510 Epidemiologic Data Analysis (3) Jeffrey Stanaway

Intended for students planning to take EPI 514. Introduces concepts and programming skills necessary to analyze data sets for case-control and cohort studies. Provides students hands-on experience in using epidemiologic data sets for stratified analyses with Stata and R. Co-requisite: either EPI 511, EPI 512, or PHI 512. Credit/no-credit only. Offered: A.

EPI 511 Introduction to Epidemiology (4)

Epidemiologic methods for non-epidemiology majors. Focuses on research designs and methods to describe distribution and determinants of disease and health events in populations; uses quantitative and biomedical information to infer whether causal relationships exist between potential causes and disease in populations. Offered: A.

EPI 512 Epidemiologic Methods I (4) Ali Rowhani-Rahbar, Amanda I Phipps

Considers principles and methods of epidemiology. Covers measures of disease frequency, descriptive epidemiology, overview of study designs, measures of excess risk, causal inference, screening, measurement error,

misclassification, effect modification, and confounding. First in a two course sequence. Prerequisite: BIOST 511, which may be taken concurrently, or equivalent. Offered: A.

EPI 513 Epidemiologic Methods II (4) *Amanda I Phipps, Ali Rowhani-Rahbar* Considers how epidemiologic studies may be designed to maximize etiologic inference. Covers infectious disease epidemiologic studies, randomized controlled trials, cohort studies, case-control studies, cross-sectional studies, ecological and multilevel studies, and selected topics such as meta-analysis. Second in a two course sequence. Prerequisite: either EPI 512 or PHI 512. Offered: W.

EPI 514 Application of Epidemiologic Methods (5) *Stephen E. Hawes, Alyson Littman* Practical experience in analysis of data. Students analyze data sets currently on file using contemporary epidemiologic methods as taught in EPI 512 and EPI 513. Prerequisite: EPI 510 or experience in statistical programming; EPI 512, EPI 513, and epidemiology major. Offered: Sp.

EPI 515 Advanced Epidemiologic Methods I (3) *Steve Mooney* First in a series of 2 courses. Increases knowledge of epidemiological principles by introducing methodological approaches to handling common problems in epidemiologic research that extend beyond the scope of traditional methods. Prerequisite: EPI 512 and EPI 513 Offered: jointly with BIOST 519.

EPI 516 Advanced Epidemiologic Methods II (4) *Brandon L Guthrie* Second of a series of 2 courses whose objective is to deepen students' knowledge of epidemiological principles by introducing methodological approaches to handling common problems in epidemiologic research that extend beyond the scope of traditional methods. Prerequisite: EPI 515. Offered: jointly with BIOST 520.

EPI 517 Genetic Epidemiology (3) *Sara Lindstroem* Research methods for evaluating genetic influences on disease and risk factors and genetic-environmental interactions. Study designs and statistical methods include twin studies, family studies, population-based association studies, segregation analysis, and linkage analysis.

Prerequisite: EPI 511, BIOST 511, and GENOME 371, or equivalent. Offered: jointly with PHG 511.

EPI 519 Research Methods and Current Topics in Cardiovascular Epidemiology (3) *N. Smith* Overview of epidemiologic research methods applied to current topics in cardiovascular and cardiometabolic health and disease in human populations. Covers pathophysiology; molecular, clinical, behavioral, and social risk factors; burden and disparities across and within populations nationally and globally; and public health interventions. Prerequisite: EPI 511 or EPI 512; BIOST 508, BIOST 511 or BIOST 517; or permission Credit/no-credit only.

EPI 520 Epidemiology of Infectious Diseases (3) *Christine M Khosropour* Focuses on infectious diseases from a public health perspective. Uses domestic and international case studies to apply traditional and contemporary epidemiologic principles and methods to infectious disease research and public health practice. Specific topics include: surveillance, program evaluation, outbreak investigation, transmission dynamics, and mathematical modeling. Prerequisite: either EPI 511, EPI 512, or permission of instructor.

EPI 521 Epidemiology of Maternal and Child Health Problems ([3-4]-) *D. ENQUOBAHRIE* Contributions to understanding and prevention of major maternal and child health problems, including pregnancy outcome, infant and child morbidity and mortality, maternal morbidity and mortality, abnormal child growth and development, and early-life factors in adult health problems. Prerequisite: graduate, medical, or dental school standing and EPI 511 or EPI 512 or permission of instructor. Offered: jointly with HSERV 542.

EPI 522 Reproductive Epidemiology (3) Focuses on female reproductive system conditions and diseases, non-birth pregnancy outcomes, and impact of pregnancy on later health. Presentation of current epidemiologic knowledge and discussion of methodologic issues on topics including the menstrual cycle; contraception; infertility; spontaneous and induced abortion; and uterine and ovarian disease. Prerequisite: either EPI 511, both EPI 512 and EPI 513, or permission of instructor.

EPI 524 Cancer: Epidemiology and Biology (3) *M. MADELEINE* Explores the epidemiology of major

cancers (infection-related, breast, prostate, lung, colon, melanoma) , with an emphasis on milestones in cancer mechanisms (such as tumor viruses, cell cycle, DNA repair, and metastasis) . Integrates knowledge from different fields of cancer research, with guest lectures from experts in epidemiology and cancer biology. Prerequisite: either EPI 511 or EPI 512; either undergraduate biology coursework or instructor permission.

EPI 527 Vaccines (3) *H. Chu* Overview of issues in vaccine development, clinical trials, implementation of vaccination programs, and the role of vaccines in the control of infectious diseases. Emphasizes current issues and real-world challenges in the vaccine field and features critical reading of the literature.

EPI 529 Emerging Infections of International Public Health Importance (3-) Focuses on the nexus between emerging infections and increasing globalization of the world due to the mobility of people and goods. Examines emergent events through risk factors and associated macro changes implicated in their genesis. Reviews microbial evolutionary strategies and factors of emergence. Prerequisite: graduate standing. Offered: jointly with HSERV 536.

EPI 530 AIDS: A Multidisciplinary Approach (2) *Carey Farquhar* Comprehensive overview of the public health, clinical, and laboratory aspects of human immunodeficiency virus (HIV) infection and disease. Topics include the pathogenesis, natural history, and management of HIV infections; the impact of HIV/AIDS on community and global healthcare; and prospects for prevention and control. Credit/no-credit only. Offered: jointly with G H 562/MED 530.

EPI 531 Statistical Methods for Analysis with Missing Data (3) Covers statistical methods for the analysis of missing data, including likelihood-based, weighted GEE, multiple imputation, and Bayesian approaches. Uses computational tools such as EM algorithm and Gibbs' sampler. Covers both ignorable and non-ignorable missing-data mechanisms as well as cross-sectional and longitudinal study designs. Primarily uses data arising from epidemiologic studies. Offered: jointly with BIOST 531.

EPI 532 Epidemiology of Infectious Diseases in Resource-Limited Countries (3) A review of major infectious disease problems of the developing world, including AIDS, malaria, tuberculosis, measles, and diarrhea, with an emphasis on public health control strategies.

EPI 533 Pharmacoepidemiology (3) Overview of pharmacoepidemiology including drug development and approval; application of epidemiologic methods to study drug safety and effectiveness; exploration of the interplay between research and public policy; introduction to resources for information about drugs; introduction to pharmacology principles pertinent to pharmacoepidemiology. Prerequisite: Health Sciences graduate student; either EPI 511 or both EPI 512 and EPI 513. Offered: jointly with PHARM 533.

EPI 535 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with BIOST 516/PHG 519.

EPI 536 Categorical Data Analysis in Epidemiology (4) Summary of univariate categorical data analysis; introduction to multivariate analysis of categorical epidemiologic and health sciences data using multiplicative models. Experience at interpretation; familiarity with available software programs gained by analysis of bona fide data and critiques of published analyses appearing in literature. Prerequisite: BIOST 515; EPI 513 and either BIOST 513 or BIOST 518; or permission of instructor. Offered: jointly with BIOST 536; A.

EPI 537 Survival Data Analysis in Epidemiology (4) Introduction to multivariate analysis of survival data using multiplicative models. Application to epidemiologic and health sciences studies. Familiarity with interpretation and available software computer programs gained by analysis of bona fide sets of data and critiques of published analyses appearing in the literature. Prerequisite: BIOST 536 or EPI 536. Offered: jointly with BIOST 537; W.

EPI 538 Nutritional Epidemiology (3) Application of epidemiological methods to studies of diet, nutrition, and chronic disease. A discussion of current issues and controversies enables students to design studies and read the literature in nutritional epidemiology. Prerequisite: EPI 511 or EPI 512 or instructor permission. Offered: jointly with NUTR 538.

EPI 539 Research and Evaluation Methods in Global Health (3-4) *Caryl Feldacker* Provides an overview of a range of evaluation and research designs used in global health. Students learn practical methodologies to obtain, validate, and analyze information regarding health status, services, and programs. Discusses usefulness, validity, limitation of vital records, health reports, household (and cluster) surveys, and qualitative methods. Offered: jointly with G H 531; Sp.

EPI 540 Bayesian Biostatistics (3) Introduction to Bayesian methods for data analysis; Bayesian reasoning, prior elicitation, inference and decision making, and computation applied to biomedical research. Prerequisite: any course in statistics at the 400-level or higher or instructor's permission. Offered: jointly with BIOST 526/PHARM 526; Sp.

EPI 541 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with BIME 541/HSERV 529/PHARM 529.

EPI 542 Clinical Epidemiology (2) *Weiss* Principles and methods involved in studying the outcome of illness. Prerequisite: EPI 511, or EPI 512 and EPI 513.

EPI 546 Psychiatric Epidemiology (3) *I. Rhew, A. Vander Stoep* Using epidemiological methods to study mental illness. Topics include contributions of mental illness to global disease burden; major population-based studies of mental illness; measurement of psychopathology; culture and mental illness; role of neurodevelopment, genetics,

social and physical environment in etiology of mental disorders; mental health services research. Prerequisite: either EPI 511, EPI 512, HSERV 591, or permission of instructor. Credit/no-credit only. Offered: jointly with PBSCI 546.

EPI 547 Social Determinants of Population Health and Health Disparities (3) Explores the elements and actions of a population health approach, including conceptualizing the determinants of health, synthesizing knowledge about major social determinants, and applying knowledge to improve population health and reduce health disparities. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor. Offered: jointly with HSERV 514.

EPI 548 Research Methods for Social and Contextual Determinants of Health (3) *A. Hajat* Explores study-design, measurement, analytic, and interpretation issues applicable to research on social and contextual determinants of health and health disparities. This lecture/seminar course is offered to graduate students with knowledge of epidemiologic and biostatistical principles who are interested in understanding complex relationships between social/contextual factors and health. Prerequisite: EPI 511 or EPI 512/513; and BIOST 511/512/513 or BIOST 517/518. Credit/no-credit only. Offered: jointly with HSERV 548; W.

EPI 549 HIV/STI Prevention Research Methods (3) *R. Heffron, A. Roxby* Focuses on current research and implementation of HIV/STI prevention including biomedical, behavioral, and public health interventions. Includes analyzing strength of research evidence to support novel interventions, understanding key features of study design, and applying interventions that are most appropriate and feasible for specific settings and populations. Offered: jointly with G H 563.

EPI 553 Advanced Methods for Global Health II (4) Presents applications of the cluster-randomized trial design to estimate the impact of interventions for a global health and implementation science audience. Covers trial design and implementation, reviews methods commonly used for analysis. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540,

CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BIOST 528/G H 536/HMS 536; W.

EPI 554 Introduction to Epidemic Modeling for Infectious Diseases (3) *R. BARNABAS* Covers the basic tools for building and analyzing mathematical models of infectious disease epidemics. Model types include deterministic and stochastic models, compartmental and individual-based models. Laboratory provides hands-on model building experience in Excel, Stella, and R.

EPI 555 Statistical Methods for Spatial Epidemiology (3) Motivates the need for, and describes methods for the analysis of spatially indexed epidemiological data. Covers four major topics: clustering and cluster detection, disease mapping, spatial regression, and an introduction to geographical information systems. Considers both point-references and spatially aggregated data. Offered: jointly with BIOST 555/G H 534.

EPI 556 Advanced Methods for Global Health III (4) *Brad Wagenaar* Focuses on applying advanced non-randomized methods to quantitatively evaluate global health implementation science questions, including a specific focus on applying difference-in-differences, interrupted time-series, and regression discontinuity designs. Assumes prior knowledge of generalized linear models and modern methods to analyze correlated data, including generalized estimating equations (GEE) and random-effects models. Prerequisite: either BIOST 540, CS&SS 560/SOC 560/STAT 560, or permission of instructor; recommended: EPI 512 and EPI 513. Offered: jointly with BIOST 525/G H 537/HMS 537; Sp.

EPI 570 Occupational and Environmental Epidemiology (3) Research in occupational and environmental determinants of disease. Defining exposed populations, characterizing exposure levels, estimating disease risks relative to exposure. Cohort, case-control, cross-sectional designs for various health outcomes. Applications to exposure standard setting and risk assessment. Prerequisite: EPI 511 or EPI 512, EPI 513 or permission of instructor. Offered: jointly with ENV H 570.

EPI 571 Neuroepidemiology and Environmental Risk Factors (3) *Walter A Kukull* Focuses on neurologic

diseases and etiology. Presentation of descriptive epidemiology, clinical features, and risk factors, including stroke, Parkinson's disease, Alzheimer's disease, multiple sclerosis, and other disorders. Discussion of NIH grantsmanship. Guest experts present some topics. Psychiatric disorders e.g. schizophrenia, autism spectrum disorders, and depression will not be discussed. Offered: jointly with ENV H 571.

EPI 573 Methods and Issues in Using Biological Measurements in Epidemiologic Research (3) *Schwartz* Introduction to use of measurements from biological specimens in epidemiologic studies. Prepares epidemiology and laboratory science students for conduct of interdisciplinary human studies. Evaluation of biomarkers, preliminary studies, methodologic issues, quality control. Brief review of molecular biology. Applications and current literature discussed. Prerequisite: EPI 511 or EPI 512. Offered: jointly with ENV H 573.

EPI 582 Design and Analytic Strategies to Enhance the Validity of Epidemiologic Studies (2) *Weiss* Discusses the issues that led to specific methodologic developments during the past 30 years, along with a characterization of these developments and the consequences of their application. Prerequisite: EPI 512 Credit/no-credit only.

EPI 583 Epidemiology Seminar (1, max. 12) Presentation of current epidemiologic research and application of epidemiologic research in the practice of public health. Offered: AWSp.

EPI 584 Doctoral Dissertation Seminar (1, max. 2) *A. FITZPATRICK, N. WEISS* Forum for epidemiology doctoral students to obtain information for doctoral research, including: project ideas; forming a committee; developing a proposal; conducting the project; and presenting results. Prerequisite: EPI 512 and EPI 513, admission to the PhD program, successful completion of the preliminary examination, or second-year status. Credit/no-credit only.

EPI 585 Injury and Violence: A Public Health Approach (3) Focuses on broad concepts including a conceptual model, surveillance, research methods, control and prevention of injuries. Topics include unintentional injuries from motor vehicle crashes,

falls, drowning, sports injuries and intentional injuries from youth violence, intimate partner violence, homicide and suicide.

EPI 586 Responsible Conduct of Research: Global and Local (3) *Alison Drake, Carey Farquhar* Prepares international and U.S. students to develop research proposals; conduct international and domestic field research; and present scholarly work. Credit/no-credit only. Offered: jointly with G H 532; A.

EPI 588 Preparing, Writing, and Critiquing Scientific Research Proposals (2-3) *A. FITZPATRICK, L. KESSLER* Experience in preparing, organizing, and writing research proposals, following NIH and AHRQ guidelines. Includes weekly assignments and didactic exercises, leading to final research proposal. All students participate in mock study section to review and critique proposals. Prerequisite: second-year graduate student (PhD recommended) , or PhD or MD in health-related field. Credit/no-credit only. Offered: jointly with HSERV 578.

EPI 590 Selected Topics in Epidemiology or International Health (1-6, max. 6) Tutorials arranged for a small number of students for in-depth examination of an area of epidemiology or international health, usually of current nature. Seminar format. Prerequisite: EPI 511. Also a special summer format presenting introductory material. May be offered with ENV H 590 and/or HSERV 590. For more information and permission, consult department program adviser.

EPI 591 Current Literature in Epidemiology (1, max. 15) Articles pertaining to epidemiology and related subjects selected from the current literature to be distributed and read by all participants. Faculty members and enrolled students alternate being responsible for conducting sessions and choosing articles to read. Prerequisite: EPI 513. Credit/no-credit only. Offered: AWSp.

EPI 592 Program Seminars (1-6, max. 16) Graduate seminars organized to address specific educational needs of students in various specialized programs within the Department of Epidemiology (i.e., Maternal and Child Health) . Prerequisite: permission of instructor.

EPI 593 Cancer Prevention Research Laboratory (3, max. 24) Research experience for pre- and post-

doctoral students working on cancer prevention projects at the Fred Hutchinson Cancer Research Center. Credit/no-credit only. Offered: AWSpS.

EPI 594 Field Epidemiology: Student Epidemic Action Leaders Team (1-2, max. 8) *J. BASEMAN* Introduces applied epidemiology in public health practice, specifically in areas of outbreak investigation, public health preparedness and response. Includes fieldwork opportunities. Offered: AWSpS.

EPI 595 Epidemiology Master's Practicum (1-6, max. 6) Supervised practice experience providing students an opportunity to learn how epidemiology is applied in a public health setting and in the formulation and application of public health policy. Prerequisite: EPI 512 and BOST 511 or equivalent and permission of instructor. Credit/no-credit only. Offered: AWSpS.

EPI 600 Independent Study or Research (*-) Prerequisite: permission of independent study supervisor. Credit/no-credit only. Offered: AWSpS.

EPI 700 Master's Thesis (*-) Prerequisite: permission of thesis chair. Credit/no-credit only. Offered: AWSpS.

EPI 800 Doctoral Dissertation (*-) Prerequisite: permission of dissertation chair. Credit/no-credit only. Offered: AWSpS.

HEALTH SERVICES

HEALTH INFORMATICS AND HEALTH INFORMATION MANAGEMENT

HIHIM 400 Health Care Language for Health Informatics and Information Management (3) Designed for HIHIM majors to compile a working vocabulary in health care and to explain clinical documentation. Strengthens student competence to read/write/comprehend and speak the language used by health providers/administrators. Employs a variety of tools (reading, writing, listening exercises; electronic health record documents/case studies; mini-lectures on body systems) . Practices written and verbal communication to achieve proficiency. Prerequisite: BIOL 118 and BIOL 119 Offered: A.

HIHIM 405 Introduction to Health Data Analytics (3)

Covers the process of and tools used in evaluating data using analytical and logical reasoning to examine each component of the health data. Offered: jointly with BIOST 405.

HIHIM 407 Foundations for Healthcare Vocabularies

(3) Focuses on health concepts, documentation, healthcare taxonomies, and clinical vocabularies, terminologies, classifications, and nomenclatures required for health data analysis, clinical coding, and clinical systems associated with the electronic health record.

HIHIM 408 Management Concepts with HIM

Applications (4) Covers management principles from a health information management perspective and core management functions of planning, organizing, staffing, delegating, leading, and controlling; theories of management, both traditional and contemporary; leadership concepts in HIM; change management; human resource management; employment law; performance management, and HIM organizational structure.

HIHIM 409 Disease Concepts for Managers (4)

Develops a methodology for understanding and communicating dimensions of disease states as all health state that a person might experience. Presents clear, effective ways to describe the diversity of health conditions and focuses on disease from a health information systems perspective.

HIHIM 410 Foundations in Health Information Management (4)

Focuses on the basic of health information through study of the creation and maintenance of health records, access to and retention of health information, accreditation, licensure and professional standards in acute care hospitals and alternate care facilities.

HIHIM 411 Health Data Management (3) Addresses the governance and management of healthcare data through exploration of data assets and linking the assets to standards and quality.

HIHIM 412 Healthcare Coding (5) Covers healthcare coding principles for International Classification of Diseases (ICD) and Current Procedural Terminology (CPT) code sets used in diagnosis and procedure code assignments for research and reimbursement

by healthcare providers in all settings. Prerequisite: HIHIM 409.

HIHIM 413 Revenue Cycle Management (3) Covers the revenue cycle management of health information administration.

HIHIM 414 ICD, Clinical Documentation and Revenue Management (3)

In depth study of ICD code sets for diagnosis and procedure coding, clinical documentation to support ICD code assignment, and reimbursement methodologies which use the ICD code set to determine payment models.

HIHIM 415 CPT/HCPCS, Clinical Documentation and Revenue Management (5)

In depth study of CPT/HCPCS code sets for procedure coding, clinical documentation to support CPT/HCPCS code assignment, and reimbursement methodologies which use the CPT/HCPCS code sets to determine payment models.

HIHIM 420 Healthcare Computer Systems and Electronic Health Records (5)

Current health information systems and the role of health informatics; technology infrastructure and health informatics standards, electronic health records, definitions, functions, issues, and barriers; hospitals, ambulatory care, home health and long-term care and computer applications. Prerequisite: HIHIM 410; HIHIM 411.

HIHIM 421 Health Information Systems Analysis (5)

Examines lifestyle systems development process and tools, project management and team coordination, analysis of health information systems, and user requirements. Prerequisite: HIHIM 420.

HIHIM 425 Research Design and Statistics for HIHIM (3)

Explores healthcare and research statistics. Addresses hospital statistics, used to calculate usage levels of healthcare resources and outcomes of clinical operations, and research statistics, used to summarize and describe significant characteristics of a data set, and to make inferences about a population based on data collected from a sample. In addition, principles of research are described, including the Institutional Review Board process. Offered: jointly with BIOST 406/STAT 406.

HIHIM 450 Healthcare Delivery and Policy (5)

Organization of healthcare services across delivery

systems - both governmental (federal, state, local) and private. Financing health care services and related policy issues. Competencies and content areas related to public health profession, science, and human health. Offered: A.

HIHIM 454 Finance Concepts for Healthcare Managers (4) Covers financial concepts applied to today's healthcare environment, financial management tools, and budgeting.

HIHIM 455 Leadership and Strategic Management (4) Focuses on leadership and strategic management for enterprise-wide health information and information governance initiatives; evaluates organizational ethics and culture for situations impacting HIM and health informatics; and analyze individual interpersonal skills and professional and personal goals.

HIHIM 456 Quality Improvement in Healthcare (5) Focuses on quality improvement, risk management and utilization management; management of quality improvement systems; use of data systems in quality assurance; health data retrieval, analysis and presentation. Recommended: statistics; medical terminology.

HIHIM 460 Professional Pathways (3) Explores the development of management skills and competencies, and a seminar through site experience in healthcare facilities with campus and clinical faculty. Prerequisite: HIHIM 410

HIHIM 461 Professional Development and Networking (2) Addresses the professional portfolio and mentoring, and preparation for the national credentialing examination for Registered Health Information Administrator (RHIA) .

HIHIM 462 Capstone Project (5) Explores applied management using a formal capstone project in a healthcare setting. Prerequisite: HIHIM 460.

HIHIM 470 Legal Concepts for Health Fields (3) Examines principles of law as applied to the health field, with reference to health information management.

HIHIM 480 HIM Operations and Project Management (5) Provides the tools and experiences

useful for health informatics and information management professionals in the daily functions and activities of a HIM department, and in the controlling the activities of a health care project.

HIHIM 490 Special Topics (1-5, max. 15)

HIHIM 499 Independent Study (1-5, max. 5)

HIHIM 508 Health Information Management systems and Leadership (3) Provides a high level framework of health informatics and health information management practice. Covers practice related systems with emphasis on enterprise information governance, patient record organization, content and structure, and associated enterprise business functions and processes to provide foundation for understanding the practice. Offered: A.

HIHIM 509 Introduction to Health Informatics (3) Healthcare is one of today's most information-intensive industries. Yet healthcare delivery organizations have been slow to adopt advanced health information technology (HIT) . It is imperative that future health care leaders have a deep understanding of and belief in HIT spanning the spectrum of health delivery systems.

HIHIM 510 Enterprise Systems and Electronic Health Records (3) Covers industry drivers, development, compliance framework, and certification of electronic health record systems status and operations addressed through strategic decision making and leadership: data movement among enterprise clinical, business, administrative systems to legal health record; and barrier and benefit assessment within major institutional culture and technology initiative changes. Offered: A.

HIHIM 520 Law, Policy, and Ethics in Health Information (3) Explores the laws, policies, and issues involved in oversight and management of health data and health information systems. Defines the legal health record and the requirements, role, and uses. Covers the legal and ethical framework, issues and concepts, and the role of e-discovery on the emerging health data environment. Offered: W.

HIHIM 524 Health Data Analytics (3) *Ken White* Healthcare organizations generate a large number of clinical performance metrics. Extracted data from

different data systems is used to display relevant metrics in dashboards that are meaningful to senior leadership. Statistical tools may determine if differences in performance are significant and what factors are associated with the differences. Predictive models may then be built and inputs varied to obtain performance improvements. Recommended: beginner Excel skills. Offered: jointly with BIOST 507; Sp.

HIHIM 525 Healthcare Databases and Applications

(3) Provides an overview of data models, architecture platforms, and relational database theory and technology. Covers design and uses of databases in patient record systems, registries and indexes, and health databases, security, privacy and ethical issues, database design, data integrity, field properties, tables, reports, queries, and data retrieval. Offered: Sp.

HIHIM 530 Healthcare Privacy and Security in the e-Environment

(3) Covers the laws, regulations, policies, and practice related to the confidentiality, privacy, and security of health information in an electronic environment. Federal and state laws and regulations require specific performance in the acquisition, use, storage, and maintenance of health information. Examines systems and practices. Offered: Sp.

HIHIM 535 Clinical Vocabularies and Terminologies

(3) Covers clinical terminologies, classifications, and mapping, which provides information on taxonomies and metadata, information objects, and classification theory in organizing information in an electronic system. Includes current initiatives in terminologies and data mapping in electronic health record systems. Offered: S.

HIHIM 540 Consumer Health Informatics

(3) Covers community and consumer health informatics associated with health services provides; electronic health records that address internal and external standards; accreditation and regulatory requirements needed to provide quality care; and health information exchange from policy to implementation. Offered: A.

HIHIM 550 Health Care Information Governance

(3) Covers the conceptualization, design, and management of data initiatives and knowledge needed by the healthcare enterprise. Reviews data

integrity principles and guidelines to determine methodology for evaluation development and management of internal and external information requirements. Offered: W.

HIHIM 552 Healthcare Business Intelligence

(3) Examines business and enterprise data used to inform enterprise healthcare business intelligence and decision making to underpin and meet strategic and operational business goals and objectives. Performance metrics, business data analytics, data mining, predictive modeling, business process modeling, data visualization and other tools used to enable healthcare program and product performance assessment are featured. Offered: A.

HIHIM 555 EHR/Hi Systems Operations and Improvement

(3) Addresses leadership and management of an organization's health information assets that are required as the nation transitions to interoperable health information systems. Offered: A.

HIHIM 556 Healthcare Quality and Technology

(3) Explores the current healthcare environment related to healthcare safety issues. Examines an overview of major health and safety challenges and responses; focusing on the impact of the issues in improving health and safety in healthcare and information resources needed. Offered: Sp.

HIHIM 560 Special Topics in Health Informatics

(3) Presents problem solving opportunities on health industry information issues, strategies and unmet challenges. Topics reflect the current state, progress, and future expectations faced by healthcare and health information managers.

HIHIM 598 Project Management

(3) Focuses on applying leadership readiness at the enterprise level; informatics and information governance challenges; research and project management resources; communication management strategies; and the impact of technology from management oversight to health services delivery. Offers an opportunity to practice a key role of leadership: transforming organizational culture by effective implementation of change. Offered: W.

HIHIM 599 Capstone Project

(3) Provides a practice-based problem solving experience that draws on health informatics and information management;

health industry knowledge; leadership and management strategies; and applies project management skills to design, plan, and implement a management project in healthcare and healthcare related organizations. Offered: S.

HEALTH SERVICES

HSERV 100 Personal and Public Health (3) I&S

Provides an overview of the key components of health and wellness. Presents a balance between individual responsibility and social determinants of public health, emphasizing a holistic preventative model. Incorporates self-assessment and considers the impact of personal, family, social, cultural, and environmental factors on health.

HSERV 204 Communicating about Health: Current Issues and Perspectives (3) Provides an overview of health communication topics and perspectives for students who are interested in pursuing careers in the health industry and those with a research interest in health communication such as caregivers, health care administrators, marketing and public relations professionals, media planners, public health promoters, and educators, researchers and others. Offered: WSp.

HSERV 230 Sleep and Population Health (3)

NW/I&S M. Garrison Examines the role of sleep in population health, including risk factors and short and long-term consequences for inadequate sleep. Expands understanding of sleep science and how sleep can function as not only an outcome, but also as a predictor, mediator, confounder, and effect modifier of health outcomes and disparities. Also explores established and emerging sleep interventions and their potential to improve population health outcomes. Offered: W.

HSERV 290 Special Topics (1-6, max. 12) I&S

Explores current or evolving areas of interest in public health.

HSERV 343 Health Behavior and Health Promotion

(5) Introduction to health behavior change and health promotion. The course will cover theoretical foundations of health behavior and health promotion, as well as how to apply theory and evidence in health promotion practice. It will also

introduce strategies for implementing and evaluating health promotion programs. Offered: A.

HSERV 344 Public Health and Health Systems

Management (5) Introduces public health and health systems management concepts. Students learn key tenets of high-performing public health and healthcare organizations, and environments in which these organizations operate. Examines a variety of health system models, including governmental public health, healthcare delivery systems, accountable communities of health and other collaborative models. Offered: W.

HSERV 345 Community Health Assessment (5)

Introduces role of assessment in planning for community health improvement through health promotion activities. Considers determinants of health; methods to find, collect, and analyze quantitative and qualitative data; interpret findings to describe the health resources, risks, and outcomes; role of assessment in identifying health disparities and patterns of health inequities. Offered: Sp.

HSERV 346 Using Economics to Solve Today's Healthcare Problems (4) I&S

Health economics is a growing field and an important aspect of public policy. Introduces health economics and the tools economists use to analyze current issues in health care. Furthers the understanding of economics and how it is used in current debates. Prerequisite: ECON 200. Offered: jointly with ECON 346; A.

HSERV 415 War and Health (4) I&S A. Hagopian, E.

Kanter Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity). Offered: jointly with G H 415; Sp.

HSERV 475 Perspectives in Medical Anthropology

(5) I&S Introduction to medical anthropology. Explores the relationships among culture, society, and medicine. Examples from Western medicine as well as from other medical systems, incorporating both interpretive and critical approaches. Offered: jointly with ANTH 475.

HSERV 476 Introduction to Applied Ethnographic Methods in Public Health (4) Introduces practical methods of gathering ethnographic data. Students investigate a local culture, including such diverse groups as graffiti artists and dumpster divers.

HSERV 479 Black Lives and Police Violence: Racism and the Public's Health (4) I&S, DIV C. SPIGNER The effects of racism on health are profound and multi-dimensional. Critically analyzes theories of human behavior in relation to epidemiological concepts of race, against the backdrop of the current Black Lives Matter movement in the United States. Offered: Sp.

HSERV 482 The Health of Populations (4) I&S, DIV Explores what makes a population healthy or unhealthy. Examines why the United States is less healthy than all other rich countries, despite being one of the healthiest fifty years ago. Offered: jointly with G H 482.

HSERV 488 Dark Empire: Race, Health, and British Society - Abroad (6) I&S, DIV Explores factors responsible for the well-being and health of black and other racial/ethnic minorities in Britain. Addresses: the National Health Service; ethnic diaspora, anti-immigration laws; urban riots; inequality, and the rise of Muslim fundamentalism and Islamophobia. Conducted in Britain.

HSERV 490 Advanced Topics (1-6, max. 12) I&S Explores current or evolving public health problems. Offered: W.

HSERV 499 Independent Study in Health Services (1-12, max. 12) Individual library or field study project selected in consultation with a faculty adviser.

HSERV 504 Health Promotion and Behavior Change Communication ([1-3]-, max. 3) Overview of the theory and practice of designing, producing, and evaluating public health communication campaigns, including the use of mass media. Develops greater capacity for critical judgment about the use of communication strategies for achieving public health goals.

HSERV 507 Health Communication and Marketing for Health Promotion: Theory and Practice (3) Discusses health communication theories and applications at the individual level (persuasion), interpersonal level (motivational interviewing), and

population level (mass media). Examines marketing principles for health promotion. Develops a health communication campaign for clients. Investigates adaptation frameworks of communication campaign cutting across cultures.

HSERV 508 Dynamics of Community Health Practice (3) Analysis of principles of community health as applied to the delivery of clinical services in order to improve public health, reduce disparities, provide leadership in delivery of care, and synthesize one's clinical role with public health. Examines environmental, social, cultural, and behavioral determinants of health. Includes family, aggregates, and populations. Offered: jointly with NURS 560.

HSERV 509 Public Health and Informatics (3) Introduction to the emerging field of public health informatics. Covers general public health topics as well as key public health informatics issues and applications. Evaluates a public health information system. Prerequisite: either BIME 530 or permission of instructor. Offered: jointly with BIME 533.

HSERV 510 Social and Behavioral Sciences in Health Program Planning and Implementation (3) Provides an overview of three core areas in the social and behavioral sciences of public health practice and research: social determinants of individual and population health, health promotion and disease prevention, and cultural competency and community collaboration. Offered: A.

HSERV 511 Introduction to Health Services and Public Health (3-4) History, organization, and effectiveness of U.S. healthcare and public health systems. Determinants of health, need, and utilization. Public and private financing. Supply and provision of personal and public health services. Managed care. Government and private sector roles. Prerequisite: graduate standing or permission of instructor.

HSERV 512 Health Systems and Policy (3) Students review and examine selected topics from literature. Includes need and access to care; theory and effects of health insurance; private and public insurance programs; managed care; costs/expenditures; availability and organization of health resources; and quality assessment and improvement. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511.

HSERV 513 Health Policy Research (3) Extends students' understanding of the nature of health policy and health policy development in the context of a market-based economy. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor.

HSERV 514 Social Determinants of Population Health and Health Disparities (3) Explores the elements and actions of a population health approach, including conceptualizing the determinants of health, synthesizing knowledge about major social determinants, and applying knowledge to improve population health and reduce health disparities. Enrollment priority for Health Services PhD students. Prerequisite: HSERV 511, permission of instructor. Offered: jointly with EPI 547.

HSERV 515 War and Health (4) *A. Hagopian, E. Kanter* Explores the health consequences of war (injury, infectious diseases, mental health, chronic disease, malnutrition, infrastructure) and the role of health professionals and others in preventing war (advocacy, measurement and application of epidemiology methods, promotion of social equity) . Offered: jointly with G H 515; Sp.

HSERV 516 Introduction to Health Services ([3-4]-) Provides overview of healthcare system, exposes students to current issues and developments affecting organization and delivery of health services, helps students develop ability to frame and analyze questions and issues related to health services. Prerequisite: registration in Extended MPH degree program.

HSERV 517 Qualitative Research Methods: An Introduction (3) Introduction to research skills to discern how and why humans behave relative to their health. Emphasizes planning, design, evaluation, using qualitative research procedures. Students gain an understanding of qualitative research techniques by articulating a phenomenon of interest, identifying a target population, employing proper data collection strategies, and rigorous verifying results. Offered: S.

HSERV 518 Social and Ethical Issues (2-4, max. 4) Presents introduction to ethical issues in public health policy and practice. Additional one credit option focuses on health administration/managed

care. Coursework designed to train students in basic skills of ethical analysis and increase competency in recognizing, researching, and analyzing issues arising in public health and health services delivery.

HSERV 519 Study Design and Causal Inference (1) Increases depth of knowledge about causal inference in impact evaluation. Applies the elements of causal inference to impact study design and statistical analysis, including the concept of statistical conclusion validity, internal validity, construct validity, and external validity. Credit/no-credit only. Offered: A.

HSERV 520 Methods in Applied Community Research ([0-4]-, max. 4) Skills/knowledge necessary to conduct orderly investigation of specific problems in preparation for MPH thesis or project. Includes problem identification, posing research questions, literature review, consideration of theoretical/practical context, choosing study design, data collection, protection of human subjects, and recognizing potential errors. Prerequisite: registration in Extended MPH degree program. Credit/no-credit only.

HSERV 522 Health Program Evaluation ([1-5]-, max. 5) Politics, theory, methods of evaluation, from simple health programs to evaluation of large-scale interventions. Emphasizes experimental and quasi-experimental designs to estimate program impacts, as well as evaluation of program implementation. Case studies drawn from health field illustrate various types of evaluations. Prerequisite: background in introductory statistics.

HSERV 523 Advanced Health Services Research Methods I: Large Public Databases; Big Data (4-5) Introduces the new big data of health services research, health claims, and survey databases. Discusses the promises and pitfalls of the data and models for analyzing the correlates of health care costs and utilization. Prerequisite: either HSERV 511, BOST 511/BOST 512/BOST 513, BOST 517/BOST 518, or EPI 511/EPI 512, and permission of instructor.

HSERV 524 Advanced Health Services Research Methods II: Hierarchical and Incomplete Data (4-5) Introduces advanced biostatistical techniques for analyzing incomplete data in population health research. Examines a wide range of topics including:

missing data and potential outcome framework for causal inference, propensity score and multiple imputation, multilevel random effect linear and logistic models, and empirical Bayes prediction
Prerequisite: either HSERV 523 or permission of instructor.

HSERV 525 Advanced Health Services Research Methods III: Casual Inference Using Observational Data ([4-5]-) Focuses on reviewing statistical methods developed for "micro" (individual-level) data on behavior (choices or exposures) and outcomes in order to make casual inference about the role of a choice or an exposure on outcomes. Prerequisite: either HSERV 523, BIOST 511, BIOST 512, BIOST 513, or permission of instructor.

HSERV 527 Survey Research Methods (4) A. *MOKDAD* Provides students with skills in questionnaire development and survey methods. Students develop a questionnaire and design a survey research proposal on a health-related or social topic. Prerequisite: either HSERV 511/HSERV 513; BIOST 517/BIOST 518; or EPI 512/EPI 513, which may be taken concurrently, or permission of instructor. Students should have a survey project in mind. Offered: jointly with CS&SS 527/G H 533.

HSERV 528 Critically Appraising and Applying Evidence in Healthcare (3) Literature appraisal skills for various articles (therapy effectiveness, diagnostic tests, literature reviews, clinical measurement, prognosis, quality of care, decision analysis, causation/etiology, guidelines, and economic evaluation) . Appraisal of clinical information from literature, strengths/weaknesses of data, analyses, study design/applicability to a current patient's problem. Prerequisite: permission of instructor. Offered: jointly with BIME 540.

HSERV 529 Introduction to Systematic Reviews and Meta-Analysis of Evidence (3) Conceptual understanding of the quantitative methods used to synthesize evidence. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Prerequisite: either introductory level courses in statistics, epidemiology, or biostatistics or permission of instructor. Offered: jointly with BIME 541/EPI 541/PHARM 529.

HSERV 531 COPHP Population Health and Community Development (6) Population Health considers social and other factors that determine health. The course challenges dominate views of health. We compare health in the United States with other countries. In Community Development, we learn asset-based community engagement. Students work directly with community members, advocates, and service organizations to address health issues. Offered: A.

HSERV 533 COPHP Quantitative Methods (6) Acquaints students with methods of epidemiology and biostatistics used in conceptualizing, collecting, analyzing, and interpreting quantitative data on health outcomes and risk factors with quantitative methods for evaluating programs or treatments that address health concerns in populations. Expands skills in communicating quantitative aspects of public health, using writing, tables, and graphs. Offered: W.

HSERV 534 COPHP Health Behavior and Health Promotion and Environmental Health (6) Environmental Health reviews scientific principles utilized in environmental public health and examines the occurrence of diseases resulting from environmental and occupational exposures. Health Behavior and Promotion reviews theory and practice of planning and evaluating public health promotion problems and applying sound judgment when deciding about identification, audience segmentation, and intervention selection. Offered: Sp.

HSERV 536 Emerging Infections of International Public Health Importance (3-) Focuses on the nexus between emerging infections and increasing globalization of the world due to the mobility of people and goods. Examines emergent events through risk factors and associated macro changes implicated in their genesis. Reviews microbial evolutionary strategies and factors of emergence. Prerequisite: graduate standing. Offered: jointly with EPI 529.

HSERV 537 COPHP Health Policy (6) Covers concepts and analytic tools for health policy analysis, development, and advocacy, while exploring factors affecting public health policy, including science and community values. Student write a policy statement for an advocacy organization, teach a lay audience

about an issue, and arrive at policy conclusions based on quantitative data.

HSERV 538 COPHP Evaluation Design and Community Organizing (6) Covers concepts and approaches for program evaluation in public health. Uses one case, including a final assignment requiring students to work as a team to design an evaluation. Organizing synthesizes accumulated skills and knowledge a public health professional uses to work with communities to advance public health. Integrates a broad array of skills to consolidate perspectives of the many players that interact in dynamic community settings. Offered: W.

HSERV 540 COPHP Management and Leadership (6) Explores the principles of leadership and management within the context of public health organizations. Explores the distinction between management and leadership and examines the management functions of planning, organizing, directing, and controlling the use of human and financial resources to accomplish the goals of the organization.

HSERV 541 Topics in Maternal and Child Health I (3-) Provides an overview of the historical and legislative basis for the major MCH health and social service policies and programs. Uses the life-course perspective to examine the social determinants of health and development of women, children, and adolescents. Pays special attention to racial inequities on the health of families.

HSERV 542 Epidemiology of Maternal and Child Health Problems ([3-4]-) D. ENQUOBAHRIE Contributions to understanding and prevention of major maternal and child health problems, including pregnancy outcome, infant and child morbidity and mortality, maternal morbidity and mortality, abnormal child growth and development, and early-life factors in adult health problems. Prerequisite: graduate, medical, or dental school standing and EPI 511 or EPI 512 or permission of instructor. Offered: jointly with EPI 521.

HSERV 544 Maternal and Child Health in Low and Middle Income Countries (3) D. DENNO Emphasizes critical health problems of women and children in developing countries in social, economic, and cultural contexts. Practical approaches to developing MCH programs shared via lecture/discussions,

exercises, and small group work. Students acquire skills in baseline assessment, setting objectives, planning and evaluating interventions, and involving communities. Offered: jointly with G H 544; W.

HSERV 548 Research Methods for Social and Contextual Determinants of Health (3) A. Hajat Explores study-design, measurement, analytic, and interpretation issues applicable to research on social and contextual determinants of health and health disparities. This lecture/seminar course is offered to graduate students with knowledge of epidemiologic and biostatistical principles who are interested in understanding complex relationships between social/contextual factors and health. Prerequisite: EPI 511 or EPI 512/513; and BOST 511/512/513 or BOST 517/518. Credit/no-credit only. Offered: jointly with EPI 548; W.

HSERV 551 Public Health Law (2-4, max. 4) Focuses on the role of law in public health administration and in the increasingly regulated healthcare industry. Provides a foundation in the relevant law for public health officers and healthcare industry administrators. Offered: jointly with LAW H 512; A.

HSERV 552 Health Policy Development (3-) Uses primarily case- and problem-based learning and small-group projects to focus on factors that influence public policy development concerning health services in the U.S., with some global health content. Examines the roles of science and stakeholder interests in the structure of and changes to a nation's health system. Offered: A.

HSERV 555 Health Disparities (2) Focuses on health disparities and health inequity in the United States. Course will cover both theoretical and empirical approaches to understanding patterns of health across social groups, with a focus on designing research and public health programs to addressing health disparities. Offered: W.

HSERV 556 Tobacco-Related Health Disparities (1/2) Integrates multiple disciplinary perspectives to address the pressing issue of disproportionate tobacco use and related diseases among marginalized populations, including those defined by socioeconomic status, race/ethnicity, and sexual orientation. Explores links between, and intervention strategies for, smoking and mental

illness, social stress, acculturation processes, and genetics.

HSERV 558 Tobacco and Public Health: Prevention, Treatment, Policy, and Social Change (1-3, max. 3)

Integrates multiple disciplinary perspectives to provide a comprehensive overview of the history, health effects, policy, prevention, and treatment of tobacco use. Utilizes readings, stimulates discussions, and hosts renowned experts to provide students with the foundation to understand and address the local, national, and global epidemic of tobacco use.

HSERV 559 Public Policy and the Public's Health ([0-3]-, max. 3)

Watts Explores the factors that affect health policy and the interaction of policy, markets, and the legal system through public health examples. Examines how science and community values intertwine in policy development, and how context influences the structure of and changes to a nation's health system.

HSERV 560 Adult Learning: Theory and Practice (3)

Designed to help students apply Popular Education theory and practice to preparation, presentation, and evaluation of health education. Students design, teach, and evaluate four separate teaching sessions (one between each seminar) using theory and principles of Popular Education learned to date. Prerequisite: graduate standing or permission of instructor.

HSERV 561 Introduction to Health Promotion Planning and Evaluation ([0-3]-, max. 3)

Links practice to theory between the planning, implementation, and evaluation of health promotion intervention and behavior change theory. Uses PRECEDE/PROCEED planning model by Green and Kreuter as framework.

HSERV 567 Strategic Leadership of Public Health Systems ([2/3]-, max. 5)

Prepares students to become public health leaders as envisioned in the Public Health 3.0 framework. Emphasizes leadership and communication skills for public health leaders to spearhead health promotion efforts in partnership with stakeholders such as health care clinicians and leaders in widely diverse sectors, and being deeply engaged in addressing social determinants of health and advancing health equity. Offered: WSp.

HSERV 568 Health Economics (3) Applies microeconomics principles and models to understand the nature of health care markets and systems. Includes a wide range of health sector activities and policy issues by applying rigorous economic analytical tools coupled with review of key econometric and empirical analysis. Prerequisite: introductory coursework in microeconomic principles and basic statistics. Offered: W.

HSERV 571 Cultural Competency for Public Health Practice ([1-4]-, max. 4)

Application of cultural competency to clinical practice, healthcare management, and health services research when working with culturally diverse populations. Methodological orientation is qualitative, historical, and ethnographic. Lecture, narratives, discussions, guest presentations, film, video. Interdisciplinary perspective appropriate for graduate students in public health, health administration, nursing, social work, and anthropology.

HSERV 572 Planning, Advocacy and Leadership Skills (4)

An opportunity to master basic concepts, analytic tools, and skills for health program and policy planning, advocacy, evaluation and leadership skills under close mentor-ship of faculty and teaching staff in an interdisciplinary and applied setting. Engages MPH and other graduate students with real-world public health problems, partners with local community health organizations, builds skills and competencies in a number of topics and processes. Offered: Sp.

HSERV 575 Cancer Prevention and Control (3)

Provides an overview of research in cancer prevention and control for students training for a career in this field. Students identify major areas of prevention and control research, conduct an analysis of data in cancer prevention and control, and learn to prepare a research project grant. Prerequisite: permission of instructor.

HSERV 576 Health, Culture, and Community (3)

Chrisman A multidisciplinary approach to the development of leadership in personal and organizational cultural competence in community-based participatory research. Emphasizes understanding collaborative assessment, planning, and evaluation of health promotion and disease prevention programs to address the social

determinants of health at the population level.
Offered: jointly with NURS 557; W.

HSERV 577 Health Behavior and Preventative Medicine ([2/4]-, max. 4) Focuses on psychosocial and cultural factors related to health, preventive health behavior, illness perception, and behavior; theoretical basis for prevention; the interaction of consumers and providers in the delivery of healthcare services; and clinic and community based applications.

HSERV 578 Preparing, Writing, and Critiquing Scientific Research Proposals (2-3) A. FITZPATRICK, L. KESSLER Experience in preparing, organizing, and writing research proposals, following NIH and AHRQ guidelines. Includes weekly assignments and didactic exercises, leading to final research proposal. All students participate in mock study section to review and critique proposals. Prerequisite: second-year graduate student (PhD recommended) , or PhD or MD in health-related field. Credit/no-credit only. Offered: jointly with EPI 588.

HSERV 579 Structural Racism and Public Health (1) Introduces the concept of institutional racism and ways structural racism undermines public health. Discusses history of racism and intersections between structural racism and other systems of oppression. Explores relationship to racism and ways internalized racism acts as a barrier to health equity. Considers public health practitioners' role in addressing racism. Credit/no-credit only. Offered: jointly with PHI 579; AWSp.

HSERV 580 Foundations of Health Behavior and Social Determinants of Health (2) Provides an overview of core areas of health behavior and social determinates of health, including: social determinants of health; population health and health disparities; community engagement; and working effectively in diverse communities. Offered: A.

HSERV 581 Strategies of Health Promotion (4) Assessment of health promotion planning, implementation, and evaluation strategies for their strengths, weaknesses, and effectiveness. Students critique strategies to modify behavioral factors that influence lifestyles of individuals, including decisions influencing their reciprocal relationship with environmental factors affecting the health of

individuals, organizations, and communities.
Prerequisite: HSERV 511.

HSERV 583 Economic Evaluation in Health and Medicine (3) J. Babigumira, L. Steuten Methods and techniques for evaluating costs and cost-effectiveness of health, medical, and pharmaceutical interventions. Emphasis on economic evaluation, decision analysis, and modeling techniques for resource allocation and decision making. Applications to technology assessment, health policy, clinical practice, and resource allocation. Prerequisite: permission of instructor. Offered: jointly with PHARM 534.

HSERV 584 Assessing Outcomes in Health and Medicine (3) Concepts and methods for developing and using patient-reported outcomes in health and medicine. Emphasis on patient self-reported health status and quality of life. Qualitative research and psychometric methods applied to health outcomes assessment and all applications. Prerequisite: permission of instructor. Instructors: Devine, Edwards Offered: jointly with PHARM 535; W.

HSERV 585 Seminar in Medical Geography (5, max. 10) Intensive research seminar dealing with new and promising research themes in medical geography and public health. Offered: jointly with GEOG 581.

HSERV 586 Medical Geography (3) Geography of disease, consideration in health systems planning. Analysis of distributions, diffusion models, migration studies. Application of distance, optimal location models to health systems planning; emergency medical services; distribution of health professionals; cultural variations in health behavior. Prerequisite: familiarity with social science research; health-related issues. Offered: jointly with GEOG 580.

HSERV 587 Health Policy Economics (3) Applies economic theory to selected topics in healthcare, including information, risk and insurance, industry organization, government regulation, and public health issues. Emphasizes policy implications of these applications. Offered: jointly with ECON 547.

HSERV 589 Community Based Participatory Research and Health (3) Begins with a research topic of importance to the community with the aim of combining knowledge and action for social change. Provides an understanding of principles and

strategies, and appreciate of its advantages and limitations, and skills for participating effectively.

HSERV 590 Selected Topics in Health Services (*-, max. 30) Explores current or evolving public health problems. Prerequisite: permission of instructor.

HSERV 591 Community Oriented Public Health Practice (1-6, max. 42) Seven-quarter integrated sequence covers public health aspects of community assessment, biostatistics, epidemiology, health promotion/disease prevention, behavior change, environmental health, community development, policy development and analysis, and program planning and management. It is taught in a problem-based format. Prerequisite: enrollment in the COPHP program.

HSERV 592 Program Seminars (1-6, max. 20) Graduate seminars organized to address specific educational needs of students in various fellowships, residencies, and other specialized programs within the Department of Health Sciences (i.e., maternal and child health, international health, preventive medicine, social and behavioral sciences). Prerequisite: permission of instructor.

HSERV 595 Practicum/Field Work in Community Medicine ([1-12]-, max. 12) Experience in variable time blocks in community health activities in agencies delivering and planning health services. Sites include neighborhood clinics, health planning bodies, medical practice settings, public health agencies, special problem clinics and facilities, environmental programs and services. Prerequisite: master's student in health services and permission of instructor.

HSERV 598 Executive Master of Public Health Capstone ([1-10]-, max. 25) Students work with a community, public or private health-related agency to (a) identify and contribute to the solution of a community health problem, and (b) summarize, present, and evaluate this effort. Includes survey of literature, development of approach, and written paper on conclusions. Prerequisite: registration in extended MPH degree program and satisfactory completion of the first summer's coursework.

HSERV 599 Capstone Project (*-) Applies and extends the public health skills learned to other settings, develops new skills, expands a professional

network, and provides specialized knowledge that can be used to advance the student's future career and effectiveness in public health.

HSERV 600 Independent Study or Research (*-) Prerequisite: permission of instructor.

HSERV 700 Master's Thesis (*-) Prerequisite: permission of instructor.

HSERV 800 Doctoral Dissertation (*-)

HEALTH SERVICES MANAGEMENT

HSMGMT 500 Risk and Insurance Seminar (3) Presents the principles and practices of health insurance and risk. Emphasizes healthcare financing arrangements in the United States, including both private and government-sponsored (public) programs. Discusses comparisons with other developed countries.

HSMGMT 501 Epidemiology/Critical Evidence Appraisal (2-4, max. 4) Basic knowledge about methods used in epidemiology and their application to critical appraisal of clinical, epidemiological, and health administration literature for evidence-based management of healthcare organizations, improvement of delivery of health services, and for creating health policies.

HSMGMT 503 Population Health Management (2) Provides health administration students with an introduction to managing the health of defined populations. Examples include: the population within the catchment area of a hospital, the members of a health maintenance organization, the persons served by an accountable care organization, and the population employed in a workplace.

HSMGMT 505 Managing Healthcare Organizations (2-4) Introduces healthcare organizations and organizational management concepts. Develops a broad perspective by integrating conceptual, strategic, and systemic frameworks using four knowledge themes; the management role, organizational theory, management economics, and theory and practice of systemic organizational change within overall strategic management and systemic contexts.

HSMGMT 506 Introduction to Clinical Care (2)

Introduces the world of clinical care. Discovers through readings, discussion, and direct experience, the people and processes of clinical care and how they relate to healthcare administration.

HSMGMT 507 Group Dynamics and Team Leadership ([1-4]-, max. 4)

Focuses on theories and observations of team behaviors and techniques with emphasis on the individual as a team member; introduces team management/leadership models, theories, and skills. Students develop self-awareness, knowledge, and skills associated with building interpersonal relationships. Credit/no-credit only.

HSMGMT 510 Organizational Behavior (3-4)

Application of organizational behavior theory to explore the factors that affect behavior, performance, and job satisfaction of people working in organizations. Provides a body of knowledge and skills needed to successfully manage and lead healthcare organizations. Focuses on "best practices" for managing individuals, teams, and organizations.

HSMGMT 513 Seminar in Healthcare Finance (3-4)

Focuses on case studies and modern theory in managerial finance relevant to health services. Students prepare group presentations and individual case study analyses of health services finance problems. Builds on accounting and finance principles.

HSMGMT 514 Health Economics (3/4)

Uses economic concepts and tools to examine range of issues pertaining to healthcare, delivery of healthcare services. Includes demand analysis, production of health services, expenditure growth, markets for hospital and physician services, externalities. Emphasis on using economics to examine issues and solve problems. Prior economics courses not required.

HSMGMT 515 Advanced Economics - Decision Analysis ([1-3]-, max. 3)

Develops skills to become informed consumers of economic evaluations of health programs. Develops skills necessary to conduct economic analyses of public health and health service programs.

HSMGMT 518 Ethical Issues in Health Services (2-3)

Presents an introduction to ethical issues that arise

in management of health services organizations. Covers clinical and organizational ethics.

HSMGMT 523 Informatics in Healthcare Management (3)

Medical informatics concerns the representation, organization, and manipulation of biomedical information and knowledge. Exposes students to a high-level understanding of informatics and its healthcare applications. Discussion of successes and failures in implementing information technology focuses on gaining leadership and management knowledge that embraces informatics.

HSMGMT 531 Systems Modeling Frameworks for Healthcare (3)

Focuses on methodologies to support strategic decision making in a systems context, considering the material, patients, providers, information, and resource dependencies of most healthcare organizations. Includes optimization models and basic alternative evaluation methods for the applications of capacity planning, policy investigation, and design and planning decisions. Offered: W.

HSMGMT 532 Quantitative Methods for Health Systems Design and Analysis (3)

Focuses on the method and application of operations research in health systems design and analysis. Covers a variety of topics in healthcare management and decision making. Healthcare decision making touches areas in resource allocation, scheduling, staffing, capacity planning, cost-effectiveness analysis, and assessment of medical technologies. Offered: W.

HSMGMT 545 Capstone Integrative Seminar ([1-4]-, max. 4)

Designed to assist students in the transition from theory to practice. Emphasis on sharpening analytical and intuitive leadership practices through the use of interactive case studies, team building exercises, and field projects. Prerequisite: second-year MHA students.

HSMGMT 550 Medical Practice Quality Measurement and Management (3)

Provides an overview of healthcare industry themes regarding cost, access, and quality. Concentrates on definition, measurement, and improvement of quality. Shows how quality measurements and specifications; the concept of value, guidelines, and pathway; and the evidence-based medicine movement interconnect. Utilizes examples of cutting edge programs to apply and promote improvement.

HSMGMT 552 Health Administration and Business Law (4) Studies numerous interrelated legal topics pertinent to healthcare organizations, typically including contracts, medical malpractice, legal and ethical obligations to provide healthcare, privileging, medical decision-making, tax-exemption, antitrust, fraud, and health information management. Encourages discussion of how the law supports or hinders current efforts to improve healthcare delivery systems.

HSMGMT 553 Healthcare Marketing Strategy (2) Provides an understanding of wholesale and retail markets in the healthcare sector. Examines market research and the application of marketing strategies and tactics to support an organization's core strategies. Applies the concepts of market segmentation, targeting, and positioning to decisions about design, distribution, pricing, and promotion of health services.

HSMGMT 554 Entrepreneurship (2) Focuses on developing students' resourcefulness, know how, and decision support skills needed to critically identify, evaluate, and develop new healthcare ventures. Topics include anatomy of startup ventures; new venture creation and innovation, business plan development and assessment, financing, marketing, and growth strategies; and corporate venturing.

HSMGMT 560 Management Practice in Healthcare and Public Health Organizations (1-4, max. 4) Introduction to leadership and management, focusing on effective strategies for creating a productive work environment. Organizational structure and strategy introduced. Case studies and other problem-solving methods, using health services applications, are utilized in order to apply theoretical material. Prerequisite: graduate student.

HSMGMT 562 Strategic Management of Healthcare Organizations (3-5) Management of goals, strategy, and structure in healthcare organizations. Design of external relationships and internal structures., strategy-formulation, decision-making, and change. Integration of professional, social, and organizational values. Theory, student and practitioner experience, and case studies used to enhance repertoire of management approaches and skills. Prerequisite: HSERV 511 and HSMGMT 560 or equivalent.

HSMGMT 563 Personnel Management for Health Professionals ([1-3]-, max. 3) Designed for midcareer health services professionals developing strategies and skills in human resource management. Focuses on policy and practice issues important to handling day-to-day personnel problems-selection, promotion, performance appraisal, discipline, grievances. Prerequisite: registration in Extended MPH degree program or permission of instructor; non-business majors.

HSMGMT 566 Decision Support Models for Health Services (3) Management science and approaches developed as applied to problems in public health. Emphasizes conceptual understanding of processes/application of systematic and rational approach to managerial problem solving, including cost-benefit, cost effectiveness analysis. Prerequisite: BIOST 502 and BIOST 503, or BIOST 511; registration in Extended MPH degree program; non-business majors.

HSMGMT 567 Clinical Systems Management (3) Introduces the management of clinical systems and their underlying cultures. Focuses on quality improvement, change management, governance, and clinical leadership development of physician-administrator partnerships in complex medical care settings.

HSMGMT 568 Quality Process Management (3-4) Provides a thorough understanding of the main concepts of operations management with a focus on total quality management techniques, along with key integrative frameworks that provide the foundation for successful applications of these approaches, as applied to healthcare organizations.

HSMGMT 570 Quantitative Methods (3-4) Concentrates on fundamental concepts of statistics and their application to healthcare management. Approaches statistics from two different perspectives that benefit leaders in healthcare: that of biostatistics and evidence based medicine, and that of management statistics for process improvement.

HSMGMT 571 Healthcare Financial Management (3) Focuses on the tools and analytic frameworks that healthcare managers use to make prospective forward-looking decisions. Problems worked in-class and assigned as homework to ensure that

participants develop competencies and confidence in applying the analytic tools and frameworks.

Prerequisite: HSERV 511 and ACCTG 500 or ACCTG 501 or permission of instructor. Offered: W.

HSMGMT 572 Financial Management for Health Professionals (3) Intensive review of basic accounting principles/terminology and an introduction to financial management/managerial accounting, including budgeting for managerial control, planning, cost accounting, financing health programs. Managerial accounting, program costing, rate setting, budget preparation. Prerequisite: BOST 502 and BOST 503, or BOST 511; registration in Extended MPH degree program or permission of instructor; non-business majors.

HSMGMT 574 Financial Management I (3-4) Prepares clinical professionals for participating intelligently in, and contributing to, financial decisions of healthcare organizations. Learn the language and fundamental concepts of accounting and finance, and become comfortable with what is required in formal financial analysis.

HSMGMT 576 Capital Planning (2) Emphasizes preparing clinical executives for managerial and leadership in healthcare organizations. Key concepts include capital cycle, creditworthiness, financial planning, cost of capital, capital structure, and capital allocation.

HSMGMT 577 Environment of Care (2) Addresses the basic issues of the "environment of care." Explores the physical environments in which care is provided to patients, JCAHO standards provide the core structure. Uses real world experiences and examples.

HSMGMT 578 Project Management (2/3) Introduces need for, concepts of, and tools and techniques used in contemporary project management. Builds upon prior courses and experience in leadership, management, planning, and team development. Focuses on difference between management of ongoing operations and of projects, and the need for a disciplined approach when planning and executing projects. Offered: W.

HSMGMT 579 Accounting for Health Service Managers (3) Emphasis on preparing graduate students for management and leadership roles in

their healthcare organizations. Covers financial accounting including the accounting equation, journal entries, and processes of accounting.

HSMGMT 590 Select Topics (1-6, max. 12) By arrangement, students and faculty members develop a program of reading and conference appropriate to the selected topic. Topic chosen is within the special competence of the participating faculty member, in the area of health services management.

HSMGMT 592 Health Management Program Seminar (1-6, max. 6)

PATHOBIOLOGY

PABIO 498 Undergraduate Thesis (*)

PABIO 499 Undergraduate Research (*, max. 12)

PABIO 500 Introduction to Pathobiology Research (3-9, max. 15) Rotation through research laboratory. Credit/no-credit only. Offered: AWSpS.

PABIO 536 Bioinformatics and Gene Sequence Analysis (3) *T. ROSE* Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with PHG 536; Sp.

PABIO 548 Molecular and Cellular Parasitology (3) Molecular and cellular biology of parasites of health-related significance, emphasizing current research topics unique to parasites, particularly well-suited for study in parasites, and especially important to study in host-parasite systems. Prerequisite: familiarity with molecular and cellular biology and permission of instructor. Instructors: Feagin

PABIO 550 Diseases and Issues in Global Health (2) *O. Soge* Provides a broad perspective on global health issues; the biology and strategies for control of diseases of global importance; the global health landscape; and factors that influence global health. Recommended: Background in cellular and molecular biology, and microbiology recommended. This course is intended for students pursuing

laboratory-based research in pathogen biology.
Offered: jointly with G H 565; A.

PABIO 551 Biochemistry and Genetics of Pathogens and Their Hosts (4) Provides a strong foundation in biochemistry, molecular biology, and genetics for students interested in disease. Principles illustrated through examples focusing on pathogens, and infectious and non-infectious disease. Prerequisite: undergraduate-level coursework in molecular biology or biochemistry, or permission of instructor. Instructors: L. Campbell Offered: jointly with G H 566; A.

PABIO 552 Cell Biology of Human Pathogens and Disease (4) Cell biology and immunology explored through diseases of public health importance. Examples of pathogen interaction with host cell biology and immune systems, unique aspects of the cell biology of pathogens, perturbations of these systems in non-infectious diseases, and design of therapeutics and vaccines to combat diseases of public health importance. Prerequisite: undergraduate-level coursework in biology or molecular biology or permission of instructor. Offered: W.

PABIO 553 Survival Skills for Scientific Research (2) Focuses on skills needed for scientific career: writing abstracts, curriculum vitae, research proposals; preparing for oral presentations; lab management skills; discussion of mentorship/trainee relationships; case-based discussions of various topics in ethics and scientific misconduct. Credit/no-credit only. Offered: W.

PABIO 580 Pathobiology Seminar (1, max. 21) Research from students, faculty members, and invited speakers presented and discussed. Topics include immunochemistry, viruses, membranes, infectious diseases, immune response, and other related topics. Offered: W.

PABIO 581 Current Literature in Pathobiology (1, max. 15) Develops skills in analyzing data and assessing conclusions through an analysis of current literature in pathobiology. Focuses on breadth and analytical skills. Prerequisite: enrollment in the pathobiology graduate program.

PABIO 582 Critical Thinking and Research Design in Pathobiology (1.5, max. 12) Analysis of issues,

hypothesis and experimental design and testing. Prerequisite: graduate standing in pathobiology. Instructors: Lingappa Credit/no-credit only. Offered: Sp.

PABIO 590 Selected Topics (1-20, max. 20)

Individual offerings focusing on topics such as pathogenesis, immunology, virology, disease agents, bioinformatics and grant writing. Small lecture format. Prerequisite: permission of instructor.

PABIO 591 Rotating Pathobiology Minicourses (1)

Individual offerings focusing on topics such as pathogenesis, immunology, virology, disease agents, bioinformatics and grant writing. Small lecture format with discussion. Offered: Sp.

PABIO 598 Didactic Pathobiology (*, max. 12)

Supervised teaching experience in pathobiology courses for PhD candidates. Prerequisite: permission of instructor.

PABIO 600 Independent Study or Research (*-)

Prerequisite: permission of Graduate Program Adviser. Credit/no-credit only.

PABIO 700 Master's Thesis (*-) Prerequisite:

permission of Graduate Program Adviser. Credit/no-credit only.

PABIO 800 Doctoral Dissertation (*-) Prerequisite:

permission of Graduate Program Adviser. Credit/no-credit only.

PUBLIC HEALTH GENETICS

PHG 200 Implications of Public Health Genomics for the Modern World (3) I&S/NW J. GOGARTEN

Introduces the field of public health genomics through examples of genetic, ethical, political, and social issues emerging in the wake of the Human Genome Project. Students develop the skills to analyze and critique public health, clinical, personal, and social implications resulting from emerging genomic technologies. Offered: A.

PHG 301 Introduction to Genetic Epidemiology (5) I&S/NW J. Gogarten

Explores basic approaches that are used to identify genetic and environmental factors in health and disease, and how application of this information can be used to improve population

health. Discusses the relevant ethical, legal, and social implications that occur in research and translation to practice. Offered: Sp.

PHG 302 Forensic Genetics (3) I&S/NW, QSR Bruce S Weir Introduces the field of forensic genetics through discussion of genetic and statistical issues emerging since the introduction of DNA profiling. Students develop the skills to interpret the evidence of matching genetic profiles; to perform calculations relevant for parentage determination; the identification of remains; and to consider the implications of familial searching of DNA databases. Prerequisite: either BIOST 310, STAT 220, STAT 221/CS&SS 221/SOC 221, STAT 311, Q SCI 381, or Q METH 201. Offered: jointly with BIOST 302; W.

PHG 303 Direct-to-Consumer Genetic Testing: Uses and Issues (5-) I&S/NW Jennifer Morris Gogarten Surveys current genetic tests offered directly to customers (including all types of genomic data generated, and interpretations in health and ancestry) . Investigates current use of personal genomics in forensic and political realms, as well as marketing and regulation of these tests. Ethical, legal, and social implications covered in lectures, debates, and case studies. Recommended: prior exposure to basic genetics (at any level) . Offered: Sp.

PHG 401 Computational and Applied Genetic Epidemiology (5) QSR Alison Fohner Advanced topics in genetic epidemiology for undergraduate students, focusing on hands-on introduction to computational analysis of population genetics and individual health data using R programs. Students will investigate how genes and environment interact to cause disease and health-states and to inform public health interventions. Recommended: PHG 301 or prior background in basic genetics and statistics. Offered: jointly with BIOST 401/EPI 410; Sp.

PHG 511 Genetic Epidemiology (3) Sara Lindstroem Research methods for evaluating genetic influences on disease and risk factors and genetic-environmental interactions. Study designs and statistical methods include twin studies, family studies, population-based association studies, segregation analysis, and linkage analysis. Prerequisite: EPI 511, BIOST 511, and GENOME 371, or equivalent. Offered: jointly with EPI 517.

PHG 512 Legal, Ethical, and Social Issues in Public Health Genetics (3) Equips the student to anticipate and assess potential legal, ethical, and social barriers complicating the incursion of new genetic advances, information, and technologies into public and private healthcare delivery efforts. Prerequisite: GENOME 361, GENOME 371, or equivalent. Offered: jointly with B H 514/LAW H 504; A.

PHG 513 Basic Concepts in Pharmacogenetics and Toxicogenomics (3) K. THUMMEL Addresses current technologies for DNA sequencing, genotyping, RNA and epigenetic analysis and basic concepts of pharmacogenetics and toxicogenomics. Emphasis placed on applications of genomic technologies to the understanding of "gene-environment interactions" that cause variability in drug treatment responses, as well as diseases of public health importance, including cancer, chronic neurological diseases, and adverse drug reactions. Offered: jointly with ENV H 513/PCEUT 513; W.

PHG 519 Statistical Methods in Genetic Epidemiology (3) Theory and application of statistical techniques used in genetic epidemiology. Includes discussion of association studies, linkages and segregation analyses. Examples stressed with reference to assumptions and limitations. Prerequisite: either BIOST 513 or BIOST 518; PHG 511/EPI 517; or permission of instructor. Offered: jointly with BIOST 516/EPI 535.

PHG 521 Culture, Society, and Genomics (3) B. MCGRATH Examines social and cultural issues of human genome sequencing and control of genetic expression. Attitudes and behaviors toward health, illness, and disability are studied using historical, contemporary, and cross-cultural case study material. Offered: jointly with ANTH 574/NURS 582; Sp.

PHG 523 Genetics and the Law (3) Explores and analyzes legal issues arising from genetic technologies and information. Statutes, regulations, and cases demonstrate the constitutional, contract, tort, criminal, and family law use of genetic science to determine rights, disputes, and controversies. Prerequisite: either LAW H 504/B H 514/PHG 512 or permission of instructor. Offered: jointly with LAW H 520; Sp.

PHG 527 Social Science Research Methods (3) D. *BOWEN* Introduces students to research methods in bioethics, ranging from qualitative to quantitative: interviews, focus groups, surveys, and experimental and observational designs. Students write research questions, match research methods to research questions, and conclude with a proposal that uses a social sciences empirical approach to address their research question. Offered: jointly with B H 527; Sp.

PHG 536 Bioinformatics and Gene Sequence Analysis (3) T. ROSE Nature and relevance of molecular sequence information, computer-based protein, and DNA sequence analysis, molecular sequence and genomic databases, and methods for database accession and interrogation. Prerequisite: background in molecular biology and permission of instructor. Offered: jointly with PABIO 536; Sp.

PHG 544 Ethical Implications of Emerging Biotechnology (3) S. FULLERTON Introduces students to select biotechnology innovations and invites consideration of the ethical and policy implications surrounding their development and potential use. Offered: jointly with B H 544; W.

PHG 545 Biostatistical Methods for Big Omics Data (3) This "hands-on" course introduces statistical methods for high-dimensional omics data, as well as the R programming language and the Bioconductor project as tools to extract, query, integrate, visualize, and analyze real world omics data sets. Prerequisite: BIOST 512, 514, or 517. Offered: jointly with BIOST 545/GENOME 545.

PHG 580 Interactive Seminar (1, max. 30) Bruce S Weir Seminar series on topics related to public health genetics, including current bioethical, legal, medical, biotechnology, and public policy issues. Credit/no-credit only. Offered: jointly with LAW H 579; AWSp.

PHG 590 Selected Topics in Public Health Genetics (1-6, max. 6) Tutorials are arranged for a small number of students for in-depth examination of an area of public health genetics, usually of a current nature.

PHG 595 Master's Practicum (1-12, max. 12) Supervised practice experience providing students an opportunity to learn how genetics is applied in a public health setting and in the formulation and

application of public health policy. Prerequisite: practicum agreement.

PHG 600 Independent Study or Research (*-) Credit/no-credit only.

PHG 700 Master's Thesis (*-) Credit/no-credit only.

PHG 800 Doctoral Dissertation (*-) Credit/no-credit only.

SCHOOL OF PUBLIC HEALTH

PUBLIC HEALTH INTERDISCIPLINARY

PHI 511 Foundations of Public Health (3) Examines public health and healthcare - U.S. and globally. Covers foundational elements of public health, including history and impact, importance of health equity and human rights, and how racism manifests and is perpetuated within public health/healthcare systems. Builds community and provides a foundation for students to work effectively as public health professionals on inter-professional teams.

PHI 512 Analytic Skills for Public Health I (7) Focuses on principles and methods of epidemiology and biostatistics, including: descriptive epidemiology, data summaries and presentation, study design, measures of excess risk, causal inference, screening, measurement error, misclassification, effect modification, confounding, confidence intervals, hypothesis testing, p-values, sample size calculation, and linear regression analysis. Includes hands-on data analysis.

PHI 513 Analytic Skills for Public Health II (3) Introduces qualitative and mixed methods and relevance to rigorous public health research and practice. Places a strong emphasis on qualitative data analysis as an integral dimension of the mixed-methods approach. Focuses on contexts for and types of qualitative research questions, integration with quantitative measures of magnitude and frequency, and assessment of strength of evidence in the context of implementation science. Prerequisite: PHI 511 and PHI 512.

PHI 514 Determinants of Health (3) Describes and applies frameworks for understanding determinants of health at multiple levels and within different

systems. Emphasizes individual- and family-level determinants, physical and social environments, population-level determinants, and systems dynamics. Students learn how to apply theory and to interpret and weigh evidence to identify and prioritize health determinants for public health research, practice, and policy. Prerequisite: PHI 511 and PHI 512.

PHI 515 Implementing Public Health Interventions (4) Uses evidence and ethics in intervention design, implementation, and evaluation. The concepts, models, and methods of implementation science in public health are emphasized across multiple levels of the socio-ecological framework. Ethical considerations include assessing and acting on the values and preferences of stakeholder groups and striving for equity in potential outcomes. Prerequisite: PHI 511; PHI 512; PHI 513; and PHI 514.

PHI 516 Public Health Practice (3) Integrates knowledge of health determinants, public health systems, analytic skills and evidence-based approaches to public health problem solving. Public Health Practice, the culminating course of the MPH core curriculum, develops new skills in public health leadership, management, communication and community engagement. Students work in teams to apply knowledge and skills to real world public health practice challenges through case studies. Prerequisite: PHI 511; PHI 512; PHI 513; and PHI 514.

PHI 579 Structural Racism and Public Health (1) Introduces the concept of institutional racism and ways structural racism undermines public health. Discusses history of racism and intersections between structural racism and other systems of oppression. Explores relationship to racism and ways internalized racism acts as a barrier to health equity. Considers public health practitioners' role in addressing racism. Credit/no-credit only. Offered: jointly with HSERV 579; AWSp.

PHI 590 Public Health Interdisciplinary Selected Topics (1-10, max. 20) Topics vary.

SCHOOL OF PUBLIC HEALTH

SPH 380 History and Practice of Public Health (5) *Suzinne Pak-Gorstein* Provides a historical overview of public health as a framework to understand

organization of contemporary public health and key issues faced today. Offered: AWSp.

SPH 381 Science and Public Health (5) *Edward J. Kasner, Sarah F. Benki* Provide an overview and introduction to the ways different scientific disciplines are used to address public health goals. Prerequisite: minimum grade of 1.7 in SPH 380; either BIOL 118, BIOL 180, CHEM 120, CHEM 142, CHEM 145, or both MICROM 301 and MICROM 302. Offered: AWSp.

SPH 480 Research Methods in Public Health (5) *Sara Nelson Glick, Jennifer A. Slyker, Kate McGlone West* Applies concepts and research methods to real public health problems. Prerequisite: EPI 320; either BIOST 310, QMETH 201, Q SCI 381, STAT 220, STAT 221/CS&SS 221/SOC 221, or STAT 311; and a minimum grade of 1.7 in SPH 381. Offered: AWSp.

SPH 481 Ethics, Social Justice, and Policy in Public Health (5) *ALEXANDRA MONTANO, Stephanie Ann Farquhar, Rabi Yunusa* Integration of prior learning and consideration of public health decision from an ethics and justice perspective. Prerequisite: minimum grade of 1.7 in SPH 480. Offered: WSp.

SPH 489 Structural Racism and Public Health (1) *DIV Tara Bostock, Omid Bagheri Garakani* Introduction to and exploration of institutional and structural racism in a public health context. Credit/no-credit only. Offered: AWSp.

SPH 490 Selected Topics in Public Health (1-5, max. 15) In depth study of current public health topics. Offered: AWSpS.

SPH 491 Public Health Capstone I (2-) *Anjulie Ganti* Part one of integrative experience bringing together students' knowledge and skills acquired in the public health major. Prerequisite: SPH 380, SPH 381, or SPH 480. SPH 480 may be taken concurrently. Offered: AWS.

SPH 492 Public Health Capstone II (-3) *Anjulie Ganti* Part two of integrative experience bringing together students' knowledge and skills acquired in the public health major. Prerequisite: SPH 491. Offered: WSpS.

SPH 493 Public Health Capstone (5) Students complete a final self-directed paper on public health

topic of interest integrating the knowledge and skills acquired during their time in the public health major. Offered: AWSpS.

SPH 494 Honors Seminar in Public Health (1, max. 5)

Anjulie Ganti Skill-building, discussion-based seminar designed to challenge ability to analyze issues in public health using topics raised in current media. Credit/no-credit only. Offered: AWSp.

SPH 495 Public Health Internship (1-5, max. 15)

Anjulie Ganti Internship in public health related area. Credit/no-credit only. Offered: AWSpS.

SPH 497 Public Health Special Electives (1-5, max. 15) Independent study of a current public health topic. Offered: AWSpS.

SPH 499 Undergraduate Research (1-5, max. 15)

Individual research on a specific topic in public health. Offered: AWSpS.

SPH 589 Undoing Racism in Public Health (1)

Introduction to and exploration of institutional and structural racism in a public health context. Credit/no-credit only. Offered: AWSp.

SPH 590 Selected Topics in Public Health (1-5, max. 15)

In depth study of current public health topics.

RESERVE OFFICER TRAINING CORPS

AEROSPACE STUDIES

A S 101 Foundations of the United States Air Force I

(1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: A.

A S 102 Foundations in the United States Air Force II

(1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: W.

A S 103 Foundations in the United States Air Force III

(1) Focuses on the basic characteristics of air doctrine; U.S. Air Force mission and organization; functions of United States strategic offensive and defensive, general-purpose, and aerospace support forces; officership/professionalism and an introduction to communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Offered: Sp.

A S 211 The Evolution of Air and Space Power I (1)

Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine. History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: A.

A S 212 The Evolution of Air and Space Power II (1)

Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine.

History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: W.

A S 213 The Evolution of Air and Space Power III (1)

Factors contributing to the development of air power from its beginnings to the present, and the evolution of air power concepts and doctrine. History of air power employment in military and nonmilitary operations in support of national objectives. Assessment of communicative skills. Additional one-hour leadership laboratory is mandatory for cadets, but not special students. Prerequisite: either A S 101, A S 102, or A S 103, any of which may be taken concurrently. Offered: Sp.

A S 250 Aerospace Studies Leadership Laboratory

(0-1, max. 10) Evaluates the challenges of team leadership in complex contemporary environments. Students apply critical thinking skills using scenarios that emulate real-life Air Force issues and environments. Evaluates Air Force leadership attributes, skills, and activities. Focuses on advanced leadership development. Corequisite: any A S course. Credit/no-credit only. Offered: AWSp.

A S 331 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: A.

A S 332 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership

experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: W.

A S 333 Aerospace Studies 300 (3) Emphasis on basic leadership and management fundamentals, professional knowledge, and communicative skills required of an Air Force officer. Case studies used to examine leadership and management situations. An additional leadership laboratory (mandatory for cadets but not special students) provides leadership experiences, giving students the opportunity to apply learned principles. Prerequisite: A S 213. Offered: Sp.

A S 431 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: A.

A S 432 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: W.

A S 433 Aerospace Studies 400 (3) I&S Needs for national security, evolution of American defense strategy, policy, and organization; methods for managing conflict, alliances and regional security to preserve American interests. Arms control, terrorism, and current military issues; refinement of communicative skills. A one-hour leadership laboratory is also required for cadets, but not special students. Prerequisite: A S 333. Offered: Sp.

MILITARY SCIENCE

M SCI 101 Military Science and Leadership Development (3) Introduction to challenges and competences critical for effective leadership. Examines how critical thinking, goal setting, time

management, and stress relate to leadership. Develops knowledge and comprehension of leadership dimensions. Lessons include history and mission of the Army and leadership, personal development, values and ethics, and tactics and techniques discussions. Offered: A.

M SCI 102 Military Science and Introduction to Tactical Leadership (3) Overviews leadership fundamentals of problem solving, listening skills, briefings, providing feedback, and effective writing. Explores dimensions of leadership values, attributes, skills, and actions in the context of practical, hands-on, and interactive exercises. Introduction of effective oral communication. Develops skills in map reading, land navigation, and tactical maneuvering at team levels. Offered: W.

M SCI 103 Military Science and Introduction to Applied Basic Leadership (3) Final introductory series on leadership. Applies leadership fundamentals emphasizing attributes, skills, and actions. Students assess capabilities simultaneously, considering their personal leadership. Lessons apply leadership to military tasks of map reading, navigation, and tactics. Offered: Sp.

M SCI 110 Military Science Leadership Laboratory (0.5, max. 3) Evaluates the challenges of leading teams in complex contemporary environments. Students apply critical thinking skills using challenging scenarios related to small unit operations. Provides feedback on the 16 Army leadership attributes, skills, and actions. Focuses on leadership development. Credits do not count toward graduation. Credit/no-credit only. Offered: AWSp.

M SCI 201 Military Science and Innovative Team Leadership (3) Explores dimensions of innovative tactical leadership strategies and styles. Practices personal motivation and team building through planning, preparing, and executing group exercises. Develops knowledge of leadership values and attributes through an understanding of Army leadership examples. Lessons include leadership, personal development, values and ethics, officership, and tactics and techniques. Offered: A.

M SCI 202 Military Science and Foundations of Tactical Leadership (3) Explores creative and innovative tactical leadership strategies and styles by

examining team dynamics and leadership theories. Examines challenges of leading teams in complex contemporary environments. Practical exercises focus on dimensions of terrain analysis, patrolling, operation orders, and cultural awareness. Lessons include fundamentals of leadership, personal development, and tactics and techniques. Offered: W.

M SCI 203 Military Science and Transformational Leadership (3) Continues study of the theoretical basis of Army leadership and framework and dynamics of transformational leadership in the context of military operations. Develops greater self-awareness by assessing leadership styles and practices oral and written communication skills. Enables progress to applied and advanced tactical leadership study. Offered: Sp.

M SCI 301 Military Science and Tactical Leadership (3) Studies, practices, and evaluates adaptive leadership skills. Develops self-awareness and critical thinking skills using challenging scenarios related to small unit operations. Analyzes and evaluates leadership values, attributes, skills, and actions. Lessons focuses on leadership, land navigation, oral and written presentations, tactics, and physical fitness. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: A.

M SCI 302 Military Science and Applied Leadership (3) Continues adaptive approach to leadership applying situations necessary to build skills required in complex scenarios. Develops proficiency in evaluating, decision-making, persuading, and motivating peers through practical exercises. Students evaluate individual leadership values, attributes, skills, and actions, and receive specific feedback on their leadership abilities based on written and oral presentations. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: W.

M SCI 303 Military Science and Advanced Tactical Leadership (3) Finalizes M SCI 301 and M SCI 302 leadership skills that are necessary to successfully lead others while solving complex problems. Explores, evaluates, and develops decision-making skills required in contemporary environments.

Reviews critical aspects of combat, specifically stability and support operations. Provides specific leadership feedback and prepares for advanced leadership and management. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher. Offered: AWSp.

M SCI 305 Practicum-Techniques of Military Instructions (1-3, max. 3) Analysis, review of techniques used in military training and instructions. Students plan, rehearse, deliver, provide written critique on block of military instruction from the Military Qualification Skills Manual. Prerequisite: M SCI 101; M SCI 102; M SCI 103; M SCI 201; M SCI 202; M SCI 203; may not be repeated if received grade of 2.0 or higher.

M SCI 310 Military Science Advanced Leadership Laboratory (1, max. 6) Evaluates the challenges of leading teams in complex contemporary environments. Students apply critical thinking skills using challenging scenarios related to small unit operations. Provides feedback on the 16 Army leadership attributes, skills, and actions. Focuses on advanced leadership development. Prerequisite: M SCI 110. Offered: AWSp.

M SCI 401 Military Science and Developmental Leadership (3) I&S Develops proficiency in planning, executing, and assessing complex problems, functioning as a staff member, and providing leadership-performance feedback. Explores situational opportunities assessing values, risk, and ethical decisions. Performance measured by abilities to give and receive systematic, specified feedback on 16 leadership attributes, skills, and actions focusing on advanced leadership development. Prerequisite: M SCI 301; M SCI 302. Offered: A.

M SCI 402 Military Science IV: Advanced (3) I&S Explores dynamics of leading in complex situations of contemporary environments. Examines differences in customs and courtesies, military law, principles of war, and rules of engagement. Lessons review aspects of interacting with nongovernmental organizations, civilians, and host nation support with case studies examining complex ethical and practical demands of leadership. Prerequisite: M SCI 301; M SCI 302; M SCI 303; may not be repeated if received grade of 2.0 or higher. Offered: W.

M SCI 403 Military Science and Advanced Leadership (3) I&S Completes fundamental learning of advanced leadership attributes, skills, and actions that effectively prepare students for careers in military or civilian leadership. Examines Army modularity, unit organization, joint operations, and the role of junior leaders. Focuses on case studies, situational exercises, student presentations, and battlefield analysis to develop insights on leadership. Prerequisite: M SCI 301; M SCI 302; M SCI 303; may not be repeated if received grade of 2.0 or higher. Offered: Sp.

NAVAL SCIENCE

N SCI 101 The Naval Service (3) General introduction to the U.S. Navy and Marine Corps, with emphasis on organization, missions, roles, tasks, assets, and operations. Offered: A.

N SCI 102 History of U.S. Sea Power I (3) I&S A study of the U.S. Navy and Marine Corps as they fit into the history of the United States, from the American Revolution to the outbreak of World War II. Prerequisite: N SCI 101. Offered: W.

N SCI 103 History of U.S. Sea Power II (3) I&S A study of the U.S. Navy and Marine Corps as they fit into the history of the United States, from World War II to the present day. Prerequisite: N SCI 102. Offered: Sp.

N SCI 110 Naval Science Laboratory (*, max. 12) Evaluates the challenges of leading teams in complex contemporary environments. Topics vary. Required each quarter for NROTC students. Credit/no-credit only. Offered: A/Sp.

N SCI 201 Naval Leadership and Management (3) I&S Introduction of the theory and techniques of naval leadership based on principles of behavioral science pertinent to understanding individual and group behavior of adults. Introduces the management process and the relationship of management functions to leadership. Stresses acceptance of a traditional deep sense of moral responsibility on the part of the aspiring leader. Prerequisite: minimum 2.0 grade in N SCI 101. Offered: A.

N SCI 202 Navigation I (3) NW The science and practice of maritime coastal navigation, including visual fixing, dead reckoning, and piloting methods. Computation of tides and currents and nautical rules of the road. Prerequisite: N SCI 101. Offered: W.

N SCI 203 Navigation II (3) NW Basic theory and practice of celestial and electronic navigation. Relative motion theory and contact coordination practice in a multiple ship environment. Prerequisite: N SCI 202. Offered: Sp.

N SCI 301 Naval Ship Systems I (3) Study of fundamental principles of energy transfer and thermodynamics. An introduction to nuclear propulsion, gas turbines, and auxiliary power systems. Offered: A.

N SCI 302 Naval Ship Systems II (3) Study of ship characteristics, ship design, hydrodynamic forces, stability, damage control, and shipboard electrical systems. Includes introduction to engineering documentation, electrical safety, preventative maintenance, and personnel qualifications. Prerequisite: N SCI 301. Offered: W.

N SCI 303 Naval Weapon Systems (3) Study of fundamental principles of sensor, tracking, weapon delivery subsystems, and current naval weapons. Includes techniques of linear analysis of ballistics and weapons, and dynamics of basic components of weapon-control systems. Prerequisite: N SCI 302. Offered: Sp.

N SCI 321 Evolution of Warfare (3) I&S Focuses on how and why warfare has changed. Explores how warfare technology has evolved over time. Topics include military theory, fourth generation warfare, and Marine Corps doctrine. Designed for future Marine Corps Officers, but open to all students. Offered: A.

N SCI 323 USMC Leadership and Administration of Justice I (3) Concepts, objectives, characteristic qualities, and practical techniques of leadership as exercised by the Marine Corps officer. Emphasizes leadership and management role of the junior officer in the Fleet Marine Forces. Intensive physical activities and outdoor projects to test an individual's physical and mental endurance. Prerequisite: N SCI 110; N SCI 421. Offered: Sp.

N SCI 401 Naval Operations (3) Introduction to naval operations, the employment of naval forces, naval tactics, formulation of operations plans and orders, employment of detection equipment, and meteorology. Prerequisite: N SCI 101. Offered: A.

N SCI 402 Naval Leadership and Ethics (3) I&S Study of leadership and ethics within a military context using applicable case studies. Examines the Law of Armed Conflict and Code of Conduct; the importance of integrity, moral courage, and ethical behavior to effective leadership; and the interrelationship between authority, responsibility, and accountability. Offered: W.

N SCI 403 Naval Organization and Management (3)
Study of organization, systems, and techniques

employed in the Navy for management of its human, material, and financial resources. Some work relates to the administration of discipline in the Navy under the Uniform Code of Military Justice. Emphasis on the leadership and management role of the junior officer in the fleet. Prerequisite: minimum 2.0 grade in N SCI 402. Offered: Sp.

N SCI 421 Amphibious Warfare (3) I&S Provides basic knowledge of evolution of amphibious warfare from premodern era to present. Strategic, operational, and tactical considerations in planning specific operations and amphibious landings. Prerequisite: either N SCI 321 or minimum two POL S or JSIS courses. Offered: A, even years.

SCHOOL OF SOCIAL WORK

SOCIAL WELFARE (BASW)

SOC WF 101 Social Work in Action: Bridging the Gap From Science to Service (5) I&S Explores current social work practice and research applied to major societal problems. Lectures and discussions by leading faculty introduce students to the evidence-based perspective underlying program planning and practice innovation. Topics include: juvenile delinquency, child maltreatment, domestic violence, foster care reform, mental health, school violence, substance abuse, and poverty. Offered: A.

SOC WF 120 International Responses to Human Needs: Social Welfare Policies and Services (5) Focuses on major global social services such as poverty, immigration, and health that are reshaping social welfare policies and services throughout the world. Provides a comparative overview of social welfare policies and programs in the United States and selected other countries.

SOC WF 200 Introduction to Social Welfare Practice (5) I&S Introduction to the field of social work, including the theoretical concepts and institutional framework that guide practice. Overview of social work profession and social welfare system within which it operates. Lectures supplemented by exercises, films, guest lectures, and class discussions. Offered: A.

SOC WF 201 Advances in Prevention Science: Bridging the Gap from Science to Service (5) I&S Investigates the potential for preventing major social problems (child abuse and neglect, alcohol misuse, and interpersonal violence). Critically examines the state of prevention science, includes dialogue about ways to enhance the exchange of ideas between research and practice communities, and explores implications for social policy.

SOC WF 215 Intergroup Dialogues (3) DIV Explores issues of social identities, differences, and inequalities to build understanding, skills, and values for bringing about greater social justice using dialogic communication.

SOC WF 250 Writing for Social Welfare (1-2, max. 2) Offers an engaging space for social welfare students to develop, practice, and strengthen college-level writing using exercises, discussion, and lecture. Covers summarizing and responding, critical thinking and argument, APA style and academic honesty, as well as language and the writing process. Review of punctuation and mechanics, grammar, and sentence style. Credit/no-credit only.

SOC WF 297 Study Abroad in Social Work (1-15, max. 15) For participants in a UW study abroad program. Specific content varies and must be individually evaluated.

SOC WF 310 Social Welfare Practice I (5) Provides an introduction to the roles, tasks, and functions of the social welfare practitioner and to theories and methods of intervention; a conceptual framework for social work practice with individuals, families, and small groups; and an opportunity to develop skills in problem assessment, intervention, termination, and evaluation. Offered: A.

SOC WF 311 Social Welfare Practice II (5) Provides an introduction to the roles, tasks, and functions of the social welfare practitioner and to theories and methods of intervention; a conceptual framework for social work practice with individuals, families, and small groups; and an opportunity to develop skills in problem assessment, intervention, termination, and evaluation. Prerequisite: SOC WF 310. Offered: W.

SOC WF 312 Social Welfare Practice III (5) Focus on macro systems in a diverse society using the generalist perspective. The implications of system resources and configurations for meeting human needs are considered. The role and function of generalist social workers to understand and advocate for system development and change is emphasized. Prerequisite: SOC WF 311. Offered: Sp.

SOC WF 315 Community Service Learning (1-5, max. 6) Opportunity for students to apply social work theory to practice, to advocate for social justice, and to be involved in community service. Students learn by connecting classroom theory and community-

based experience through the completion of community-based projects in social work-type agencies. Majors only.

SOC WF 320 Social Welfare Policy (5) I&S

Emphasizes policy and program development in social welfare with emphasis on the context, making, and unmaking of social policy. Covers policy formulation as well as current and emerging policies in social welfare. Prerequisite: SOC WF 200. Offered: WSp.

SOC WF 390 Introduction to Social Welfare

Research (5) Introduction to logic of the scientific method as applied to social work and social welfare practice, to the design and conduct of a research study, and to data collection and summarization. Skill development in critical consumption of social welfare research. Prerequisite: either STAT 220 or QMETH 201. Offered: A.

SOC WF 402 Human Behavior and Social

Environment I (5) I&S Focuses on understanding human development across the lifespan. Integrates biological, psychological, structural, environmental, political, global, and socio-cultural perspectives. Explores the relationship between the person and the environment including families, groups, organizations, communities, and institutions.

SOC WF 404 Cultural Diversity and Justice (5) I&S,

DIV History and culture of disadvantaged and oppressed groups served by social welfare generalist practitioners. Offered: Sp.

SOC WF 405 Fieldwork Seminar (1-4, max. 9)

Integrates social work practicum experiences with prior and concurrent coursework in social sciences, social work, and research. Includes discussion of class presentations and simulations or practice situations that combine knowledge and skill utilization. Student logs provide a basis for individual goal identification and achievement. Required of social welfare seniors. Offered: AWSp.

SOC WF 410 Evidence-Based Practices in Social

Welfare (3) Focuses on interface between social work research and practice, with attention to origins and defining features of evidence-based practice (EBP) and approaches to intervention consistent with EBP framework. Integrates content on research and practice priorities, and provides students with

knowledge and skills to promote use of theory-driven, empirically-supported interventions.

SOC WF 415 Beginning Field Instruction (1-12, max.

12) Students are placed in selected social service agencies and accept beginning social service assignments under the supervision of competent agency personnel. Credit/no-credit only. Offered: AWSp.

SOC WF 435 Skills for Social Welfare Practice (1)

Builds on first-year generalist practice content. Provides skill building in one or two areas of social work practice relevant to many practice settings. Topic chosen by students and faculty. Credit/no-credit only.

SOC WF 442 Building Competencies for Intergroup

Dialogue Facilitation (5) VLPA/I&S, DIV Focuses on both knowledge and skills development for peer facilitators. Topics include philosophy and principles of dialogic education and dialogic communication; intergroup communication; social identity development; principles of working with conflict; group dynamics, observation, and facilitation; team building among co-facilitators; and creating a support system among instructors and facilitators.

SOC WF 443 Facilitating Intergroup Dialogue (5)

VLPA/I&S, DIV Practicum seminar providing instruction, consultation, and supervision of peer group facilitators. Focuses on comparison of facilitation experiences and consultations, troubleshooting with other facilitators, co-facilitator team building, and planning for dialogues. Exploration of specific, current intergroup issues, such as affirmative action and immigration. Continuation of team-building work begun in SOC WF 442.

SOC WF 445 Special Topics in Social Work Practice

Methods (3, max. 6) Examines roles, skills, and methods in designated areas of social work practice. Content builds on foundation practice methods.

SOC WF 450 Integrative Seminar: Poverty Analysis

(5) Critical analysis of poverty both in the United States and from a global perspective. Analytical and descriptive focus on measurement, processes of production and perpetuation, and theoretical perspectives that lead to different social and economic policy responses.

SOC WF 460 Chemical Dependency: Assessment and Treatment (3) Provides students the knowledge and basic skills needed to recognize and understand the dynamics of chemical dependency in the lives of individuals. Students learn how to assess the presence of this disorder and what the issues are in referring individuals to treatment.

SOC WF 465 Social Welfare Capstone Seminar (1) Students demonstrate and reflect on mastery of core competencies and respective practice behaviors foundational to generalist practice. Studies analyze and synthesize data from their experiences in the BASW program and integrate this understanding with their new identity as a professional social worker. Credit/no-credit only.

SOC WF 490 Independent Research in Social Welfare (1-15, max. 15) Individual work with faculty member to assist with current research project(s). Students trained and supervised in some or all of the following research tasks: literature review, data analysis, record-keeping, interviewing, report writing, data entry and coding, data collection, and other tasks commonly found in research problems in social welfare. Credit/no-credit only.

SOC WF 491 Honors Seminar (1, max. 3) Three quarter seminar for students admitted into the BASW Honors Program. Guides students through stages of research conceptualization and proposal writing, IRB application, data collection and analysis, and dissemination. Includes feedback and discussion with instructor and peers. Credit/no-credit only.

SOC WF 492 Honors Thesis I (3-) Part one of a two quarter series for BASW Honors students writing their honors thesis. Students carry out an individual project of their choosing under the guidance of a faculty member. Focuses on data collection, management, and preliminary analysis.

SOC WF 493 Honors Thesis II (-3) Part two of a two quarter series for BASW Honors students writing their honors thesis. Students carry out an individual project of their choosing under the guidance of a faculty member. Focuses on data analysis, research writing, and presentation of results.

SOC WF 495 Special Topics in Generalist Social Welfare (1-5, max. 15) Readings, lectures, and

discussions pertaining to significant topics of special and current interest to social workers.

SOC WF 497 Advanced Study Abroad in Social Work (1-15, max. 15) For participants in a UW study abroad program. Specific content varies and must be individually evaluated.

SOC WF 499 Independent Study in Social Welfare (1-15, max. 15) Independent reading or independent study. Includes written paper. Not open to graduate or non-matriculated students.

SOCIAL WELFARE

SOC WL 515 Community Service Practicum (3, max. 6) Development of skills on working in partnership with community institutions in the role of researcher or scholarly collaborator, through ongoing reflection and consultation with a faculty member. Uses a learning contract to focus specific activities. Credit/no-credit only. Offered: AWSpS.

SOC WL 552 Seminar in Contemporary Social Welfare Policy (3) Critical review of contemporary American income maintenance and related social welfare policies, and the economic, political, and social factors that affect their development, implementation, and effectiveness. Evaluation of their effects on poverty, income inequality, and related social outcomes, including international comparisons. Assessment of proposals for reform. Closely linked to SOC WL 553.

SOC WL 553 Policy Implementation and Organizations (3) Examines diverse organization theories relevance to policy implementation, translational research, and practice interventions within health and human service settings. Emphasizes multilevel models and integrative frameworks that take into account individual, group, and organizational factors, recognizing outcomes as embedded phenomenon nested within organization, community, and societal contexts. Offered: Sp.

SOC WL 554 Analytical Perspectives on Social Welfare Policy (3) Broad overview of the social welfare policy process, including epistemological issues, content on social problem construction and definition, policy agendas and case study methodology. Introduction to analytical tools and

concepts needed to take a proactive role in policy development, advocacy, implementation, and policy research.

SOC WL 556 West Coast Poverty Center Seminar Series (1, max. 15) Presents cutting-edge research on poverty, inequality, and public policy. Offered: AWSp.

SOC WL 557 Dissertation and Career Seminar (1, max. 20) Orients advanced PhD students to three main tasks: dissertation, job market, and entering teaching and research careers. Offered: AWSp.

SOC WL 559 Preparing to Teach: Instructional Theory and Practice (3) Teaching conceptualized as professional practice. Focuses on integration of theory, research and educational strategies, techniques, and skills into students' practice as educators. Classroom discussions and activities promote reflection, exploration, critical analysis, and experimentation.

SOC WL 573 Proseminar: Cross-Cohort Impact Science Career Development (1) *Paula S Nurius* Year long course reserved for social welfare doctoral students toward building a cross-cohort collegial support community. Topical foci are broadly: (1) transdisciplinary collaboration skills, (2) translational dissemination and science communication skills, (3) social justice and equity driven aims in scholarship, and (4) stakeholder engagement, co-production of research models and strategies. Offered: AWSp.

SOC WL 577 Promoting Well-Being among At-Risk Groups through Prevention Research (3) Interdisciplinary overview of major concepts and methods in health promotion and prevention research, with emphasis on at-risk populations. Attentive to health disparities, collaboration with diverse communities and biobehavioral advances in addition to application of theory and prevention-science framework. Encourages interdisciplinary participation and supporting students in articulating their research perspectives.

SOC WL 578 Seminar in Special Topics for Prevention Research (1, max. 30) Interdisciplinary overview of major concepts in promotion of mental health and prevention of mental distress with prevention science as framework. Provides conceptual foundations for advanced study in

specialized aspects of mental health prevention research. Credit/no-credit only.

SOC WL 579 Interdisciplinary Approaches to Prevention Science: Children and Adolescents (3) Overview of theory, research, and practice in prevention science. Developmental perspective examining factors that promote or inhibit health development at different stages and during transitions (focus on birth through age 21) . Designed for interdisciplinary dialogue, and includes guest faculty from around the University who are specialists in course topics. Credit/no-credit only.

SOC WL 580 Quantitative Research Methods and Design (3) Logic, terminology, and methods of quantitative social science approaches to correlational, experimental, quasi-experimental, survey, and program evaluation research. Components of the research process (problem definition, concept explication, ethical evaluating, and designing defensible quantitative research studies) .

SOC WL 581 Qualitative Research Methods and Design (3) Theoretical and methodological foundations of a range of qualitative methods relevant to social welfare and social science research. Fundamentals of qualitative research design and implementation, including framing research questions, sampling, data collection, analytical methods, and quality criteria. Focus on ethics, cultural sensitivity, and community-based research with vulnerable populations.

SOC WL 582 Research Practicum (3-) Development of specific methodological skills in social welfare research through participation in an ongoing research project. Learning contract used to target specific research competencies. Credit/no-credit only. Offered: ASpS.

SOC WL 583 Research Practicum (-3) Development of specific methodological skills in social welfare research through participation in an ongoing research project. Learning contract used to target specific research competencies. Credit/no-credit only. Offered: ASpS.

SOC WL 584 Teaching Practicum (3) Supervised teaching of a required course or teaching as a co-instructor with a faculty member. Learning contract

used to target specific teaching competencies, e.g., assessing and evaluating student outcomes, identifying class session goals and objectives, tailoring instruction methods to diverse learning styles. Credit/no-credit only. Offered: AWSpS.

SOC WL 585 Qualitative Methods in Social Work Research I (3) The first in a two-quarter sequence offering intensive experience in the theory and application of qualitative and ethnographic research methods. Prepares students for conducting qualitative studies and for combining qualitative and quantitative research methods. Focuses on applications especially relevant to social welfare.

SOC WL 586 Qualitative Methods in Social Work Research II (3) The second in a two-quarter sequence offering intensive experience in the theory and application of qualitative and ethnographic research methods. Prepares students for conducting qualitative studies and for combining qualitative and quantitative research methods. Focuses on applications especially relevant to social welfare.

SOC WL 589 Multivariate Data Analysis for the Social Sciences (4, max. 8) *E. EROSHEVA* Multivariate analysis aims to summarize and describe patterns among multiple observed characteristics. Explores theoretical introduction and practical skills to carry out multivariate analysis methods such as cluster analysis, principal components, factor analysis, and latent class analysis. Prerequisite: SOC 504, SOC 505, or SOC 506. Offered: jointly with CS&SS 589; A.

SOC WL 590 Topics in Advanced Research Methods (3) Special topics in social and behavioral research design for advanced graduate students. Topics vary and focus on community-based research methods and measurement construction for culturally diverse populations. Prerequisite: doctoral student in social welfare or related discipline; advanced master's level students by permission of instructor.

SOC WL 591 Seminar on Topics in Social Welfare (1-5, max. 15)

SOC WL 592 Applied Longitudinal Data Analysis For Social Sciences (4) *E. Eroshva* Addresses statistical methodology for using longitudinal data to answer research questions about changes over time including exploratory analysis tools, and random coefficient, growth curve, multilevel and hierarchical

models, and their extensions. Prerequisite: Successful completion of SOC 504, SOC 505, and SOC 506; and a solid knowledge of linear regression. Offered: jointly with CS&SS 592; A, odd years.

SOC WL 594 The Embodiment of Risk, Health Disparities, and Stress Mechanisms (3) Interdisciplinary course focused on multi-level exposure to and impacts of stress, integrating social determinants and life course development perspectives. An overview of theory and research integrating biological and psychosocial processes with emphasis on vulnerable populations and disparities. Encourages interdisciplinary engagement and supporting students in articulating their research perspectives. Offered: A.

SOC WL 598 Theory and Metatheory in Social Research (3) Explores the nature and role of theory in social research, theoretical and metatheoretical foundations of major social science research paradigms, and interdisciplinary perspectives on the socially constructed nature of theory and definitions of social "problems." Encourages critical, collaborative reflection on the role of theory in contemporary interdisciplinary research environments.

SOC WL 599 Theory Development for Social Research (3) Assists students in applying theory in building an original conceptual model. Emphasizes critical and integrative thinking derived from a social justice framework. Encourages students to examine the ideological, political, methodological, and ethical principles shaping theories, models, and concepts in contemporary social science and social welfare research. Open to interdisciplinary students with instructor permission. Prerequisite: admission to social welfare PhD program or permission of instructor.

SOC WL 600 Independent Study or Research (*-) Prerequisite: approval of a well-specified plan by the instructor and program director. Includes a written product. Credit/no-credit only. Offered: AWSpS.

SOC WL 800 Doctoral Dissertation (*-) Offered: AWSpS.

SOCIAL WORK (MSW)

SOC W 500 Intellectual and Historical Foundations of Professional Social Work Practice (3) Intellectual, historical, and ethical foundations of the social work profession. Engagement with crucial aspects of the profession's history; contemporary issues, problematics, and directions; and key concepts and theoretical frameworks. Students develop personal, professional, and intellectual foundations for practicing social work built on the central values of plurality and social justice.

SOC W 501 Poverty and Inequality (3) Analysis of poverty and inequality in United States. Analytic and descriptive focus on measurement, processes of production and perpetuation, and public policy responses. Examines causes of poverty, the role of policy, and socioeconomic dimensions of stratification, including race, ethnicity, class, gender, immigration status, disability, age, sexual orientation, and family structure.

SOC W 504 Social Work for Social Justice: Developing a Personal-Professional Stance (1-4, max. 4) Focuses on personal and professional development toward social work practice for social justice. Employs critically self-reflective, experiential, and dialogic learning processes to engage students to explore personal meaning systems and narratives in the context of professional values of social justice, multiculturalism, empowerment, and globalization. Credit/no-credit only.

SOC W 505 Foundations of Social Welfare Research (3) Overview of research process/methods in social work, with focus on consuming and performing practice-related research and evaluating one's own practice. Emphasis on critical understanding of empirical literature, development of useful and appropriate questions about social work practice, and strategies and techniques for doing research and applying findings to practice. Offered: Sp.

SOC W 506 Social Welfare Research and Evaluation (3) Second of a two-quarter research sequence. Introduces a range of methods for informing evidenced-based social work practice. Emphasizes critical appraisal of the literature, development of research questions, and strategies and techniques for conducting practice-relevant research, including

data collection and analysis. Prerequisite: minimum 2.5 grade in SOC W 505.

SOC W 507 Advanced Standing Social Welfare Research and Evaluation (5) Introduces a range of methods for informing evidence-based social work practice. Emphasizes critical appraisal of the literature, development of research questions, and strategies and technique for conducting practice-relevant research, including data collection and analysis. Prerequisite: advanced standing students.

SOC W 510 Micro/Meso Social Work Practice 1: Individuals (3) Foundation course in direct social work practice with individuals. Introduces knowledge and skills needed for effective and accountable person-centered and participant-directed practice. Students gain skills for engagement, relationship building, interviewing, assessment and collaborative intervention planning with individuals through an intersectional lens.

SOC W 511 Micro/Meso Social Work Practice 2: Families and Groups (3) Foundation course in direct practice with families and groups. Provides generalist practice knowledge and skills for social work practice with families, small groups and service delivery systems to promote maximum self-determination, functioning, and quality of life. Prepares students for assessment, intervention planning and decision making with families and groups within the context of social systems.

SOC W 512 Macro Social Work Practice 1: Community and Policy Practice (3) Foundation course in macro social work, focused on community-based social work and policy practice. Students develop skills in system-level assessment, intervention, and evaluation. Theories of social change are examined with examples drawn from community organizing and policy advocacy.

SOC W 513 Macro Social Work Practice 2: Organizational Practice (3) Foundation course in macro social work practice, focused on organizational change. Using an anti-oppression lens, students develop skills in assessment, intervention and evaluation with groups, organizations, and communities. Students examine ways to facilitate change within organizations and critically assess the cultural aspects of organizations.

SOC W 514 Clinical Social Work: Practice with Adults (3) Theory and practice of clinical social work, emphasizing social justice frameworks and life course perspectives. Emphasizes specialized, strengths-based approaches to all phases of social work practice. Students learn motivational interviewing, critically examining applications with clients of varying social identity categories, given intersectional identities.

SOC W 515 Clinical Social Work: Practice With Children, Youth, and Families (3) Builds on foundational frameworks/competencies applying strength-based, social-justice informed approaches including motivational interviewing to all phases of social work practice specific to children and families. Covers common child and family topics (historical trauma, child development, attachment, intersectionality and disability) focusing on assessment and intervention through a culturally responsive lens.

SOC W 516 Research Base for Prevention Science (3) Introduces the transdisciplinary field of prevention science; enhances understanding of the developmental epidemiology of risk, protection and outcome and how prevention interventions are conceptualized and evaluated; critiques research on preventive interventions and practice; and outlines the role of prevention science in advancing health and well-being over the life course.

SOC W 517 Promoting Individual, Family, School, and Community Risk Prevention (3) Covers existing evidence-based practices in prevention science that have demonstrated effects on reducing risks and promoting positive development in youth. Emphasizes practice skills, topic include promotion of healthy development in childhood/adolescence; prevention of child abuse and neglect, early pregnancy, violence and delinquency, substance abuse, school misbehavior, and mental health disorders.

SOC W 518 Macro Practice in Health and Prevention (3) Students engage in the translation of research, advocacy, and the sustainability and dissemination of prevention initiatives and programs. Includes skill development in policy analysis, community organizing, and media/legislative advocacy. Covers current issues in prevention, the policy context

surrounding them, and skills to propel prevention forward as a priority in or society.

SOC W 519 Policy/Services: Health/Mental Health (3) Investigates how social and economic inequality in America is established, manifested, and maintained. Also examines interventions that purportedly address inequality. Provides analytic tools to help with critical thinking about competing views of inequality and the interventions that address it.

SOC W 520 Policy/Services: Multigenerational (3) Investigates how social and economic inequality in America is established, manifested, and maintained. Also examines interventions that purportedly address inequality. Provides analytic tools to help with critical thinking about competing views of inequality and the interventions that address it.

SOC W 521 Child and Family Inequalities: Policy/Services Platform (3) Advanced study of policy and services relevant to practice with children, adolescents, and families. Applies social justice framework to understanding policy context and organization of services responses to child and family inequalities, especially for historically oppressed and marginalized populations. Examines social construction of policies in historical, political, and comparative context.

SOC W 522 Advanced Standing Integrative Seminar (5) Assists with transition to graduate study for students entering MSW Advanced Standing Program. Serves as bridge between students' BASW preparation and the advanced MSW curriculum; builds graduate-level critical analysis and writing skills, integrating MSW foundation course content in social justice principles, diversity, structural inequalities, anti-oppression work; and micro/mezzo/macro practice.

SOC W 523 Preparation for Advanced Professional Practice - Advanced Standing Students (3) Designed to prepare students in the Advanced Standing MSW program for field/practicum experience. Builds upon content and skills acquired through generalist (micro, mezzo, and macro levels) practice. Includes development of critical thinking skills, values, and knowledge to advance social justice, skills for advancing multiculturalism, intergroup

collaboration, and empowerment. Credit/no-credit only.

SOC W 524 Foundation Practicum (0-10, max. 14)

Agency-based practicum with emphasis on development of knowledge, perspectives, and skills needed for practice with individuals, families, groups, organizations, and communities.

Prerequisite: social work major. Credit/no-credit only. Offered: AWSpS.

SOC W 525 Advanced Practicum (1-10, max. 24)

Agency-based advanced practicum. Prerequisite: completion of foundation courses and practicum.

Credit/no-credit only. Offered: AWSpS.

SOC W 526 Social and Healthcare Policy in an Aging Society (3)

Applies a multigenerational, social justice framework to analyze how historical and current service structures, policies, and regulations support or undermine families across the lifespan, especially marginalized populations. Builds and applies skills to analyze, critique, and advocate for policies and services that support growing numbers of older adults and multigenerational families.

SOC W 527 Global and Local Inequalities: Critical Analyses of the Processes and Policies of Globalization (3)

Discussion of the health of the planet, economic and cultural globalization, the enduring legacies of imperialism and colonialism in this global era, and their local impacts. Foci include international agreements, UN conventions, immigration, and refugee policies.

SOC W 528 Healthcare Inequalities: Policy/Services Platform (3)

Examines the organization, policies, and services of U.S. healthcare system from a social justice framework. Topics include the U.S. healthcare system's historical development, differential access to health and healthcare, healthcare system reform, and the analysis of healthcare policy from contrasting ideological perspectives.

SOC W 529 Mental Health Inequalities:

Policy/Services Platform (3) Mental health policy trends and organization of services at national, state, and local levels reflected in legislative, regulatory, and institutional policies. Provides historical perspective on the development of U.S. mental health policies and services. Discusses specific areas

of intersystem linkages in terms of equitable access and empowerment.

SOC W 530 Advanced Practice with Diverse Children and Families (3)

Builds on foundation frameworks and competencies to develop specialized knowledge and skills for working with vulnerable children and families. An ecological framework informs family- and community-centered assessment and intervention that is empowering, culturally responsive, and clinically relevant. Foci include resilience, violence, attachment, loss, substance abuse, and disability.

SOC W 531 Practice with Diverse Children and Families: Focus on Child Mental Health (3)

Develops specialized knowledge and skills for practice with children with mental health concerns and their families. Emphasis on child and family mental health assessment and interventions that are culturally relevant, collaborative, and strength-promoting. Topics include culture and mental health, system of care, psychotropic medication, ADHD, and depression.

SOC W 532 Practice with Diverse Children and Families: Focus on Child Welfare (3)

Develops specialized knowledge and skills for culturally relevant child welfare practice across a range of settings including child protection, foster care, and adoption. Topics include family dynamics around child maltreatment; trauma and its impact on children; separation, loss, and identity development; and self-care in child welfare practice.

SOC W 533 Practice with Diverse Children, Youth, and Families: Community Settings (3)

Focuses on the critical role of neighborhoods and communities as settings for child and family social work intervention. Provides the theoretical, empirical, and practical foundations for engaging with, implementing, and designing effective programs and services with and for children, youth, and families in diverse community settings.

SOC W 534 Praxis of Intergroup Dialogue (3)

Students design, plan, implement, and evaluate intergroup dialogue sessions as peer facilitators. Students facilitate intergroup dialogue in conjunction with SOC W 504. Focuses on intensive in-vivo instruction, consultation, and supervision of facilitators.

SOC W 535 Special Topics in Interpersonal/Direct Practice (2-3, max. 9) Examines current substantive topics in direct/interpersonal practice.

SOC W 536 Social Movements and Organizing: People, Power, and Praxis (3) Focuses on social, economic, and political problems from an organizer's perspective, and strategies, tactics, and skills necessary to engage in organizing activities. Emphasizes principles common to community, electoral, union, and issue organizing. Addresses why people organize, how organizing works, and what it takes to be a good organizer.

SOC W 537 Empowerment Practice with Refugees (3) Empowerment practice with refugees and immigrants across a transnational continuum of forced migration, including flight, internal displacement, asylum seeking, repatriation, and resettlement. Instruction includes classroom activities, workshops with local service providers, and agency-based projects. Addresses implications for strengths-based social services, policy, and practice skills.

SOC W 538 Critical Empowerment Practice with Multi-ethnic Communities (3) Principles of empowering practice, critical analyses of models of multiculturalism and paradigms of knowledge and practice proven problematic in our increasingly diverse society. Assists students in developing empowering practice values, knowledge, and skills for work in multi-ethnic communities.

SOC W 539 Breaking Down the Wall and Shifting the Paradigm: Engaged Practice with Latinas and Latinos (3) Provides advanced knowledge and skills for practice with diverse Latinx populations through 1) examination of structural and cultural factors, and 2) understanding of Latinx practice models to promote the well-being of Latinx communities at multiple levels and in local and global contexts in culturally responsive ways.

SOC W 540 Advanced Social Work Practice in Health Settings I (3) Teaches theory and strengths-based practice within interprofessional health care settings from bio-psychosocial, family systems, multicultural, contextual, and lifespan perspectives. Advances skills in conducting assessments and interventions to support individuals and families

experiencing pain and loss associated with trauma and acute or chronic illness.

SOC W 541 Social Work Practice in Health Settings (3) Teaches health care theory and practice skills relevant to working with adults and children in a variety of health care settings, using biopsychosocial, contextual, multicultural, interdisciplinary, and lifespan perspectives. Advances skills in adherence assessment, ethical decision-making, discharge planning, cross-cultural and cross-professional practice, and counseling regarding life-threatening illness.

SOC W 542 Recovery-Oriented Social Work Practice in Community Mental Health (3) Emphasizes recovery-oriented practice with adults with severe and persistent mental illness and persons with co-occurring mental illness and substance disorders. Trains for generalist social work practice in most community mental health settings: community mental health centers, psychiatric hospitals, residential programs, jails, homeless shelters, on-the-streets, client's homes, etc.

SOC W 543 Social Work Practice in Community Mental Health II (3) Focuses on social work practice with persons with severe mental illness. Emphasizes recovery, supported housing, supported employment, integrated treatment of co-occurring disorders. Covers practice with diverse populations: multicultural, developmentally disabled, geriatric, and gay/lesbian. Examines partnering with family members and working with Social Security. Complements SOC W 542, but may be taken free-standing.

SOC W 544 Clinical Social Work with Individuals I: Theory and Practice (3) First quarter of a two-quarter sequence on the theory and practice of clinical social work. Focuses on key concepts underlying direct practice. Topics include the therapeutic relationship, therapeutic listening, the ground rules, transference, counter transference, psychological defenses, resistance, phases of treatment, transference, countertransference, and vicarious trauma.

SOC W 545 Evidence-Based Practices for Clinical Social Work (3) Continues knowledge building around the theory and practice of clinical social work with adults. Focuses on deeper application of

theories and evidence-based practices for clinical social work. Emphasizes cognitive-behavioral approaches within the context of a social ecological framework and a recovery orientation.

SOC W 546 Addressing Trauma and Recovery in Multi-Generational Advanced Practice (3)

Multigenerational perspective on clinical interventions for various traumas: childhood sexual abuse, battering at any age, chemically dependent parents, elders with abusive adult children, and a range of losses throughout the lifespan. Recovery process explicated in terms of family strengths across the generations and through state-of-the-art techniques for healing trauma.

SOC W 547 Multigenerational Integrative Seminar (1-3, max. 3)

Designed to foster the integration of classroom learning and field education. Taken concurrently with advanced practicum, provides support for addressing challenges in professional settings, development of leadership skills, and preparing for future work in the field of multigenerational practice. Credit/no-credit only.

SOC W 548 Advanced Practice I: Multigenerational (3)

First quarter of a two-quarter sequence. Emphasizes preparation of practitioners with capacity to move flexibly among a variety of professional roles, including the provision of direct services, program planning, supervision, and community practice. Emphasizes contextual assessment from micro to macro levels.

SOC W 549 Advanced Practice II: Multigenerational (3)

Second quarter of a two-quarter sequence. Highlights program planning, supervision, and intervention across all levels of practice.

SOC W 550 Strategic Program Management and Change Leadership in Human Services (3)

Examines tools and techniques required for leadership, program planning, implementation, and program change. Topics include strategic planning, logic modeling, agency-bound relations, work-group facilitation, and diversity-promoting management. Lecture, discussion, and exercises. Required for SSW administration concentrators; open to others with permission of instructor.

SOC W 551 Human Resource Management in the Human Services (3)

Theories and techniques for 1)

designing human services workplaces that support employees' performance and well-being, and 2) managing diverse, satisfied, and high-performing human service staffs. Topics include job quality analyses; job descriptions; employee interviewing, supervision and performance evaluation; models of negotiation and conflict resolution; and strategies for working with volunteers.

SOC W 552 Financial Management of Human Services Programs (3)

Covers key financial management components of human service programs, including development and use of business plans, budgets, and financial statements. Helps students to demonstrate an understanding of financial management through budget preparation, financial statement analysis, new project cost projections, audits, and presentations using computer-based spreadsheets and presentation software.

SOC W 554 People, Place, Equity (3)

Introduces empirical, theoretical, and applied knowledge on place as a key dimension of social work practice. Examines how people-place relationships differentially affect social opportunities such as health and wellness, employment, and housing. Provides intellectual and practical foundations for incorporating spatial analyses and collaborative place-making interventions in practice.

SOC W 555 Global Perspectives in Social Work Practice (3)

Focuses on contemporary social issues of global importance: poverty; HIV/AIDS; population growth; gender inequality; and war, conflict, and displacement, with specific focus on these issues in the global south. Examines sociocultural, economic, and political processes that shape these issues, and entwined perspective of human rights and development.

SOC W 556 Family Healing: A Cross-Generational Approach (3)

Lustbader Explores how to respond to multi-generational dynamics within the entire extended family and examines how bow difficulties and strengths are passed from one generation to another. Emphasizes cultural differences as well as issues pertaining to the impact of chemical dependency, mental illness, and disability across generations.

SOC W 557 Caring for Persons with Life-Limiting Illness: A Lifespan Approach (3) Focuses on multi-systemic social work practice with seriously ill people with a life-limiting condition. Examines how families care for a critically ill loved one, and the differences that occur when the seriously ill person is a child, adolescent, a mid-aged adult, or an elder at the end of life.

SOC W 558 Gender, Gender Identity, and Sexuality (3) Anti-oppression focus on social work practice with lesbian, gay, bisexual, transgender, two-spirit, intersexed, and queer communities. Emphasizes cultural, social, and political context within which such practice occurs as well as an examination of the diversity and heterogeneity within these communities. Enhances students' micro and macro practice skills.

SOC W 559 Child Development (3) Provides students with a basic understanding of child development theory and research as well as specific knowledge about the development of children from infancy through adolescence. Emphasizes developmental approach to assessment and intervention with children and families. Particular emphasis placed on developmentally-based child welfare practice.

SOC W 560 Policy Processes, Institutions, and Influences (3) Focuses on the process and institutions through which social policies are developed, adopted, and implemented, with special attention to the implications of these processes for social justice. Develops practice skills in analyzing and influencing the policy process, including social problem definition, policy design, policy adaptation, and policy implementation.

SOC W 561 Concepts and Methods of Policy Analysis (3) Engages students in the concepts and applied practice of policy analysis and evaluation. Prepares students to address two generic policy questions: Given an identified problem, what policy or program should be selected? Given a particular policy or program, how do we evaluate effectiveness? Particular attention paid to social justice implications.

SOC W 562 Advanced Practice I: Health/Mental Health (3) First quarter of a two-quarter sequence. Emphasizes preparation of practitioners with capacity to move flexibly among a variety of

professional roles, including the provision of direct services, program planning, supervision, and community practice. Emphasizes contextual assessment from micro to macro levels.

SOC W 563 Advanced Practice II: Health/Mental Health (3) Second quarter of a two-quarter sequence. Highlights program planning, supervision, and intervention across all levels of practice.

SOC W 565 Special Topics in Policy Practice (2-3) Examination of current substantive topics in policy practice. Content varies according to recent developments in the field and the interests of the instructor.

SOC W 569 Community-Centered Integrative Practice (3) This interactive student-centered course shifts the paradigm from the binary of macro vs micro and elevates the importance of relationships, connectivity, and allyship as acts of love, justice and resistance. Provides advanced skill building in assessing and maximizing community strengths, empowering practices and coalition building.

SOC W 570 Anti-racist Organizing for Social and Economic Change (3) Applies an institutional analysis of racism and white privilege to the strategies of community organizing by communities of color and indigenous peoples. Examines anti-racist organizational transformation, intersectionality of oppressions and privileges, white allies in anti-racist struggles, and the role of social workers in maintaining and combating institutional racism.

SOC W 571 Assessment of Mental Disorders (3) Provides basic knowledge and skills to assess mental disorders and improve critical thinking concerning assessment and diagnosis. Emphasizes the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) for its system of symptom description and classification. Examines challenges of methodological implications of mental health assessment across race, gender, and ethnicity.

SOC W 572 Understanding Addiction, Pharmacology of Drugs, and Treatment Methods (3) Provides students with the knowledge and basic skills to recognize and understand the dynamics of chemical dependency in the lives of individuals, how to assess the presence of this disorder, and what the issues

are in referring individuals to treatment for this disorder.

SOC W 573 Child Welfare and Permanency Planning

(3) Focuses on social work interventions within the public child welfare system for children who have been abused and neglected. Includes practice models to ensure safety and permanency for children, federal and state mandates for permanency, cultural determinants, juvenile court dependency system, and research findings pertaining to permanency planning outcomes.

SOC W 574 Collaborative Community-Based

Program Evaluation (3) Focuses on carrying out a formative and process evaluation of a community program in conjunction with program staff and clients. In addition to learning about program theory, measurement construction, study design, and data analysis, students develop consultative and presentation skills needed in utilization-focused evaluation.

SOC W 575 Domestic Violence Policy and

Intervention (3, max. 6) Examines policy, theory, research, and intervention in field of intimate partner violence with emphasis on historical, cultural, and political contexts. Advanced study of structural contributors, policy parameters, and service delivery and cross-systems necessary to effective practice and leadership in the field locally, nationally, and globally.

SOC W 576 Contexts of Disability and Anti-Ableist

Practice (3) Engages several areas of social work practice where knowledge about disability as an element of human diversity is needed. Examines disability's recent socio-political history, models of disability, disability rights and disability justice frameworks. Emphasizes how policies and their implications for practice affect peoples' daily lives and facilitates critical personal reflection.

SOC W 577 Maintaining Quality Social Work

Practice: Ethics, Self-care, and Risk Management (2-3) Develops models for managing ethical and legal obligations to clients and others; managing risk; and maintaining ethical, responsible, and self-sustaining practice over a professional career. Examines competing ethical frameworks and material on essential values underlying ethical principles and the basis for ethical and legal regulation of practice.

SOC W 578 Evidence-Based Practice in Child Mental Health (3)

Critically examines the program components and empirical research base of selected child mental health treatment program models designed to serve children and youth who present with severe emotional or behavioral disorders. Focuses on treatment models that reflect a "systems care philosophy" and which offer alternatives to traditional services.

SOC W 579 Faith Matters and Mental Health

Practice: Conflict vs Integration (3) Examines the complex interrelation between faith matters and the practice of mental health professions, including approaches to definitions and assessments.

SOC W 580 Grant Writing and Fund Development

(3) Prepares students to participate and provide leadership in grant writing and fundraising for community-based human services. Opportunity to practice skills required for developing a successful grant proposal and planning a successful fundraising program. Identify, cultivate, and develop sources of funding. Students assist in writing a complete grant proposal as final project.

SOC W 581 Historical Trauma and Healing (3)

Provides specialized knowledge and skills for practice with communities experiencing historical trauma. Covers emerging theories of historical trauma, impact of historical trauma on families and communities, and culturally relevant interventions to promote healing. Builds upon the concepts of empowerment practice and indigenous models of social work.

SOC W 582 Interpersonal Violence and Trauma (3)

Examines trauma theory, nature of interpersonal violence, psychodynamic concepts, cognitive behavioral theory, treatment of victims and offenders. Psychological trauma, abuse-specific psychotherapy, multidisciplinary and cognitive behavioral interventions with victims and offenders, effects of interpersonal violence, and counter-transference reactions. Includes lecture, discussion, case presentations, and presentations by community experts.

SOC W 583 Multicultural and Multigenerational

Approaches to Healing Grief and Loss (3) Uses critical analysis to expand Western symptom-oriented grief and loss theory to include

multicultural approaches, exploring new constructionist models of meaning-making, narrative biography, and cultural tradition through case studies. Assessment and intervention exercises include journaling, art, and ritual, allowing students to explore how their own grief affects practice.

SOC W 584 Multicultural Mental Health Practice (3)

Advanced-practice course that builds upon foundation content in HUB, micro- and macro-practice/HBSE sequences, policy, diversity, and research. Grapples with complex mental health service design and delivery issues often informed by ethnocentric paradigms of knowledge and practice that have proven problematic in their general application in our increasingly diverse society.

SOC W 585 Advanced Group Work (3) Overview of group work and major theorist in the field. Examines differential applicability of methods across diverse populations. Emphasis on developing powers of observation of group process (as opposed to content) and on ability to intervene at the group level (as opposed to individual level) . Prerequisite: Group work experience.

SOC W 586 Policy Advocacy (1-3, max. 3) Focuses on involvement in the policy-making process. Students design projects to influence public policy in local, state, and federal levels. Readings based on policy materials (proposed and final laws, regulations, budgets, advocacy documents) . Credit/no-credit only.

SOC W 587 Spirituality in Healthcare (2)

Examination of the beliefs, values, meaning, and spirituality of health professionals for the well-being of their patients as well as for themselves. Offered: jointly with B H 518/FAMED 547; Sp.

SOC W 588 Social Work in Schools (3) Meets professional standards for Washington State Educational Staff Associate certification. Explores social work role within organizational and legal contexts of school systems. Addresses evidence-informed and multi-level social work practice relative to national, state and local trends in education. Examines school reform, truancy, homelessness, diversity, violence, student support and special education.

SOC W 589 Social Work Practice with Families (3)

Philosophical, theoretical, and practice issues relevant to family-centered social work. Presents family systems theory and a generalized model of engagement, assessment, and treatment. Clinical applications with particular client populations and their presenting problems, such as couples, family crisis, child behavioral problems, and affective disorders.

SOC W 590 Social Work Supervision and Consultation (3)

Provides knowledge and skills involved in the role of social worker as supervisor and team leader; supervision as a leadership function, power and authority, professional boundaries, staff recruitment, selection, performance evaluation, and addressing staff-related performance problems.

SOC W 591 Social Work Practice in Long-Term Care Across the Lifespan (3)

Applies a multigenerational framework to introduce values, skills, and knowledge necessary for social work practice in long-term care settings across all age groups. Meets at a nearby continuing care community and provides regular opportunities to interact with persons requiring long-term care, their families, and formal caregivers.

SOC W 592 Social Work Practice with African-American Families (3)

Introduces the study of African-American families from a historical, socio-cultural, and political perspective. Presents various theories for understanding African-American families and addresses an Afrocentric framework for intervention.

SOC W 593 Social Work Practice with Chemically Dependent Adults: Understanding Assessment, Evaluation, and Counseling (3)

Teaches skills in four contexts: (1) incorporating questions concerning alcohol/drug use in an assessment of new clients, (2) conducting a comprehensive alcohol/drug assessment when a problem has been identified, (3) offering a brief motivational enhancement intervention to ambivalent clients, and (4) delivering cognitive-behavioral counseling focusing on overcoming dependence.

SOC W 594 Gender and Inequalities in the Global Context (3)

Examines issues of gender, globalization, and inequality through a gender lens. Topics include

global movements of capital (the global factory) and labor (migration, trafficking, etc.) , disruption/creation of family forms and gender roles (domestic violence) , social welfare, private/public policies, international frames (human rights) , resistance, and response.

SOC W 595 Co-Occurring Addiction and Mental Health Disorders (3) Provides students with the knowledge and skills to understand the dynamics of co-occurring addiction and mental health disorders (COD) in the lives of individuals. Students learn how to assess the presence of COD and what the issues are in referring individuals to treatment or providing them treatment for COD.

SOC W 596 Special Topics in Social Work (1-10, max. 15) Introduces and explores a specific area of social work, with specific focus on emerging methods of practice. Content varies according to recent developments in the field and the interests of the instructor.

SOC W 597 Graduate Study Abroad in Social Work (1-15, max. 15) For graduate students in a UW study

abroad program. Specific content varies and must be individually evaluated.

SOC W 598 Integrative Seminar (1-5, max. 12)

Integrative, skill-based seminar that provides MSW students an opportunity to synthesize social work theory and practice through applied critical thinking, case presentations, skill-building, and professional development. Credit/no-credit only.

SOC W 599 Independent Study in Social Work (1-10, max. 10) Prerequisite: approval of a well-specified plan by an instructor and program director, including learning objectives and activities. Credit/no-credit only.

SOC W 600 Independent Study or Research (1-10, max. 10) An independent research project.

Prerequisite: approval of a well-specified plan by an instructor and program director, including learning objectives and activities included on the SOC W 600 form.

SOC W 700 Master's Thesis (*-)

INTERDISCIPLINARY UNDERGRADUATE PROGRAMS

HONORS PROGRAM

HONORS 100 Introduction to Honors Education (1)

Introduces students to the essential features of the Honors Program, including interdisciplinary thinking, experiential learning, and the Honors portfolio. For University Honors Program students only.

HONORS 205 What We Know and How We Know It (5) C

Helps students to develop methods of researching and gaining knowledge through critical reading of texts, dialogue, reflective writing, and visiting faculty lecturers from different disciplines. For University Honors Program students only. Cannot be taken for credit if credit received for HONORS 345.

HONORS 210 Humanities for Honors Students I (5, max. 15) VLPA

Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 211 Humanities for Honors Students II (5, max. 15) VLPA

Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 212 Humanities for Honors Students III (5, max. 15) VLPA

Evolution of an idea or a discipline central to the humanities. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 213 Honors Foreign Study I - Humanities (2-5, max. 15) VLPA

Coursework drawn from interdisciplinary groups in the arts and humanities. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 220 Science for Honors Students I (5, max. 15) NW

Evolution of an idea or concept central to

the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 221 Science for Honors Students II (5, max. 15) NW

Evolution of an idea or concept central to the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 222 Science for Honors Students III (5, max. 15) NW

Evolution of an idea or concept central to the natural sciences. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 223 Honors Foreign Study II - Natural Science (2-5, max. 15) NW

Coursework drawn from interdisciplinary groups in the natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 230 Social Science for Honors Students I (5, max. 15) I&S

Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: A.

HONORS 231 Social Science for Honors Students II (5, max. 15) I&S

Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: W.

HONORS 232 Social Science for Honors Students III (5, max. 15) I&S

Development of an idea, concept, or institution central to the social sciences. Content varies from year to year. For University Honors Program students only. Offered: Sp.

HONORS 233 Honors Foreign Study III - Social Science (2-5, max. 15) I&S

Coursework drawn from interdisciplinary groups in the social sciences.

Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 240 Fine Arts for Honors Students I (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 241 Fine Arts for Honors Students II (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 242 Fine Arts for Honors Students III (5, max. 15) VLPA Evolution of an art form, an idea, or a discipline central to the fine arts. Content varies from year to year. For University Honors Program students only.

HONORS 345 Interdisciplinary Writing Seminar (5, max. 15) C Investigates emerging topics of interest in the arts and sciences and frames the investigation of subject matter through writing and dialogic inquiry within a particular field. Students discuss, revise, and reflect upon their work through peer review, in-class writing activities, and editorial feedback. For University Honors Program students only. Cannot be taken for credit if credit received for HONORS 205.

HONORS 350 Honors Seminar (2, max. 20) Discussion of selected topics in a variety of subject-matter fields. Topics and reading material vary from year to year. For University Honors Program students only. Credit/no-credit only.

HONORS 381 Honors Foreign Study IV (2-5, max. 15) NW/I&S/VLPA Develops ideas, concepts, or institutions that cut across the arts, humanities, social sciences, and natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 382 Honors Foreign Study V (2-5, max. 15) I&S/NW Develops ideas, concepts, or institutions that cut across the social sciences and natural sciences. Specific content varies and must be

individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 383 Honors Foreign Study VI (2-5, max. 15) VLPA/NW Develops ideas, concepts, or institutions that cut across the arts, humanities, and natural sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 384 Honors Foreign Study VII (2-5, max. 15) VLPA/I&S Develops ideas, concepts, or institutions that cut across the arts, humanities, and social sciences. Specific content varies and must be individually evaluated. For University Honors Program students participating in a UW study abroad program only. Offered: AWSpS.

HONORS 391 Honors Interdisciplinary Study I (5, max. 15) NW/VLPA/I&S Develops ideas, concepts, or institutions that cut across the arts, humanities, social sciences, and natural sciences. For University Honors Program students only.

HONORS 392 Honors Interdisciplinary Study II (5, max. 15) NW/I&S Develops ideas, concepts, or institutions that cut across the social sciences and natural sciences. For University Honors Program students only.

HONORS 393 Honors Interdisciplinary Study III (5, max. 15) VLPA/NW Develops ideas, concepts, or institutions that cut across the arts, humanities, and natural sciences. For University Honors Program students only.

HONORS 394 Honors Interdisciplinary Study IV (5, max. 15) I&S/VLPA Develops ideas, concepts, or institutions that cut across the arts, humanities, and social sciences. For University Honors Program students only.

HONORS 396 Interdisciplinary Special Topics-Natural Science (1-5, max. 10) NW Special courses drawn from interdisciplinary groups in the natural sciences. Content varies. For University Honors Program students only.

HONORS 397 Interdisciplinary Special Topics-Social Science (1-5, max. 10) I&S Special courses drawn from interdisciplinary groups in the social sciences. Content varies. For University Honors Program students only.

leadership development lens. Credit/no-credit only.
Offered: W.

HONORS 398 Interdisciplinary Special Topics-Humanities (1-5, max. 10) VLPA Special courses drawn from interdisciplinary groups in the humanities. Content varies. For University Honors Program students only.

HONORS 496 Integration of the Honors Core Curriculum (1) Allows students completing the Interdisciplinary Honors Program to reflect on and present to peers the intersection between their Interdisciplinary Honors core courses and experiential learning projects. For University Honors Program students only. Offered: WSp.

HONORS 499 Honors Independent Study or Research (1-5, max. 10) Faculty supervised Honors independent study or research for students in areas extending beyond their major departments or along lines not otherwise accommodated by existing Honors courses. For University Honors Program students only.

LEADERSHIP

LEAD 100 Learning Leadership in Theory and Practice (5) Introduces students to contemporary leadership theories and frameworks. Emphasis on translating formal, academic study of leadership into practice. Highlights authentic leadership constructs and concepts that center the value of social justice and critical perspectives. Develops students' leadership identity and confidence and sets the stage for continued leadership development. Credit/no-credit only. Offered: AWSp.

LEAD 298 Special Topics in Leadership Studies (1-5) Varied topics related to leadership studies taught at an introductory level. Offered: AWSpS.

LEAD 495 Leadership E-portfolio (2/3) Francesca C. Lo Guides the creation of a leadership e-portfolio through a series of reflective exercises. Supports students in integrating learning and articulating connections between personal strengths, values, key learning experiences and future goals through a

FACULTY

Entries include appointment to the Graduate School faculty (indicated by *); year of appointment to the University; graduate or professional degree(s), date(s) and institution(s) (or highest-known degree where graduate or professional degree was unavailable; see note below). Faculty are listed only under their primary appointing department.

Please note: Due to a change in databases just prior to publication of this edition of the General Catalog, many of the highest-attained degrees for faculty were unavailable. Listed is the highest-attained degree that was available at the time of publication. For full information on faculty, please consult the departmental web pages listed with each department's entry.

College of Arts and Sciences

American Ethnic Studies

For complete faculty listing, please visit <https://aes.washington.edu/people/faculty>

Professors

BONUS, ENRIQUE C. * 1998; Master's, 1990, California State University-Fresno
FLORES, LAURO H * 1980; Bachelor's, 1973, University of California-San Diego
SO, CONNIE C., 1983; Master's, 1989, Princeton University
WALTER, JOHN C, 1988; Bachelor's, 1956, Arkansas State University

Associate Professors

PINEDO-TURNOVSKY, CAROLYN * 2009; Bachelor's, 1996, Columbia University
RETMAN, SONNET H. * 2002; Bachelor's, 1989, Princeton University
SALAS, ELIZABETH, 1987; Bachelor's, 1970, California State University
WAITA, JACQUELINE N., 2010; Bachelor's, 1996, Seattle Pacific University

Assistant Professors

HUH, JANG WOOK, 2017
JUAN, MICHAEL RIGUEROS, 2018; Bachelor's, 2017, University of Washington
LEVY, LATASHA, 2016; Master's, 2006, Cornell University
MENDEZ, ALINA RAMIREZ, 2018
NGUYEN, LINH T, 2017
PITTMAN, LASHAWNDA, 2013; Bachelor's, 1995, Georgia State University

Lecturer

ATIENZA, RICHARD, 2006; Master's, 2005, Centro Escolar University Manila Mendiola

American Indian Studies

For complete faculty listing, please visit <https://ais.washington.edu/people/faculty>

Professors

HARMON, ALEXANDRA J * 1991; Bachelor's, 1966, Stanford University
 HART, DANIEL * 1999; Bachelor's, 1977, Humboldt State University
 TEUTON, CHRISTOPHER * 2014; Bachelor's, 1994, University of Colorado at Boulder

Associate Professors

COTE, CHARLOTTE * 2001; Bachelor's, 1992, Simon Fraser University
 DENNISON, JEAN M * 2015; Bachelor's, 2002, Ohio Christian University
 MILLION, DIAN L. * 2002; Master's, 1998, University of California-Berkeley

Lecturers

HOLDER, NANCY L, 2001; Bachelor's, 1985, Eastern Washington University
 STORFJELL, TROY, 2018

Anthropology

For complete faculty listing, please visit

<https://anthropology.washington.edu/people?name=&status=3&interests=All>

Professors

ANAGNOST, ANN S * 1990; Bachelor's, 1971, University of Michigan-Ann Arbor
 BARKER, HOLLY M * 2004; Master's, 1993, American University
 BILANIUK, LAADA M * 1997; Master's, 1991, University of Michigan-Ann Arbor
 CLOSE, ANGELA E. * 1995; Bachelor's, 1971, University of Cambridge
 DUNCAN, BETTINA SHELL * 1995; Bachelor's, 1985, Northwestern University
 FITZHUGH, J.BEN * 1997; Master's, 1992, University of Michigan-Ann Arbor
 GOODREAU, STEVEN M. * 2001; Bachelor's, 1994, Harvard University
 HUNN, EUGENE S * 1982; Bachelor's, 1964, Stanford University
 KAHN, MIRIAM * 1986; Master's, 1974, Bryn Mawr College
 KEYES, CHARLES F * 1982; Bachelor's, 1959, American University
 KRAMER, PATRICIA * 1993; Bachelor's, 1984, The University of Texas
 LAPE, PETER V * 2000; Doctorate, 2000, Brown University
 LEONETTI, DONNA * 1982; Bachelor's, 1965, University of Washington
 LOWE, CELIA * 1999; Bachelor's, 1990, Wesleyan University
 NASON, JAMES * 1982; Bachelor's, 1964, University of California-Riverside
 O'CONNOR, KATHLEEN A. * 1999; Bachelor's, 1984, New York University
 OTTENBERG, SIMON, 1982; Doctorate, 1957, Northwestern University
 PENA, DEVON G * 1999; Bachelor's, 1976, The University of Texas
 SMITH, ERIC A, 1982; Master's, 1976, Cornell University
 SPAIN, DAVID H, 1968; Bachelor's, 1961, Ohio State University Agricultural Technical Institute
 WINANS, EDGAR V, 1957; Bachelor's, 1952, University of California-Los Angeles

Associate Professors

AMRUTE, SAREETA BIPIN * 2008; Bachelor's, 1997, Columbia University
 CHAPMAN, RACHEL R * 2004; Master's, 1991, University of California-Los Angeles
 EISENBERG, DANIEL T A * 2012; Doctorate, 2012, Northwestern University
 FEATHERS, JAMES K * 1983; Bachelor's, 1972, University of North Carolina
 GONZALEZ, SARA L * 2013; Master's, 2006, University of California-Berkeley
 GOVINDRAJAN, RADHIKA * 2015; Master's, 2006, Jawaharlal Nehru University
 HAAKANSON, SVEN D * 2013; Master's, 1996, Harvard University
 HOLMAN, DARRYL J. * 1999; Doctorate, 1996, Pennsylvania State University-College of Medicine
 JOLLES, CAROL Z, 1982; Bachelor's, 1963, Roosevelt University
 LLOBERA, MARCOS * 2004; Bachelor's, 1991, Southern Illinois University
 MARWICK, BENJAMIN * 2008; Doctorate, 2008, Australian National University

Assistant Professors

DUBAL, SAM BHARAT, 2020; Medical Doctorate, 2017, Harvard University
 GRANT, JENNA M * 2015; Bachelor's, 1999, University of California-Berkeley
 HILL, ALEXANDER KIRKLAND, 2015; Master's, 2011, Pennsylvania State University-College of Medicine
 MARTIN, MELANIE A., 2017; Master's, 2011, University of California-Santa Barbara; Anthropology
 RABANES, RAPHAELLE * 2020; Bachelor's, 2003, Université Denis Diderot Paris VII; Clinical Psychology
 VAN EIJK, MARIEKE SIMONE, 2014; Master's, 2002, University of Amsterdam

Lecturers

CLARK, HEATHER, 2017; Bachelor's, 1991, The Evergreen State College
 DUNCAN, ANDREA E, 2002; Bachelor's, 1993, Duke University; Anthropology
 LEE, RACHEL JIHYUN, 2016
 TAYLOR, MATTHEW STRICKLAND, 2013; Bachelor's, 1998, Angelo State University
 TREIN, DEBORA C., 2017; Doctorate, 2016, The University of Texas at Austin; Anthropology

Applied Mathematics

For complete faculty listing, please visit <http://www.amath.washington.edu/people/>

Professors

ADAMS, LOYCE M. * 1985; Doctorate, 1983, University of Virginia-Main Campus; Applied Mathematics
 CRIMINALE, WILLIAM O, 1982; Doctorate, 1960, Johns Hopkins University
 DECONINCK, BERNARD * 1999; Bachelor's, 1993, Ghent University
 GREENBAUM, ANNE * 1997; Master's, 1978, University of California-Berkeley
 KUTZ, JOSE NATHAN * 1997; Doctorate, 1994, Northwestern University
 LEUNG, SIU-TANG * 2016; Bachelor's, 2003, Cornell University
 LEVEQUE, RANDALL J * 1985; Doctorate, 1982, Stanford University
 MARTIN, R DOUGLAS * 1982; Bachelor's, 1959, Princeton University
 MOOLGAVKAR, SURESH H. * 1984; Doctorate, 1973, Johns Hopkins University
 QIAN, HONG * 1997; Bachelor's, 1982, Peking University
 SHEA-BROWN, ERIC T. * 2007; Master's, 2001, Princeton University
 TUNG, KA KIT * 1988; Bachelor's, 1972, California Institute of Technology

Associate Professors

ARAVKIN, ALEKSANDR Y. * 1998; Bachelor's, 2004, University of Washington
 HETMANIUK, ULRICH L., 2008; Bachelor's, 1999, American University of Paris
 KOT, MARK * 1989; Master's, 1979, Cornell University
 LORIG, MATTHEW J. * 2014; Doctorate, 2011, University of California-Santa Barbara
 LUEBECK, GEORG * 2013; Master's, 1983, University of Washington
 TROGDON, THOMAS * 2019

Assistant Professors

BOZIC, IVANA * 2017; Doctorate, 2012, Harvard University
 SHLIZERMAN, ELI * 2009; Bachelor's, 2002, Bar Ilan University

Art, Art History, and Design

For complete faculty listing, please visit <https://art.washington.edu/people/all/faculty>

Professors

BERGER, PAUL E * 1982; Master's, 1973, New York University
 BRAVMANN, RENE A * 1972; Bachelor's, 1961, Case Western Reserve University
 BRODY, DAVID * 1996; Bachelor's, 1981, Bennington College
 CARRAHER, RONALD G, 1982; Master's, 1961, San Jose State University
 CASTERAS, SUSAN P * 1996; Bachelor's, 1971, Vassar College
 CHENG, KAREN * 1997; Bachelor's, 1991, Pennsylvania State University-College of Medicine
 CHRISTOFIDES, C G, 1982; Bachelor's, 1948, Columbia Union College
 CLAUSEN, MEREDITH L * 1979; Bachelor's, 1964, Scripps College
 CUMMIINS, REBECCA * 2001; Doctorate, 2003, Australian College of Theology
 DAHN, RICHARD F, 1982
 GALE, ANN E * 1995; Bachelor's, 1988, Rhode Island College
 GARVENS, ELLEN J. * 1994; Master's, 1983, University of Phoenix-New Mexico Campus
 GOLDSMITH, LAYNE * 1983; Master's, 1979, Cranbrook Academy of Art
 GOULD, ANNABELLE K * 2003; Master's, 1999, Cranbrook Academy of Art
 GOVEDARE, PHILIP B * 1991; Bachelor's, 1980, San Francisco Art Institute
 HOLM, BILL, 1968; Bachelor's, 1949, University of Washington
 JONES, ROBERT C, 1960; Bachelor's, 1953, Rhode Island School of Design
 KARTSONIS, ANNA D., 1983; Master's, 1968, New York University
 KEHL, RICHARD L, 1982; Bachelor's, 1959, Kansas City Art Institute
 LIN, ZHI * 2001; Bachelor's, 1982, China Central Academy of Fine Arts
 LINGO, ESTELLE C * 2006; Master's, 1993, Brown University
 LINGO, STUART P * 2006; Doctorate, 1998, Harvard University
 LUNDIN, NORMAN K, 1982; Bachelor's, 1961, The Art Institutes
 MARSHALL, JOHN C, 1982; Bachelor's, 1965, Cleveland Institute of Art
 O'TOOLE, HELEN J * 1996; Bachelor's, 1986, National College of Art and Design
 OZUBKO, CHRISTOPHER * 1981; Master's, 1981, Cranbrook Academy of Art
 ROESLER, AXEL * 2005; Master's, 2001, Ohio State University Agricultural Technical Institute
 TIHANYI, TIMEA, 2001; Bachelor's, 1998, Massachusetts College of Art and Design
 WALKER, JAMIE * 1987; Master's, 1983, Rhode Island School of Design
 WHITEHILL-WARD, JOHN, 1982; Bachelor's, 1972, Maryland Institute College of Art

Associate Professors

AHN, SANG-GYEUN * 2006; Bachelor's, 1996, Kookmin University
CABEEN, LOUISE * 1993; Master's, 1989, School of the Art Institute of Chicago
GERMANY, JASON O * 2009; Bachelor's, 1999, Montana State University
HIRSCH, EDWARD, 2011; Master's, 2000, Carnegie Mellon University
JECK, DOUGLAS A * 1996; Bachelor's, 1986, Appalachian State University
KHULLAR, SONAL * 2009; Master's, 2004, University of California-Berkeley
LABITZKE, CURT W * 1984; Master's, 1984, University of Notre Dame
MATTHEWS, KRISTINE * 1989; Master's, 1997, Royal College of Art
MCNEEL, AMIE L * 2007; Bachelor's, 1988, Kansas City Art Institute
MUREN, DOMINIC L, 2008
PRACZUKOWSKI, EDWARD, 1965; Master's, 1965, Cranbrook Academy of Art
ROUNTHWAITE ESSE, VANESSA * 2015; Master's, 2007, University of Amsterdam
SCHEIER, SHIRLEY E. * 1986; Bachelor's, 1976, University of Kansas
WANG, HAICHENG * 2008; Bachelor's, 1997, Peking University
WIECZOREK, MAREK K. * 1997; Master's, 1992, Columbia University
ZIRPEL, MARK * 2008; Master's, 1989, San Francisco Art Institute

Assistant Professors

BUNN-MARCUSE, KATHRYN * 1997; Bachelor's, 1993, Middlebury College
DESJARDINS, AUDREY * 2016; Bachelor's, 2009, Canadian University College
JAMISON, AARON FLINT * 2015; Master's, 2006, San Francisco Art Institute
LYNN, WHITNEY, 2018; Master's, 2007, San Francisco Art Institute
PIERCE, JAMES * 2020
RHEE, ROBERT * 2020; Master's, 2010, Columbia University
SPERLING, JULIET * 2020; Bachelor's, 2011, University of North Carolina at Chapel Hill
SWAINE, MICHAEL EDWARD * 2015; Bachelor's, 1994, Alfred University

Lecturers

AGUILAR, GAVRIELLA, 2015
BEYER, ROBERT D, 2017
CASTRO, FREDERIC M., 2018
DAVIS, KATHERINE F, 2017
ELEK, JENNIFER, 2018
EWING JR, RICHARD A, 2017
GHERARD, EMILY M., 2017
HALPINE, CLARE, 2015
HAWKINS, WYNDEN, 2018
JIN, DING, 2015
KADO, STEVE, 2018
MILHOAN, JASON T., 2007
MORA, DANIELA, 2015
NORSWORTHY, SARAH K, 2018; Bachelor's, 2002, Dartmouth College
OLDHAM, CHRISTIAN, 2016
ROBERTS, SARAH K, 2016
SALOV, AMANDA E., 2018
SCHROEDER, KATHERINE, 2016

SPARANO, JOSEPH F, 2014; Master's, 2016, University of Washington
SZOSZ, CARL M, 2017

Artists in Residence

COWIE, CLAIRE M., 1998
RICE, KOLYA, 1994

Asian Languages and Literature

For complete faculty listing, please visit <https://asian.washington.edu/people>

Professors

ATKINS, PAUL S * 2002; Bachelor's, 1990, Stanford University
BI, NYAN-PING, 2000; Master's, 1988, Indiana University-Bloomington
BOLTZ, WILLIAM * 1982; Bachelor's, 1965, University of California-Berkeley
COX, COLLETT D * 1985; Bachelor's, 1972, Carleton College
HAMM, JOHN C * 1999; Bachelor's, 1978, Princeton University
HANDEL, ZEV * 1998; Bachelor's, 1988, Harvard University
KNECHTGES, DAVID R * 1982; Master's, 1965, Harvard University
MATSUDA-KIAMI, IZUMI, 1996; Bachelor's, 1990, Osaka University
PAUWELS, HEIDI R * 1990; Bachelor's, 1983, Catholic University of Leuven
SALOMON, RICHARD G. * 1981; Bachelor's, 1970, Columbia University
SANDJAJA, DESIANA P, 2004; Bachelor's, 1994, Atma Jaya Yogyakarta University
SHAPIRO, MICHAEL * 1970; Bachelor's, 1967, Queens College
YU, LIPING, 2004; Bachelor's, 1986, Beijing Normal University
YUE-HASHIMOTO, ANNE OI-KAN * 1980; Doctorate, 1966, Ohio State University Agricultural Technical Institute

Associate Professors

AHMAD, JAMEEL, 2004; Master's, 1996, Jawaharlal Nehru University
BHOWMIK, DAVINDER L * 1986; Bachelor's, 1986, University of Washington
CHO, HEEKYOUNG * 2010; Doctorate, 2010, University of Chicago
DUBROW, JENNIFER E * 2006
JESTY, JUSTIN C * 2011; Bachelor's, 1996, Oberlin College
KIM, JUNGHEE, 2018
LU, CHAN * 2016; Master's, 2005, Beijing Language and Culture University
MACK, EDWARD T * 2002; Master's, 1996, Columbia University
NISHIKAWA, ITSUKO, 2005; Master's, 1999, Columbia University
OHTA, AMY * 1990; Master's, 1990, University of California-Los Angeles
OHTA, KAORU, 1987; Bachelor's, 1981, Meiji Gakuin University
PAHLAJRAI, PREM, 2002; Master's, 1990, Georgia Institute of Technology-Main Campus
WANG, PING * 2000; Bachelor's, 1993, Anhui University
WON, EUNYOUNG, 2010; Bachelor's, 1998, Hanbuk University

Assistant Professors

CAO, YU QING, 1988; Bachelor's, 1990, University of Washington
IWATA, AKIKO, 2004; Master's, 2002, Columbia University

MARINO, JOSEPH A * 2009
TAKEDA, FUMIKO, 2018
TURNER, BICH NGOC, 2014; Bachelor's, 1994, Hanoi University

Senior Lecturer

LENZ, TIMOTHY J, 1989; Master's, 1994, University of Washington

Lecturers

ABEDIN, NANDINI, 1997
KIM, WOOJOO, 2010
NEWTON, HONGYAN ZHANG, 2008
OLSON, TIMOTHY P, 2017

Astronomy

For complete faculty listing, please visit <http://depts.washington.edu/astron/people/faculty/>

Professors

AGOL, ERIC * 2003; Bachelor's, 1992, University of California-Berkeley
ANDERSON, SCOTT * 1982; Master's, 1980, University of California-Los Angeles
CONNOLLY, ANDREW J. * 2006; Bachelor's, 1988, University of London
DALCANTON, JULIANNE * 1998; Bachelor's, 1989, Massachusetts Institute of Technology
HAWLEY, SUZANNE * 1999; Bachelor's, 1981, Harvey Mudd College
IVEZIC, ZELJKO * 2004; Doctorate, 1995, University of Kentucky
LAWS, CHRISTOPHER S, 1998; Bachelor's, 1989, Louisiana State University
MEADOWS, VICTORIA S * 2007; Bachelor's, 1988, University of New South Wales
QUINN, THOMAS R. * 1993; Bachelor's, 1982, Lehigh University
SULLIVAN, WOODRUFF T * 1982; Bachelor's, 1966, Massachusetts Institute of Technology
SZKODY, PAULA * 1982; Bachelor's, 1970, Michigan State University

Associate Professors

BARNES, RORY K * 1998; Bachelor's, 1998, University of Arizona
JURIC, MARIO * 2014; Doctorate, 2006, Princeton University
LEVESQUE, EMILY M * 2015; Bachelor's, 2006, Massachusetts Institute of Technology
MCQUINN, MATTHEW J * 2012; Master's, 2006, Harvard University
SMITH, TOBY R., 1988
WILLIAMS, BENJAMIN F * 1997; Bachelor's, 1995, Middlebury College

Assistant Professors

BELLM, ERIC C * 2017; Bachelor's, 2005, Harvard University
FRASER, OLIVER J., 1997
TUTTLE, SARAH E * 2016; Master's, 2006, Columbia University
WERK, JESSICA K. * 2016; Doctorate, 2010, University of Michigan-Ann Arbor

Lecturer

KELLY, NICOLE M., 2003

Biology

For complete faculty listing, please visit <http://www.biology.washington.edu/people/faculty>

Professors

AMEMIYA, CHRIS T * 2008; Bachelor's, 1981, Purdue University-Main Campus
AMMIRATI, JOSEPH * 1979; Bachelor's, 1965, San Francisco State University
BALIGA, NITIN * 2005; Bachelor's, 1992, Mumbai University
BENDICH, ARNOLD J * 1982; Bachelor's, 1962, University of Vermont
BERGSTROM, CARL T * 2001; Bachelor's, 1993, Harvard University
BOERSMA, P DEE * 1974; Bachelor's, 1969, Central Michigan University
BOSMA, MARTHA * 1987; Bachelor's, 1979, McGill University
BRADSHAW, HARVEY D * 1984; Bachelor's, 1979, East Carolina University
BUCKLEY, LAUREN * 2013; Doctorate, 2005, Stanford University
CARRINGTON, EMILY * 2005; Bachelor's, 1985, Cornell University
CATTOLICO, ROSE A. * 1982; Doctorate, 1973, Stony Brook University
CROWE, ALISON J, 2000; Doctorate, 1993, Stony Brook University
DANIEL, THOMAS L. * 1984; Doctorate, 1982, Duke University
DE LA IGLESIA, HORACIO O. * 2003; Master's, 1991, Universidad de Buenos Aires
DEL MORAL, ROGER * 1968; Bachelor's, 1965, University of California-Santa Barbara
DETHIER, MEGAN N * 1983; Bachelor's, 1975, Carleton College
DOHERTY, JENNIFER HELEN, 2014; Bachelor's, 2000, University of Pennsylvania
EBREY, THOMAS * 1997; Bachelor's, 1963, University of Central Oklahoma
HILLE, MERRILL * 1976; Bachelor's, 1960, Cornell University
HUEY, RAYMOND B * 1977; Doctorate, 1975, Harvard University
IMAIZUMI, TAKATO * 2008; Bachelor's, 1996, Tokyo Metropolitan University
KENAGY, GEORGE JAMES * 1982; Bachelor's, 1967, Pomona College
KENNEDY, MICHAEL L, 1999; Doctorate, 1994, Arizona State University
KERR, BENJAMIN B * 2005; Doctorate, 2002, Stanford University
KLICKA, JOHN T * 2012; Master's, 1994, The University of Texas
LEACHE, ADAM D. * 2010; Bachelor's, 1997, San Diego State University
MARTIN-MORRIS, LINDA E, 1994; Doctorate, 1991, Brandeis University
MOODY, WILLIAM J * 1982; Doctorate, 1977, Stanford University
NEMHAUSER, JENNIFER L * 2006; Doctorate, 2000, University of California-Berkeley
ODELL, GARRETT M., 1985; Bachelor's, 1965, Johns Hopkins University
OLMSTEAD, RICHARD G. * 1982; Bachelor's, 1973, New York University
PALKA, JOHN M * 1982; Bachelor's, 1960, Swarthmore College
PERKEL, DAVID J * 2000; Bachelor's, 1984, Harvard University
RIDDIFORD, LYNN M * 1982; Bachelor's, 1958, Briarcliffe College
RIFFELL, JEFFREY A * 2010; Doctorate, 2004, University of California-Los Angeles
RUESINK, JENNIFER * 1990; Bachelor's, 1989, Cornell University
SEBENS, KENNETH * 2005; Bachelor's, 1972, University of Connecticut
SIDOR, CHRISTIAN A * 2005; Bachelor's, 1994, Connecticut College
STRATHMANN, RICHARD R * 1982; Bachelor's, 1963, Pomona College

STROMBERG, CAROLINE A. * 2007; Bachelor's, 1994, Lund University
SUMMERS, ADAM P. * 1995; Master's, 1992, New York University
SWALLA, BILLIE J. * 1999; Bachelor's, 1981, University of Iowa
THERIOT, JULIE ANNE, 2018
TRUMAN, JAMES W * 1982; Master's, 1969, Harvard University
VAN VOLKENBURGH, ELIZABETH * 1982; Bachelor's, 1973, Duke University
WAALAND, J ROBERT * 1982; Bachelor's, 1966, University of California-Berkeley
WAKIMOTO, BARBARA T * 1984; Bachelor's, 1976, Arizona State University
WARD, PETER D * 1984; Doctorate, 1976, McMaster University
WASSER, SAMUEL K. * 1982; Bachelor's, 1975, Michigan State University
WENDEROTH, MARY PAT * 1988; Master's, 1981, Purdue University-Main Campus
WILSON, GREGORY * 2007; Bachelor's, 1995, Stanford University

Associate Professors

BAGHERI, NADA * 2019; Doctorate, 2007, University of California-Santa Barbara; Electrical Engineering
BROSI, BERRY JUSTICE * 2020; Doctorate, 2006, Stanford University; Biology
BRUNTON, BINGNI W * 2012; Bachelor's, 2006, California Institute of Technology
BUCHWITZ, BRIAN JOSEPH, 1997; Bachelor's, 1997, University of Minnesota-Duluth
CABERNARD, CLEMENS C * 2015; Master's, 2000, Universität Basel
COOPER, MARK S * 1990; Bachelor's, 1978, New Mexico State University-Grants
DISTILIO, VERONICA SANDRA * 2003; Bachelor's, 1990, Universidad de Buenos Aires
HERRON, JON, 1987; Bachelor's, 1985, Princeton University
LIEPKALNS, JUSTINE, 2016; Bachelor's, 2004, Eckerd College
MOENS, CECILIA B * 1998; Doctorate, 1993, University of Toronto
PAREDEZ, ALEXANDER R. * 2012; Associate, 1995, College of the Sequoias
PARRISH, JAY Z * 2010; Doctorate, 2002, University of Colorado at Boulder
PETERSEN, KAREN E, 1990; Bachelor's, 1975, University of Nebraska-Lincoln
SANTANA MATA, SHARLENE E. * 2012; Master's, 2004, Universidad de los Andes Mérida
SCHIVELL, AMANDA E, 1994; Bachelor's, 1992, Stanford University
SELF, CASEY J, 2007; Bachelor's, 2003, University of California-Davis
SHOU, WENYING * 2008; Doctorate, 2001, California Institute of Technology

Assistant Professors

ABRAHMS, BRIANA LEE * 2020; Doctorate, 2016, University of California-Berkeley; Environmental Science
HURME, KRISTIINA JUNE, 2019; Doctorate, 2011, University of Connecticut; Biology
RASMUSSEN, JEFFREY P * 2018; Bachelor's, 2002, Brown University; Biology
RICO-GUEVARA, ALEJANDRO, 2019; Doctorate, 2014, University of Connecticut; Ecology
STEINBRENNER, ADAM D * 2019; Doctorate, 2015, University of California-Berkeley; Botany/Plant Biology
THEOBALD, ELINORE JENKINS, 2004; Doctorate, 2016, University of Washington; Biology

Lecturers

COOPER, JACOB DEVIN, 2008; Bachelor's, 2005, University of California-Berkeley
DOOLEY, FREDERICK DANIEL, 2009
DRAPER, MOON, 2014; Doctorate, 2005, The University of Texas; Molecular Genetics
FREEMAN, SCOTT RIDER * 1985; Bachelor's, 1978, Carleton College

Chemistry

For complete faculty listing, please visit <https://chem.washington.edu/people/faculty>

Professors

CAMPBELL, CHARLES T * 1989; Bachelor's, 1975, The University of Texas
CHIU, DANIEL T. * 2000; Doctorate, 1998, Stanford University
CHRISTIAN, GARY D * 1982; Master's, 1962, University of Maryland-University College
COSSAIRT, BRANDI MICHELLE * 2012; Bachelor's, 2006, California Institute of Technology
DALTON, LARRY R. * 1998; Doctorate, 1971, Harvard University
DROBNY, GARY P * 1981; Bachelor's, 1976, San Francisco State University
DUNNING, THOMAS HAROLD * 2013; Doctorate, 1970, California Institute of Technology
GAMELIN, DANIEL R. * 2000; Bachelor's, 1990, Reed College
GELB, MICHAEL H. * 1985; Bachelor's, 1979, University of California-Davis
GINGER JR, DAVID S. * 2003; Bachelor's, 1997, Indiana University-Bloomington
GOLDBERG, KAREN * 1995; Bachelor's, 1983, Barnard College
HEINEKEY, DENNIS M, 1991; Doctorate, 1982, University of Alberta
KELLER, SARAH L. * 2000; Doctorate, 1995, Princeton University
KHALIL, MUNIRA * 2006; Bachelor's, 1998, Colgate University
KOVACS, JULIA A. * 1988; Doctorate, 1986, Harvard University
KWIRAM, ALVIN L, 1982; Doctorate, 1963, California Institute of Technology
LALIC, GOJKO * 2008; Doctorate, 2004, Harvard University
LI, XIAOSONG * 2005; Bachelor's, 1999, University of Science and Technology of China; Chemistry
MALY, DUSTIN JAMES * 2006; Doctorate, 2002, University of California-Berkeley
MASIELLO, DAVID * 2004; Bachelor's, 1999, University of Florida
MC COY, ANNE BOWEN * 2015; Bachelor's, 1987, Haverford College
RATHOD, PRADIPSINH K. * 2001; Doctorate, 1982, Oregon Health & Science University
RAUCHER, STANLEY, 1982; Bachelor's, 1970, University of Minnesota-Duluth
REID, PHILIP J. * 1995; Doctorate, 1992, University of California-Berkeley
REINHARDT, WILLIAM P., 1991; Master's, 1966, Harvard University
ROBINSON, BRUCE H * 1980; Bachelor's, 1967, Princeton University
ROSE, NORMAN J, 1966; Bachelor's, 1957, Knox College
SASAKI, TOMIKAZU * 1989; Master's, 1981, Kyoto University
SPIRO, THOMAS, 2007; Doctorate, 1960, Massachusetts Institute of Technology
SYNOVEC, ROBERT E. * 1986; Bachelor's, 1981, Bethel College
TURECEK, FRANTISEK * 1990; Master's, 1973, Charles University
VANDENBOSCH, ROBERT, 1982; Bachelor's, 1954, Calvin College
VARANI, GABRIELE * 2001; Bachelor's, 1982, Università degli Studi di Milano
WIEGAND, DEBORAH H, 1990; Doctorate, 1990, Northern Illinois University
XANTHEAS, SOTIRIS * 2016
ZHANG, BO * 2008; Master's, 2002, Peking University

Associate Professors

BOYDSTON, ANDREW JACKSON * 2010; Doctorate, 2007, The University of Texas
BUSH, MATTHEW FRANCIS * 2011; Bachelor's, 2003, Carleton College
CARROLL, ANDREA D., 1998; Bachelor's, 1997, Creighton University
CHATTERJEE, CHAMPAK * 2010; Master's, 1999, IIT

CRAIG, COLLEEN, 2001; Bachelor's, 2001, University of Colorado Denver
GOLDMAN, LAWRENCE MICHAEL, 2014; Bachelor's, 2005, Rutgers University-Camden
MICHAEL, FORREST * 2004; Master's, 1998, Harvard University
NELSON, ALSHAKIM * 2015; Bachelor's, 1999, Pomona College
STOLL, STEFAN * 2011; Doctorate, 2003, Swiss Federal Institute of Technology ETH Zürich
VAUGHAN, JOSHUA CHARLES * 2013; Doctorate, 2005, Massachusetts Institute of Technology

Assistant Professors

FU, DAN * 2015; Bachelor's, 2003, Peking University
GOLDER, MATTHEW ROSS * 2019; Master's, 2014, Boston University; Chemistry
MAIBAUM, LUTZ GERRIT, 2011; Diploma, 2001, Heinrich Heine Universität Düsseldorf; Physics
ROBINSON, SAMANTHA JO, 2018; Bachelor's, 2009, University of Iowa; Chemistry
SCHLENKER, CODY W * 2011; Bachelor's, 2004, Linfield College
THEBERGE, ASHLEIGH * 2015; Doctorate, 2011, University of Cambridge
VELIAN, ALEXANDRA * 2017; Bachelor's, 2009, California Institute of Technology
XIAO, DIANNE JING * 2019; Bachelor's, 2011, Harvard University; Chemistry
ZALATAN, JESSE GEORGE * 2014; Bachelor's, 2002, Harvard University

Senior Lecturer

BRYANT, JASMINE R, 1998; Bachelor's, 1995, California Institute of Technology

Lecturers

CHONG, ERICA CHRISTINE, 2010; Bachelor's, 2010, Mississippi College; Chemistry
FURUTANI, JUSTINE L., 2018; Bachelor's, 1983, California Institute of Technology; Chemistry
SKOGERBOE, KRISTEN, 2017; Bachelor's, 1982, Colorado State University; Chemistry

Cinema and Media Studies

For complete faculty listing, please visit <https://chem.washington.edu/people/faculty>

Professors

ADAMS, HAZARD S, 1977; Bachelor's, 1948, Princeton University
AMES, ERIC C. * 1991; Bachelor's, 1991, Dartmouth College
BORCH-JACOBSEN, MIKKEL * 1986; Doctorate, 1981, Université de Strasbourg
BRAESTER, YOMI * 2000; Bachelor's, 1985, Hebrew University of Jerusalem
BROWN, MARSHALL J * 1988; Bachelor's, 1965, Harvard University
STEELE, CYNTHIA * 1986; Bachelor's, 1973, California State University-Chico
TWEEDIE, JAMES * 2004; Bachelor's, 1992, Stanford University

Associate Professors

BEAN, JENNIFER M * 1998; Bachelor's, 1990, Davidson College
GROENING, STEPHEN F * 2014; Master's, 2001, Claremont Graduate University
KOGOJ-KAPETANIC, BREDA, 1982; Doctorate, 1966, University of Zagreb
MAHADEVAN, SUDHIR * 2008; Master's, 2000, New York University

Assistant Professors

AHERN, MALLORY * 2019; Master's, 2011, CUNY Graduate School and University Center

Lecturer

DIAZ POZUETA, MARIA, 1999

Classics

For complete faculty listing, please visit <https://classics.washington.edu/people/faculty>

Professors

BLIQUEZ, LAWRENCE J * 1982; Bachelor's, 1963, St Marys University
 BLONDELL, RUBY * 1985; Doctorate, 1984, University of California-Berkeley
 CLAUSS, JAMES J * 1984; Master's, 1976, Fordham University
 CONNORS, CATHERINE M. * 1990; Bachelor's, 1984, Harvard University
 GOWING, ALAIN M. * 1988; Master's, 1981, Bryn Mawr College
 HARMON, DANIEL P * 1982; Bachelor's, 1962, Loyola University Chicago
 HINDS, STEPHEN E * 1992; Doctorate, 1985, St John's College
 KAMEN, DEBORAH E * 2007; Bachelor's, 1998, Bryn Mawr College
 LEVANIUK, OLGA * 2001; Doctorate, 2000, Harvard University
 STROUP, SARAH C * 1992; Master's, 1994, University of California-Berkeley

Associate Professors

HOLLMANN, ALEXANDER J * 2001; Doctorate, 1998, Harvard University
 LEVIN-RICHARDSON, SARAH * 2009; Master's, 2006, Stanford University
 TOPPER, KATHRYN R * 2008; Bachelor's, 2000, Bryn Mawr College

Assistant Professor

WALDO, CHRISTOPHER, 2020

Lecturer

GOREY, MATTHEW M, 2012

Communication

For complete faculty listing, please visit <https://com.uw.edu/people/faculty/>

Professors

BALDASTY, GERALD J * 1974; Bachelor's, 1972, University of Washington
 BEAM, RANDAL A * 1997; Bachelor's, 1974, American University
 BOWEN, LAWRENCE, 1982; Bachelor's, 1968, Pennsylvania State University-College of Medicine
 CECCARELLI, LEAH M. * 1996; Master's, 1992, Northwestern University
 COUTU, LISA, 1990; Bachelor's, 1988, University of Massachusetts
 CRANSTON, PATRICIA, 1982; Bachelor's, 1944, The University of Texas

DOMKE, DAVID S. * 1998; Bachelor's, 1991, California State University-Fullerton
FOOT, KIRSTEN A * 2001; Bachelor's, 1989, Northwestern University
HAROLD, CHRISTINE L * 2007; Master's, 1999, Pennsylvania State University-College of Medicine
JOSEPH, RALINA L * 2005; Bachelor's, 1996, Brown University
LANG, KURT, 1984; Bachelor's, 1949, University of Chicago
MANUSOV, VALERIE L * 1993; Master's, 1984, Michigan State University
MCGARRITY, MATTHEW K, 2004; Master's, 2000, Indiana University-Bloomington
MOY, PATRICIA * 1998; Bachelor's, 1989, Cornell University
NISHIME, LEILANI * 2008; Bachelor's, 1989, University of California-Berkeley
PEMBER, DON R, 1982; Bachelor's, 1964, Michigan State University
PHILIPSEN, GERRY F, 1982; Doctorate, 1972, Northwestern University
RIVENBURGH, NANCY * 1990; Master's, 1982, Boston University
RUSSELL, ADRIENNE MARIE * 2017; Doctorate, 2001, Indiana University-Bloomington
SCHEIDEL, THOMAS, 1976; Master's, 1955, University of Washington
UNDERWOOD, DOUGLAS M, 1987; Master's, 1974, Ohio State University Agricultural Technical Institute

Associate Professors

COOK, CALEY K, 2013; Bachelor's, 2002, University of San Diego
CROFTS, ANITA, 1996; Bachelor's, 1992, Haverford College
FEARN-BANKS, KATHLEEN A. * 1990; Master's, 1965, University of California-Los Angeles
KIELBOWICZ, RICHARD B * 1984; Bachelor's, 1975, The College of Wooster
OTANEZ, ANDREA K., 2013; Bachelor's, 1986, University of Utah
PEARCE, KATY E. * 2012; Doctorate, 2011, University of California-Santa Barbara
POST, ROBERT M, 1982; Master's, 1958, Ohio Christian University
POWERS, MATTHEW J * 2013; Doctorate, 2013, New York University
SPRATT, MARGARET, 1998; Bachelor's, 1982, University of California-Los Angeles
YASIN, EKIN, 2013; Bachelor's, 2003, Georgetown University

Assistant Professors

CROWLEY, JOHN P. * 2008; Master's, 2006, San Diego State University
FRIZ, AMANDA, 2020; Master's, 2013, University of Utah
GONZALEZ, CARMEN * 2015; Bachelor's, 2005, University of Southern California
HILL, BENJAMIN C * 2013; Bachelor's, 2003, Hampshire College
RAHMAN, ABU SALEH MOHAMMAD ANISUR, 2020; Master's, 2007, Rajshahi University
SCHARP, KRISTINA * 2018; Doctorate, 2014, University of Iowa
SLAKER, JANINE S, 2020; Bachelor's, 2005, Maryland Institute College of Art

Lecturers

KEYES, WHITNEY M, 2017
MAYO, JUSTIN, 2017
SOUDERS, MICHAEL C., 2013; Bachelor's, 2004, Eastern New Mexico University-Main Campus
STUTEVILLE, SARAH R, 2009
VANNINI, SARA, 2016

Artists in Residence

SILBERNER, JOANNE MARCIA, 2010; Master's, 1979, Columbia University

TOMASIC, JOHN F., 2019; Doctorate, 1997, Indiana University-Bloomington

Comparative History of Ideas

For complete faculty listing, please visit <https://chid.washington.edu/people>

Professors

HANDWERK, GARY J * 1984; Doctorate, 1984, Brown University

THURTLIE, PHILLIP S * 1998; Master's, 1994, Stanford University

Associate Professors

GARCIA, MARIA E * 2008; Master's, 1996, Brown University

SIMPSON, CAROLINE CHUNG * 1994; Bachelor's, 1985, The University of Texas

Senior Lecturers

WYGANT, CHRISTINA D, 2003

Dance

For complete faculty listing, please visit <https://dance.washington.edu/people/faculty>

Professors

KNAPP, JOAN S, 1981; Bachelor's, 1946, Bennington College

MCMAINS, JULIET * 2006; Bachelor's, 1994, Harvard University

WILEY, HANNAH * 1983; Master's, 1981, New York University

Associate Professors

LINCOLN, RACHAEL * 2013; Bachelor's, 1996, University of Arizona

SALK, JENNIFER * 2002; Master's, 1994, Ohio State University Agricultural Technical Institute

Assistant Professors

DUMBUTSHENA, RUJEKO * 2020

MCCORMICK, BRUCE, 2013; Bachelor's, 1998, The Juilliard School

Lecturers

LIAPIS, STEPHANIE, 2011

MEEKER, JORDYN D, 2017

MONTOYA, CHRISTOPHER E, 2017

MORENO, CARLOS, 2017; Doctorate, 2010, Harvard University

SMYTH, LAURA ANN, 2018

STEFFENSEN, LESLIE KRAUS, 2015

Artists in Residence

ISIGUEN, ALANA * 2020

MENDIETA, WILSON, 2011; Bachelor's, 1995, Montclair State University
 SOFIA, STEVEN, 2013

Digital Arts and Experimental Media

For complete faculty listing, please visit <https://dxarts.washington.edu/people/faculty>

Professors

PAMPIN, JUAN C. * 1999; Master's, 1995, Conservatoire de Paris

Associate Professor

COUPE, JAMES * 2004; Master's, 1999, University of Edinburgh

Assistant Professors

PSARRA, AFRODITI * 2016; Master's, 2008, Universidad Autónoma de Madrid
 RICE, TIVON C. * 2004; Bachelor's, 2000, University of Colorado at Boulder; Sculpture

Drama

For complete faculty listing, please visit <https://drama.washington.edu/people/faculty>

Professors

BOND, TIMOTHY J, 1982; Bachelor's, 1980, Howard University
 COLE, CATHERINE M * 2016; Doctorate, 1996, Northwestern University
 COMTOIS, MARY ELIZABETH, 1984; Master's, 1962, San Francisco State University
 CURTIS-NEWTON, VALERIE * 1993; Bachelor's, 1981, College of the Holy Cross
 DAHLSTROM, ROBERT A, 1982; Master's, 1967, University of Illinois at Urbana-Champaign
 JOHNSON, DAVID ODAI * 1998; Doctorate, 1994, The University of Texas
 KORF, GEOFFREY L, 2002; Bachelor's, 1983, California State University-Chico
 LONDON, TODD, 2014; Doctorate, 1985, American University
 LYNCH, THOMAS, 2005; Bachelor's, 1971, Yale University
 MADDEN, CATHERINE M * 1987; Bachelor's, 1974, Pennsylvania State University-College of Medicine
 MAGELSSSEN, SCOTT * 2013; Bachelor's, 1996, Augsburg College
 MERCIER, GEORGE W, 2015; Bachelor's, 1980, University of California-Berkeley
 POSTLEWAIT, THOMAS E * 2007; Bachelor's, 1966, Portland State University
 TROUT, DEBORAH L * 1994; Bachelor's, 1994, Yale University
 VALENTINETTI, AURORA, 1982; Bachelor's, 1943, University of Washington
 WITHAM, BARRY B * 1982; Doctorate, 1968, Ohio State University Agricultural Technical Institute

Associate Professors

BRAUN, NATHAN A, 2016; Bachelor's, 1979, Grinnell College
 CONNORS, BRIDGET, 2016; Master's, 1989, California Institute of the Arts
 FRACE, JEFFREY H * 2008; Master's, 1997, Columbia University
 HAFSO, SCOTT, 1992; Bachelor's, 1984, University of Alberta
 TSAO, ANDREW H, 2006; Master's, 1990, California Institute of the Arts

Assistant Professors

KING, ELIZABETH JANE, 2020; Bachelor's, 2000, Clemson University
 MIHAYLOVA, STEFKA G * 2011; Master's, 2001, Central European University
 WOLCOTT, JOHN R, 1982; Bachelor's, 1960, Carnegie Mellon University

Senior Lecturers

JONES, ZANE, 2012; Bachelor's, 1980, Ohio Christian University
 SHAHN, JUDITH, 1990; Bachelor's, 1977, Carnegie Mellon University

Lecturers

COEN, ELIZABETH M, 2018
 SMITH, ANDREW D, 2003; Bachelor's, 1996, Duke University
 TIENCKEN, CHARLOTTE, 2018
 WAITE, SHANNA MARIE, 2017

Senior Artist in Residence

HARTMAN, KAREN, 2014; Bachelor's, 1992, Yale University

Economics

For complete faculty listing, please visit <https://econ.washington.edu/people/faculty>

Professors

BAJARI, PATRICK L * 2012; Bachelor's, 1993, University of Minnesota-Duluth
 BARZEL, YORAM, 1982; Bachelor's, 1953, Hebrew University of Jerusalem
 BROWN, GARDNER, 1982; Bachelor's, 1959, Antioch College
 BRUCE, NEIL * 1990; Master's, 1969, Queen's University
 EICHER, THEO S * 1994; Master's, 1991, Columbia University
 ELLIS, GREGORY M, 1988; Bachelor's, 1982, Oregon State University
 FAN, YANQIN * 2013; Bachelor's, 1985, Jilin University
 GHIRONI, FABIO P * 2013; Master's, 1994, Università Bocconi
 HALVORSEN, ROBERT F * 1972; Master's, 1965, Harvard University
 HARTMAN, RICHARD C, 1971; Doctorate, 1971, University of California-Berkeley
 KHALIL, FAHAD A. * 1991; Bachelor's, 1985, Bangladesh University
 KIM, CHANG JIN * 1985; Bachelor's, 1983, Korea University
 LAWARREE, JACQUES P. * 1990; Bachelor's, 1984, Université de Liège
 LUNDBERG, SHELLY, 1984; Doctorate, 1981, Northwestern University
 MC GEE, JOHN S, 1982; Bachelor's, 1947, The University of Texas
 NELSON, CHARLES R * 1975; Master's, 1967, University of Wisconsin Colleges
 PARKS, RICHARD, 1982; Bachelor's, 1960, Harvard University
 SILBERBERG, EUGENE, 1982; Bachelor's, 1960, New York University
 STARTZ, RICHARD, 1984; Doctorate, 1978, Massachusetts Institute of Technology
 TURNOVSKY, MICHELLE H L, 1987; Doctorate, 1978, Australian National University
 TURNOVSKY, STEPHEN J * 1987; Doctorate, 1968, Harvard University
 WEN, QUAN * 2013; Bachelor's, 1985, Jilin University

WONG, KAR-YIU * 1985; Master's, 1979, Chinese University of Hong Kong
ZIVOT, ERIC W * 1993; Bachelor's, 1986, University of California-Berkeley

Associate Professors

BROCK, PHILIP L * 1991; Bachelor's, 1976, Princeton University
CHEN, YU-CHIN * 2003; Bachelor's, 1993, Harvard University
HEATH, RACHEL M * 2011; Bachelor's, 2005, Duke University
KNOX, MELISSA A, 2009; Doctorate, 2008, University of California-Berkeley
O'DEA, DENNIS C, 2012; Master's, 2007, University of Illinois at Urbana-Champaign
ROSE, ELAINA * 1993; Bachelor's, 1983, Temple University
TAN, XU * 2013; Bachelor's, 2007, Peking University
THOMAS, ROBERT P, 1982; Bachelor's, 1960, Carleton College
TURNOVSKY, GEOFFREY * 2006; Master's, 1995, Columbia University

Assistant Professors

EUN, DONG JAE * 2016; Doctorate, 2017, Massachusetts Institute of Technology
GREANEY, BRIAN, 2020
GRIFFITH, MICHAEL ALAN * 2017; Master's, 2013, University of Michigan-Ann Arbor
JACOBS, JOSHUA, 2020
LEUKHINA, OKSANA M, 2010
TAKAHASHI, YUYA * 2018; Doctorate, 2010, University of Wisconsin-Madison; Economics
TAO, JING * 2015; Bachelor's, 2006, Peking University

Lecturer

SALEHI-ESFAHANI, HAIDEH, 1990; Bachelor's, 1979, University of London

English

For complete faculty listing, please visit <https://english.washington.edu/people/faculty>

Professors

ABRAMS, ROBERT * 1979; Bachelor's, 1965, Dartmouth College
ALLEN, CHADWICK * 2015; Bachelor's, 1987, Harvard University
BAWARSHI, ANIS * 1999; Bachelor's, 1992, California State University-Northridge
BIERDS, LINDA L * 1983; Bachelor's, 1969, University of Washington
BLAKE, KATHLEEN, 1982; Bachelor's, 1966, San Diego State University
BOSWORTH, DAVID L * 1984; Bachelor's, 1969, Brown University
CHERNIAVSKY, EVA * 2005; Bachelor's, 1982, University of California-Berkeley
CHRISMAN, LAURA H * 2005; Bachelor's, 1984, University of Oxford
CHUDE-SOKEI, LOUIS ORT, 2010; Bachelor's, 1989, University of California-Los Angeles
CROUSE, DAVID J * 2016; Bachelor's, 1990, Bradford School
DILLON, GEORGE L., 1986; Master's, 1966, University of California-Berkeley
DUNN, RICHARD J, 1982; Bachelor's, 1960, Allegheny College
FOSTER, RONALD THOMAS * 2005; Bachelor's, 1982, Northwest University
GEORGE, E. LAURIE * 1991; Bachelor's, 1977, Lewis and Clark Community College
GILLIS-BRIDGES, KIMBERLEE, 1989; Bachelor's, 1988, University of California-Davis

HARKINS, GILLIAN H * 2002; Doctorate, 2002, University of California-Berkeley
 KAPLAN, SYDNEY J * 1971; Bachelor's, 1961, University of California-Los Angeles
 KAUP, MONIKA * 2000; Master's, 1988, Ruhr Universität Bochum
 KENNEY, RICHARD L * 1987; Bachelor's, 1970, Dartmouth College
 LOCKWOOD, THOMAS FRANK * 1982; Bachelor's, 1964, Rice University
 LOVELL, GEORGE I * 2001; Bachelor's, 1987, Tufts University
 MAJESKI, STEPHEN J * 1984; Bachelor's, 1973, Bates College
 MATCHETT, WILLIAM H, 1954; Master's, 1950, Harvard University
 MC CRACKEN, J DAVID, 1982; Bachelor's, 1961, Oberlin College
 MC HUGH, HEATHER, 1982; Bachelor's, 1970, Harvard University
 MCCUE, FRANCES A, 1986; Master's, 1996, Columbia University
 REED, BRIAN * 2000; Bachelor's, 1992, Harvard University
 REMLEY, PAUL G * 1988; Master's, 1987, Columbia University
 SHIELDS, DAVID * 1988; Bachelor's, 1978, Brown University
 SHIELDS, JULIET D * 2008; Bachelor's, 1998, University of California-Irvine
 SONENBERG, MAYA * 1993; Master's, 1984, Brown University
 STATEN, HENRY J * 1998; Doctorate, 1978, The University of Texas
 STEIN, JULIE K * 1980; Master's, 1976, University of Minnesota-Duluth
 STEVICK, ROBERT D, 1962; Bachelor's, 1949, University of Tulsa
 STREITBERGER, WILLIAM R * 1973; Master's, 1971, University of Illinois at Urbana-Champaign
 STYGALL, GAIL * 1990; Bachelor's, 1981, Indiana University-Bloomington
 TARANATH, ANUPAMA, 2000; Bachelor's, 1994, University of California-Riverside
 TOLLEFSON, JAMES W, 1982; Master's, 1973, Purdue University-Main Campus
 TRIPLETT, PIMONE E * 2006; Bachelor's, 1987, Sarah Lawrence College
 VAUGHAN, MICEAL F * 1982; Doctorate, 1973, Cornell University
 WEINBAUM, ALYS E * 1998; Bachelor's, 1989, Brown University
 WONG, SHAWN H * 1984; Master's, 1974, San Francisco State University
 WOODWARD, KATHLEEN * 2000; Bachelor's, 1966, Smith College

Associate Professors

BOU AYASH, NANCY * 2013; Bachelor's, 2003, American University of Beirut
 BURSTEIN, JESSICA L * 1998; Bachelor's, 1989, The University of Tennessee
 CALLOW, MEGAN, 2015; Master's, 2006, St John's College
 CLARE, STEPHANIE * 2016; Bachelor's, 2002, McGill University
 FELD, ANDREW E * 2006; Master's, 1998, University of Houston
 GRIFFITH, JOHN W * 1968; Doctorate, 1969, University of Oregon
 IBRAHIM, HABIBA * 2006; Bachelor's, 1998, Brookline College
 KNIGHT, JEFFREY T * 2011; Doctorate, 2009, Northwestern University
 LAPORTE, CHARLES P * 2005; Bachelor's, 1994, Stanford University
 LAUFENBERG, HENRY J, 2003; Bachelor's, 1992, San Diego State University
 LIU, MICHELLE S, 2001; Bachelor's, 1995, University of California-Irvine
 LONGYEAR, CHRISTOPHER R, 1972; Bachelor's, 1952, Lehigh University
 MATTHEWS, CARRIE R, 2008; Master's, 2001, University of North Carolina
 MOORE, COLETTE V * 2005; Bachelor's, 1996, The University of Texas
 MOTHA, MARY N * 2008; Master's, 1995, University of Maryland-College Park
 PALOMO, DOLORES J, 1982; Doctorate, 1972, New York University
 PARIS, RACHEL * 2018; Master's, 2003, University of Arizona; Creative Writing
 PATTERSON, MARK R * 1981; Doctorate, 1981, Princeton University

RAI, CANDICE S * 2008; Bachelor's, 1999, Roosevelt University
SANDHU, PRITI * 2010; Doctorate, 2010, University of Hawaii at Manoa; Teaching English as a Second Language
SMITH, EUGENE H, 1958; Bachelor's, 1950, Oberlin College
TAYLOR, JESSE OAK * 2013; Bachelor's, 2002, Middlebury College
WACKER, NORMAN J., 1982; Bachelor's, 1973, Rockford College
WEBSTER, JOHN M * 1972; Master's, 1969, University of California-Berkeley

Assistant Professors

DANIEL, JAMES RUSHING, 2017; Doctorate, 2012, University of Wisconsin-Madison; English
ISHII, DOUGLAS SADAQ, 2020; Bachelor's, 2006, University of California-Irvine
NORAKO, LEILA K * 2016; Bachelor's, 2004, College of William and Mary
WALWEMA, JOSEPHINE NAMBUYA, 2020; Doctorate, 2011, Clemson University; Communications Studies/Speech Communication and Rhetoric

Senior Lecturer

O'NEILL, JOHN, 1985; Bachelor's, 1976, The University of Montana

Lecturers

ARKANS, NORMAN G, 1979; Doctorate, 1975, University of Washington
BROWN, ELIZABETH C, 2008
DE MAMBRO SANTOS, RICARDO, 2018
HITCHMAN, MATTHEW, 2015
IFF, NANCY C. W., 2004
LIGHT, CAROL, 1992; Master's, 1999, University of Washington; Creative Writing
MALEY, STEPHEN N, 2002
OTTINGER, AARON J, 2010
SPESER, ARENDT O, 2004
STANSBURY, HEATHER L, 2001

French and Italian Studies

For complete faculty listing, please visit <https://frenchitalian.washington.edu/people/faculty>

Professors

DELCOURT, DENYSE * 1990; Master's, 1980, Canadian University College
MEYER, HEDWIGE M, 1988; Bachelor's, 1987, Université de Nantes

Associate Professors

ARDUINI, BEATRICE * 2012; Master's, 2005, Indiana University-Bloomington
COLLINS, DOUGLAS P * 1982; Bachelor's, 1967, Hope College
GAYLARD, SUSAN L * 2005; Master's, 1999, University of California-Berkeley
GIACHETTI, LORENZO, 2015; Bachelor's, 2005, Reed College
MACKENZIE, LOUISA * 2001; Master's, 1997, University of California-Berkeley
MAZZOLA, CLAUDIO, 1982; Master's, 1982, University of Washington
SBRAGIA, ALBERT J * 1989; Master's, 1983, University of California-Berkeley
SMITH, MAYA A * 2013; Bachelor's, 2004, New York University

VILAVELLA, HELENE, 1984; Bachelor's, 1983, American University of Paris
WATTS, RICHARD HENRY * 2009; Bachelor's, 1989, University of California-Santa Barbara

Senior Lecturers

LEPORACE, GIUSEPPE, 1987; Bachelor's, 1986, Università degli Studi di Salerno

Lecturers

LALONDE, LISE A, 2013
MITCHELL, WILLIAM C, 2003
PROBEL, CELINE, 2017

Gender, Women, and Sexuality Studies

For complete faculty listing, please visit <https://gwss.washington.edu/people/faculty>

Professors

HABELL-PALLAN, MICHELLE * 1998; Bachelor's, 1989, San Diego State University
HOWARD, JUDITH A * 1982; Bachelor's, 1969, Cornell University
RAMAMURTHY, PRITI * 1997; Master's, 1978, Institute of Integrated Management & Technology
YEE, SHIRLEY J. * 1988; Master's, 1983, Ohio State University Agricultural Technical Institute

Associate Professors

KEATING, CHRISTINE * 1995; Bachelor's, 1989, Carleton College
LEE, REGINA Y * 2014; Master's, 2007, University of Alberta
REDDY, CHANDAN C. * 2001; Master's, 1995, Columbia University
ROSS, LUANA K * 1999; Master's, 1981, Portland State University
SWARR, AMANDA L * 2005; Bachelor's, 1995, Bucknell University
WELLAND, SASHA * 2004; Bachelor's, 1991, Stanford University

Assistant Professors

ADEYEMI, ADEKEMI * 2016; Bachelor's, 2009, Macalester College
JUDD, BETTINA A * 2016; Bachelor's, 2005, Spelman College

Lecturers

BRIGHT, CLARE, 1989
CARDENAS, JAIME O, 1998

Geography

For complete faculty listing, please visit <https://geography.washington.edu/people/faculty>

Professors

BEYERS, WILLIAM B * 1982; Bachelor's, 1962, University of Washington
BROWN, MICHAEL P. * 1997; Bachelor's, 1988, Clark University

CHAN, KAM WING * 1991; Bachelor's, 1980, University of Hong Kong
 ELLIS, JOHN MARK * 1999; Master's, 1984, Indiana University-Bloomington
 ELWOOD-FAUSTINO, SARAH A. * 2006; Bachelor's, 1994, Macalester College
 ENGLAND, KIM VL * 1999; Master's, 1984, Ohio State University Agricultural Technical Institute
 JAROSZ, LUCY A. * 1990; Bachelor's, 1975, The University of Montana
 KRUMME, GUNTER, 1982; Doctorate, 1966, University of Washington
 LAWSON, VICTORIA A. * 1986; Master's, 1982, Ohio State University Agricultural Technical Institute
 MAYER, JONATHAN D * 1977; Master's, 1975, University of Michigan-Ann Arbor
 MITCHELL, KATHARYNE, 1993; Bachelor's, 1983, Princeton University
 MORRILL, RICHARD L, 1955; Bachelor's, 1955, Dartmouth College
 NYERGES, TIMOTHY L. * 1985; Bachelor's, 1975, Ohio State University Agricultural Technical Institute
 SPARKE, MATTHEW, 1995; Master's, 1991, University of British Columbia
 ZUMBRUNNEN, CRAIG * 1982; Master's, 1968, California Institute of Technology

Associate Professors

CHANG, KUEI-SHENG, 1966; Bachelor's, 1945, National Central University
 KAKIUCHI, GEORGE H, 1957; Bachelor's, 1952, University of Michigan-Ann Arbor
 WITHERS, SUZANNE D * 1997; Bachelor's, 1986, Queen's University
 YBARRA, MEGAN * 2014; Bachelor's, 2002, New York University

Assistant Professors

ALEXANDRE, KESSIE * 2020; Bachelor's, 2013, Johns Hopkins University
 BERGMANN, LUKE R * 2011; Bachelor's, 2002, Duke University
 BIERMANN, CHRISTINE P * 2014; Bachelor's, 2007, New York University
 FRESHOUR, CARRIE * 2019; Doctorate, 2018, Cornell University; Sociology
 ZHAO, BO * 2019; Master's, 2008, Nanjing University

Lecturers

BASIKORO, ELOHO E, 2012
 GROBELSKI, TIFFANY LEE, 2008
 KARR, JASON FRANKLIN, 2017
 RASHAN, JENNIFER R, 2017
 RUIZ, TRICIA, 2018; Doctorate, 2011, University of Washington; Geography
 STELMACH, MATTHEW W., 2018
 STRONG, MICHAEL E, 2017
 THAKAR, VAISHNAVI, 2018

German Studies

For complete faculty listing, please visit <https://germanics.washington.edu/people/faculty>

Professors

AMMERLAHN, HELLMUT H * 1982; Diploma, 1957, Hochschule Fresenius
 BANSLEBEN, MANFRED, 1988; Doctorate, 1979, International University Vienna
 BARRACK, CHARLES M * 1982; Bachelor's, 1961, San Diego State University
 BEHLER, DIANA I, 1973; Bachelor's, 1965, University of Washington

BLOCK, RICHARD * 2004; Bachelor's, 1975, Duke University
 BROWN, JANE K * 1988; Bachelor's, 1965, Briarcliffe College
 GRAY, RICHARD T * 1991; Master's, 1976, University of Cincinnati-Clermont College
 PRUTTI, BRIGITTE * 1991; Doctorate, 1988, Technische Universität Graz
 VOYLES, JOSEPH B. * 1982; Bachelor's, 1960, Indiana University-Bloomington
 WILKE, SABINE * 1988; Doctorate, 1986, Fachhochschule Mainz

Associate Professors

BRANDL, KLAUS K * 1991; Master's, 1987, The University of Texas
 MCLEAN, SAMMY K, 1982; Bachelor's, 1952, University of Central Oklahoma
 TERRASI, SHAYNA K, 2014; Bachelor's, 2002, Northern Arizona University
 WIGGINS, ELLWOOD * 2012; Master's, 2006, Johns Hopkins University

Assistant Professors

GROVES, JASON * 2015; Master's, 2006, Johns Hopkins University
 OEHME, ANNEGRET * 2016; Doctorate, 2016, Duke University

History

For complete faculty listing, please visit <https://history.washington.edu/people/faculty>

Professors

BACHARACH, JERE L * 1982; Bachelor's, 1960, Connecticut College
 BAILKIN, JORDANNA * 2001; Master's, 1994, Stanford University
 BEHLMER, GEORGE K * 1979; Master's, 1972, Stanford University
 CONLON, FRANK F, 1968; Bachelor's, 1960, Northwestern University
 EBREY, PATRICIA B * 1997; Master's, 1970, Columbia University
 FELAK, JAMES R * 1983; Master's, 1985, Indiana University-Bloomington
 FERRILL, ARTHUR L, 1982; Master's, 1961, University of Illinois at Urbana-Champaign
 FINDLAY, JOHN M * 1983; Master's, 1978, University of California-Berkeley
 FOWLER, WILTON B, 1982; Bachelor's, 1960, University of South Carolina-Columbia
 GLENN, SUSAN A * 1993; Bachelor's, 1973, San Diego State University
 GREGORY, JAMES N * 1993; Doctorate, 1983, University of California-Berkeley
 GUY, R KENT * 1982; Master's, 1974, Harvard University
 HANKINS, THOMAS L, 1964; Doctorate, 1964, Cornell University
 JONAS, RAYMOND A * 1985; Doctorate, 1985, University of California-Berkeley
 JOSHEL, SANDRA R. * 1993; Master's, 1970, Rutgers University-Camden
 JUNG, MOON-HO * 2001; Bachelor's, 1991, Cornell University
 KIRKENDALL, RICHARD S, 1988; Bachelor's, 1950, Gonzaga University
 LEVY, FRED J, 1982; Bachelor's, 1954, Harvard University
 NASH, LINDA L * 1993; Bachelor's, 1984, Stanford University
 O'MARA, MARGARET PUGH * 2007; Bachelor's, 1992, Northwestern University
 RAFAEL, VICENTE L. * 2003; Bachelor's, 1977, Ateneo de Manila University
 SCHMIDT, BENJAMIN * 1996; Bachelor's, 1986, Columbia University
 SEARS, LAURIE J * 1989; Bachelor's, 1968, Northwestern University
 STACEY, ROBERT C. * 1988; Bachelor's, 1975, Williams College
 STACEY, ROBIN C * 1988; Bachelor's, 1977, Colorado College

THOMAS, CAROL G * 1982; Bachelor's, 1960, Carleton College
 THOMAS, LYNN M. * 1997; Bachelor's, 1989, Johns Hopkins University
 WAUGH, DANIEL CLARKE, 1982; Master's, 1965, Harvard University
 YANG, ANAND A * 2002; Bachelor's, 1970, Swarthmore College
 YOUNG, GLENNYS J. * 1992; Master's, 1983, University of California-Berkeley

Associate Professors

BET-SHLIMON, ARBELLA H * 2006; Master's, 2008, Harvard University
 CAMPBELL, ELENA * 2007; Master's, 1996, European University
 DHAVAN, PURNIMA * 2005; Bachelor's, 1996, University of Michigan-Ann Arbor
 HEVLY, BRUCE W * 1989; Bachelor's, 1982, Carleton College
 MARHOEFER, LAURA T * 2016; Bachelor's, 2000, Columbia University
 MOSCA, MATTHEW W * 2015; Master's, 2002, Harvard University
 O'NEIL, MARY R * 1982; Master's, 1971, Stanford University
 REID, JOSHUA L * 2015; Master's, 2005, University of California-Davis
 RODRIGUEZ SILVA, ILEANA M * 2004; Bachelor's, 1988, American University of Puerto Rico
 SMALLWOOD, STEPHANIE E * 2006; Bachelor's, 1987, Columbia University
 URBANSKI, CHARITY L, 2008; Bachelor's, 1996, University of California-Berkeley
 WALKER, JOEL T * 1997; Master's, 1994, Princeton University
 WARREN, ADAM W * 2004; Bachelor's, 1995, University of California-Davis

Senior Lecturers

MYERS, POLLY M, 2014; Doctorate, 2008, University of Minnesota-Duluth

Lecturers

GREEN, MIRA, 2006; Bachelor's, 1997, Cornell College
 LAYMAN, TREVOR, 2017; Master's, 2012, Koc University
 O'DONNELL, WILSON E. * 2003; Master's, 1982, New York University
 ROY, ALYSON, 2008; Master's, 2008, Northern Illinois University

International Studies

For complete faculty listing, please visit <https://jsis.washington.edu/people/>

Professors

ANCHOROGUY, MARIE C * 1989; Bachelor's, 1978, University of California-Berkeley
 BACHMAN, DAVID M * 1991; Master's, 1977, Stanford University
 BARZILAI, GAD * 2005; Bachelor's, 1980, Bar Ilan University
 BUTOW, ROBERT J C, 1982; Bachelor's, 1947, Stanford University
 CHIROT, DANIEL * 1974; Doctorate, 1973, Columbia University
 CURRAN, SARA REYNOLDS * 1994; Master's, 1990, North Carolina A & T State University
 DONG, YUE * 1996; Bachelor's, 1986, China University of Mining & Technology at Beijing
 FERNANDES, LEELA MARGARET PATRICIA * 2020; Doctorate, 1994, University of Chicago; Political Science
 GODOY, ANGELINA SNODGRASS * 2002; Bachelor's, 1994, Harvard University
 HA, YONG-CHOO * 2003; Master's, 1978, Kent State University
 HAMILTON, GARY G. * 1993; Bachelor's, 1965, University of Kansas

HANLEY, SUSAN B, 1982; Bachelor's, 1961, Briarcliffe College
 HELLMANN, DONALD C * 1982; Bachelor's, 1955, Princeton University
 HOFFMAN, DANIEL J * 2004; Master's, 2001, Duke University
 JAFFEE, MARTIN S. * 1987; Doctorate, 1980, Brown University
 KASABA, RESAT * 1985; Bachelor's, 1976, Middle East Technical University
 LANG, SABINE * 2002; Master's, 1985, Freie Universität Berlin
 LAVELY, WILLIAM R. * 1985; Master's, 1977, University of California-Berkeley
 METZLER, MARK * 2017; Doctorate, 1998, University of California-Berkeley; History
 NOVETZKE, CHRISTIAN L. * 2007; Doctorate, 2002, Columbia University
 PEKKANEN, ROBERT J * 2004; Master's, 1992, Harvard University
 PEKKANEN, SAADIA * 2004; Master's, 1988, Columbia University
 PIANKO, NOAM * 2004; Bachelor's, 1995, Brown University
 PORTER, DEBORAH * 2002; Bachelor's, 1982, Middlebury College
 SORENSEN, CLARK W * 1989; Bachelor's, 1970, University of California-Berkeley
 WARREN, JONATHAN W * 1996; Bachelor's, 1987, Michigan State University
 WEBB, EUGENE, 1966; Master's, 1962, Columbia University
 WELLMAN, JAMES K. * 1997; Master's, 1984, Princeton Theological Seminary
 WILLIAMS, MICHAEL A * 1976; Bachelor's, 1968, Abilene Christian University

Associate Professors

BESSNER, DANIEL M * 2014; Bachelor's, 2006, Columbia University
 CALLAHAN, MARY P * 1999; Master's, 1991, Cornell University
 FRIEDMAN, KATHIE * 1987; Bachelor's, 1976, Michigan State University
 GIEBEL, CHRISTOPH * 1998; Master's, 1989, Cornell University
 HALPERIN, LIORA R. * 2017; Bachelor's, 2005, Harvard University
 JONES, CHRISTOPHER D * 1984; Master's, 1969, Harvard University
 KALE, SUNILA S. * 2007; Doctorate, 2007, The University of Texas
 LUCERO, JOSE A * 2008; Master's, 1997, Princeton University
 NAAR, DEVIN E * 2011; Master's, 2010, Stanford University
 RADNITZ, SCOTT B. * 2007; Doctorate, 2006, Massachusetts Institute of Technology
 ROBINSON, CABEIRI DEBERGH * 2003; Bachelor's, 1993, Columbia University

Assistant Professors

AHUVIA, MIKA * 2014; Doctorate, 2014, Princeton University
 DARO, REBAKAH, 2016
 FREIJE, VANESSA GRACE * 2014; Master's, 2011, Duke University
 JUN, HAJIN * 2019; Doctorate, 2019, Stanford University; History
 LIN, JAMES YUSHANG * 2017; Doctorate, 2017, University of California-Berkeley; History
 SENDEROVICH, ALEKSANDR * 2017; Doctorate, 2010, Harvard University; Slavic Languages and Literatures
 YANG, ZHUQING * 2017; Doctorate, 2016, Northwestern University; Managerial Economics

Lecturers

KAVIANI, KHODADAD, 2003
 MURG, BRADLEY, 2005
 SCHLITT, DAVID, 2018
 TOMCZUK, SARA, 2008
 YIN, LUOTH, 2011; Master's, 2017, Southern New Hampshire University; Creative Writing

Law, Societies, and Justice

For complete faculty listing, please visit <https://lsj.washington.edu/people/faculty>

Professors

BECKETT, KATHERINE A * 2000; Master's, 1989, University of California-Los Angeles
HERBERT, STEVEN K * 2000; Bachelor's, 1983, Macalester College
OSANLOO, ARZOO * 2002; Doctorate, 1993, American University

Assistant Professors

ARAR, RAWAN, 2019; Master's, 2010, The University of Texas at Austin
FROST, ANN C, 2005; Bachelor's, 1997, University of Denver
MEYERS, STEPHEN * 2015; Master's, 2002, Harvard University
WOIAK, JOANNE D, 2001; Bachelor's, 1988, Cornell University

Linguistics

For complete faculty listing, please visit <https://linguistics.washington.edu/people/faculty>

Professors

BENDER, EMILY R. MENON * 2003; Master's, 1997, Stanford University
CITKO, BARBARA * 2005; Bachelor's, 1994, Gdansk University
CONTRERAS, HELES, 1964; Master's, 1959, Indiana University-Bloomington
HARGUS, SHARON * 1985; Bachelor's, 1979, University of California-Berkeley
OGIHARA, TOSHIYUKI * 1991; Bachelor's, 1981, Sophia University
WRIGHT, RICHARD A. * 1998; Bachelor's, 1986, Michigan State University
XIA, FEI * 2005; Bachelor's, 1992, Peking University

Associate Professors

ALDRIDGE, EDITH * 2007; Doctorate, 2004, Cornell University
EVANS, BETSY E * 2007; Master's, 1992, Kent State University
FORSHAY, LANCE, 2007; Bachelor's, 1992, Gallaudet University
LEVOW, GINA-ANNE * 2010; Master's, 1993, Massachusetts Institute of Technology
MCGARRITY, LAURA WILBUR * 2004; Master's, 1999, Indiana University-Bloomington
WASSINK, ALICIA BECKFORD * 1998; Bachelor's, 1990, Houghton College

Assistant Professors

BEGUS, GASPER, 2018; Doctorate, 2018, Harvard University
CHENG, QI, 2020
FERJAN RAMIREZ, NAJA * 2013; Doctorate, 2013, University of California-San Diego
MATHIS, DAN, 2020
OMAKI, AKIRA, 2016; Bachelor's, 2002, Sophia University
STEINERT-THRELKELD, SHANE * 2019; Doctorate, 2017, Stanford University
WINTER, KRISTI G, 2010; Bachelor's, 2006, Gallaudet University

Lecturers

LE GREZAUSE, ESTHER S, 2012; Bachelor's, 2010, Université de Nantes

Mathematics

For complete faculty listing, please visit <https://math.washington.edu/people/faculty>

Professors

ATHREYA, JAYADEV S * 2015; Bachelor's, 2000, Iowa State University
 BILLEY, SARA * 2002; Bachelor's, 1990, Massachusetts Institute of Technology
 BROWNELL, FRANCIS H, 1950; Doctorate, 1949, Princeton University
 BUBE, KENNETH P * 1986; Bachelor's, 1973, Stanford University
 BURDZY, KRZYSZTOF * 1988; Master's, 1979, Maria Curie Sklodowska University
 BURKE, JAMES V. * 1985; Bachelor's, 1977, Knox College
 CHEN, ZHEN-QING * 1998; Bachelor's, 1985, East China Normal University
 COLLINGWOOD, DAVID * 1987; Doctorate, 1983, University of Utah
 CURIEL, CASPAR R, 1964; Doctorate, 1960, Swiss Federal Institute of Technology ETH Zürich
 DEVINATZ, ETHAN S * 1991; Doctorate, 1985, Massachusetts Institute of Technology
 DUCHAMP, THOMAS E * 1982; Bachelor's, 1969, University of Illinois at Urbana-Champaign
 DUMITRIU, IOANA, 2006; Doctorate, 2003, Massachusetts Institute of Technology
 GRAHAM, C. ROBIN * 1984; Doctorate, 1981, Princeton University
 GREENBERG, RALPH * 1978; Doctorate, 1970, Princeton University
 HOFFMAN, CHRISTOPHER * 1999; Master's, 1994, Stanford University
 IRVING, RONALD S * 1981; Bachelor's, 1973, Harvard University
 KOBLITZ, NEAL I * 1979; Bachelor's, 1969, Harvard University
 KOVACS, SANDOR J * 2000; Master's, 1990, Eotvos Lorand University (University of Budapest)
 LEE, JOHN M * 1986; Doctorate, 1982, Massachusetts Institute of Technology
 LIEBLICH, MAX * 2009; Bachelor's, 2000, Harvard University
 LIND, DOUGLAS A * 1982; Master's, 1971, Stanford University
 LOVELESS, ANDREW, 2005; Bachelor's, 2002, University of Puget Sound
 MARSHALL, DONALD EDDY * 1976; Bachelor's, 1970, University of California-Los Angeles
 MCGOVERN, WILLIAM M * 1990; Doctorate, 1987, Massachusetts Institute of Technology
 MITCHELL, STEPHEN A., 1985; Doctorate, 1981, University of Washington
 MORROW, JAMES ALLEN * 1969; Bachelor's, 1963, California Institute of Technology
 NAMIOKA, ISAAC, 1963; Bachelor's, 1951, Ottawa University-Kansas City
 NOVIK, ISABELLA * 2001; Bachelor's, 1994, Hebrew University of Jerusalem
 PAL, SOUMIK * 2008; Doctorate, 2006, Columbia University
 PALMIERI, JOHN * 1999; Doctorate, 1991, Massachusetts Institute of Technology
 PEVTSOVA, JULIA * 2005; Doctorate, 2002, Northwestern University
 POLLACK, DANIEL * 1996; Doctorate, 1991, Stanford University
 ROCKAFELLAR, R T * 1982; Bachelor's, 1957, Harvard University
 ROHDE, STEFFEN * 1998; Master's, 1987, Technische Universität Berlin
 SMITH, HART F * 1991; Doctorate, 1989, Princeton University
 SMITH, SHOLTO PAUL * 1986; Bachelor's, 1975, University of Canterbury
 STEIN, WILLIAM A, 2006; Bachelor's, 1994, Northern Arizona University
 SULLIVAN, JOHN B * 1982; Doctorate, 1971, Cornell University
 SYLVESTER, JOHN * 1987; Master's, 1977, New York University

TAGGART, JENNIFER, 2001; Bachelor's, 1991, University of California-San Diego
THOMAS, REKHA R. * 2000; Master's, 1992, Cornell University
TORO, TATIANA * 1996; Master's, 1989, Stanford University
TUNCEL, SELIM * 1982; Bachelor's, 1978, University of Sussex
UHLMANN, GUNTHER A. * 1984; Doctorate, 1976, Massachusetts Institute of Technology
WARNER, GARTH * 1982; Bachelor's, 1962, University of Arizona
YUAN, YU * 2001; Master's, 1993, National Taipei University
ZHANG, JIAN JAMES * 1994; Bachelor's, 1982, Fudan University

Associate Professors

ALPER, JAROD D * 2016; Bachelor's, 2002, Brown University
ARMS, JUDITH M * 1980; Master's, 1974, University of California-Berkeley
CONROY, MATTHEW, 2001; Doctorate, 1997, University of Colorado at Boulder
DRUSVYATSKIY, DMITRIY * 2014; Master's, 2010, Cornell University
KING, JAMES RICHARD * 1975; Bachelor's, 1965, Harvard University
KLEE, STEVEN R. * 2005; Master's, 2009, University of Washington
NICHIFOR, ALEXANDRA, 1997; Bachelor's, 1994, New Jersey City University
OSTROFF, JONAH K, 2013; Doctorate, 2013, Brandeis University
PERKINS, PATRICK, 1982; Doctorate, 1988, University of Washington
ROTHVOSS, THOMAS * 2013; Doctorate, 2009, École Polytechnique Fédérale de Lausanne
VIRAY, BIANCA * 2014; Doctorate, 2010, University of California-Berkeley

Assistant Professors

BEKYEL, EBRU, 2005; Bachelor's, 1995, Bogazici University
DROUOT, ALEXIS FRANCK * 2020; Doctorate, 2017, University of California-Berkeley; Mathematics
LARSON, ERIC KERNER * 2020; Doctorate, 2018, Massachusetts Institute of Technology; Mathematics
LIU, XUE * 2020; Doctorate, 2017, Massachusetts Institute of Technology; Mathematics
NAHRIG, NATALIE, 2013; Doctorate, 2008, Rheinisch Westfälische Technische Hochschule Aachen; Mathematics
PEZZOLI, ELENA, 2000; Doctorate, 1998, Stanford University; Mathematics
SHOKRIEH, FARBOD * 2019; Doctorate, 2013, Georgia Institute of Technology-Main Campus; Mathematics
STEINERBERGER, STEFAN * 2020; Doctorate, 2013, Rheinische Friedrich Wilhelms Universität Bonn; Mathematics
VOGT, ISABEL MARLEY * 2020; Doctorate, 2019, Massachusetts Institute of Technology; Mathematics
WILSON, BOBBY L.E. * 2018; Doctorate, 2015, University of Chicago; Mathematics

Lecturers

BERGET, ANDREW S, 2012
CASPER, WILLIAM R, 2011
DOS REIS, FANNY, 2013
HEALD, ANDREA M, 2014
SCHOLL, TRAVIS W., 2013

Music

For complete faculty listing, please visit <https://music.washington.edu/people/faculty/area>

Professors

BERNARD, JONATHAN W * 1987; Bachelor's, 1972, Harvard University
BOERS, GEOFFREY PAUL * 1996; Bachelor's, 1980, Pacific Lutheran University
CAMPBELL, PATRICIA S * 1989; Doctorate, 1981, Kent State University
CARLSEN, JAMES C, 1982; Doctorate, 1962, Northwestern University
COLLIER, THOMAS W * 1982; Bachelor's, 1971, University of Washington
DEMPSTER, STUART R, 1968; Bachelor's, 1958, San Francisco State University
DUDLEY, SHANNON K * 1996; Bachelor's, 1982, Oberlin College
DURAND, JOEL-FRANCOIS * 1991; Bachelor's, 1978, American University of Paris
GROSSMAN, ARTHUR, 1982
HODGE, HUCK J * 2008; Master's, 2004, Columbia University
HOKANSON, RANDOLPH H, 1949
JUSSILA, CLYDE F, 1971; Master's, 1951, Kansas State University
KARPEN, RICHARD S. * 1989; Bachelor's, 1983, New York University
KECHLEY, GERALD, 1947; Bachelor's, 1946, University of Washington
LUNDQUIST, BARBARA R, 1973; Master's, 1959, Montana State University
MCCABE, ROBIN L * 1987; Master's, 1973, The Juilliard School
PATTERSON, RONALD G * 1999
RAHN, JOHN, 1982; Bachelor's, 1966, Pomona College
SALZMAN, TIMOTHY O * 1987; Master's, 1979, Northern Illinois University
SEALES, MARC A * 1987; Bachelor's, 1978, Western Washington University
SHEPPARD, CRAIG * 1993; Bachelor's, 1970, The Juilliard School
SIKI, BELA, 1985
SMITH, BILL O, 1966; Bachelor's, 1950, California State University
STORCH, LAILA, 1982; Bachelor's, 1964, Wilkes Community College
TARICANI, JOANN * 1980; Master's, 1977, University of Pennsylvania
TERRY, CAROLE R * 1979; Bachelor's, 1971, Southern Methodist University
VU, CUONG * 2007; Bachelor's, 1993, The New England Conservatory of Music
WATRAS, M MELIA * 2004; Bachelor's, 1991, Indiana University-Bloomington
WYERS, GISELLE E * 2006; Doctorate, 2000, University of Arizona

Associate Professors

BENSHOOF, KENNETH, 1982; Master's, 1963, San Francisco State University
HARPER, THOMAS * 1998; Master's, 1976, University of Arkansas
RUMPH, STEPHEN C * 2002; Bachelor's, 1987, Oberlin College
SCHUYLER, PHILIP D * 1999; Master's, 1974, University of Washington
SHIN, DONNA YOUNG * 2007; Bachelor's, 1997, Eastern University
SUNARDI, CHRISTINA * 2007; Master's, 2003, University of California-Berkeley

Assistant Professors

LEE PRIDAY, RACHEL EUNSUN * 2019
POOR, THEODORE * 2012; Bachelor's, 2003, Eastern University
SEARCY, ANNE * 2020

THORSTEINSDOTTIR, SAEUNN * 2015; Bachelor's, 2006, Cleveland Institute of Music
WHITING, BONNIE * 2016; Bachelor's, 2004, Oberlin College

Lecturers

EATON, KALEY, 2014

Senior Artists in Residence

RAHBEE, DAVID * 2013; Doctorate, 2012, Canadian University College
STUBBS, STEPHEN, 2013; Bachelor's, 1975, University of Washington

Artists in Residence

ADAM, JOSEPH JAMES, 2019

ANDERSON, JORDAN, 2020

BERGMAN, LUKE, 2004; Bachelor's, 2010, Washington State University

BROCKMAN, MICHAEL S, 1987; Bachelor's, 1979, Lewis and Clark Community College

BYRDWELL, PHYLLIS, 1993; Bachelor's, 1982, University of Washington

CUNNINGHAM, TEKLA, 2015; Bachelor's, 1996, Johns Hopkins University

DICESARE, JOHN, 2017

FAIR, JEFFREY B, 2012; Master's, 2000, The Juilliard School

FERREIRA, RYAN, 2015

FISSEL, STEPHEN A, 2008; Bachelor's, 1975, Indiana University-Bloomington

FITZPATRICK, LUKE B, 2012; Master's, 2009, California Institute of the Arts

GORDON, DAVID * 2006; Bachelor's, 1999, Columbia University

GORDON, VALERIE MUZZOLINI, 2011; Bachelor's, 1999, The Curtis Institute of Music

HARSHMAN, PAUL, 2015; Bachelor's, 1984, Central Washington University

HILL, JONATHAN K, 2007; Master's, 2011, The Juilliard School

KARSCHNEY, JONATHAN, 2018

KELSEY, PHILIP A, 2001; Bachelor's, 1971, Harvard University

KLINE, RHONDA D, 1999; Bachelor's, 1977, Greenville College

KRIMSKY, SETH M, 2004; Bachelor's, 1982, University of Southern California

LIEBERMAN, BARRY, 1991; Bachelor's, 1971, Cleveland Institute of Music

LULICH, BENJAMIN, 2016; Bachelor's, 2005, Cleveland Institute of Music

LYNCH, MARY, 2015; Master's, 2012, The Juilliard School

MEEK, DEANNE, 2019

PARTINGTON, MICHAEL, 2007; Bachelor's, 1999, University of Washington

RODBY, STEVEN, 2018

SHAW, CARRIE LEA * 2020

SIEDENTOP, CYNDIA, 2014; Bachelor's, 1976, The Evergreen State College

SINIBALDI, GREGORY M, 2001; Bachelor's, 1995, The New England Conservatory of Music

VALDES, CRISTINA * 2014; Master's, 1995, Stony Brook University

Near Eastern Languages and Civilization

For complete faculty listing, please visit <https://nelc.washington.edu/people/faculty>

Professors

CIRTAUTAS, ILSE D, 1982; Diploma, 1944, Pope John Paul II Suwalsko-Mazurian University in Suwalki
DEYOUNG, TERRI LYNN * 1991; Master's, 1981, American University in Cairo
HEER, NICHOLAS L * 1982; Doctorate, 1955, Princeton University
NOEGEL, SCOTT B. * 1995; Master's, 1993, Cornell University
SOKOLOFF, NAOMI B * 1985; Master's, 1979, Princeton University

Associate Professors

ELKHAFIFI, HUSSEIN M. * 2004; Bachelor's, 1971, Libyan International Medical University
KURU, SELIM SIRRI * 1999; Bachelor's, 1990, Bogazici University
MAHMOOD, HAMZA * 2013; Master's, 2011, Cornell University
MARTIN, GARY D. * 2001; Bachelor's, 2001, University of Washington
MAWKANULI, TALANT * 2008; Doctorate, 1999, Indiana University-Bloomington

Assistant Professors

AHMED, KHALID A, 2013; Bachelor's, 1994, Sana'a University
ALAVI, SAMAD, 2013; Doctorate, 2013, University of California-Berkeley
FANI, ARIA * 2019; Bachelor's, 2010, San Diego State University
KHAZZAM-HOROVITZ, HADAR, 2006; Bachelor's, 1999, Academic Center for Business Law
SELOVER, STEPHANIE * 2014; Bachelor's, 2004, Stanford University
SHAMS, SHAHRZAD, 2009; Bachelor's, 1980, California State University-Fullerton
YUCEL, MELIKE, 2012; Master's, 2008, Cukurova University

Lecturer

KIALI, NIDA, 2013; Associate, 2010, Highline Community College

Philosophy

For complete faculty listing, please visit <https://phil.washington.edu/people/faculty>

Professors

BLAKE, MICHAEL I * 2005; Doctorate, 1998, Stanford University
COBURN, ROBERT, 1982; Doctorate, 1958, Harvard University
FINE, ARTHUR I * 2001; Master's, 1960, Illinois Institute of Technology
GARDINER, STEPHEN M. * 2004; Doctorate, 1999, Cornell University
GOERING, SARA L. * 2003; Master's, 1994, University of Colorado Denver
ROBERTS, JEAN VALERIE * 1991; Master's, 1978, University of Pittsburgh-Bradford
ROSENTHAL, MICHAEL * 2002; Bachelor's, 1986, Stanford University
TALBOTT, WILLIAM J. * 1989; Doctorate, 1976, Harvard University
WELLER, CASS J * 1990; Bachelor's, 1972, University of Michigan-Ann Arbor
WOODY, ANDREA I. * 1997; Bachelor's, 1987, Princeton University

Associate Professors

LEE, CAROLE J * 2008; Doctorate, 2006, University of Michigan-Ann Arbor
MARSHALL, COLIN ROBERT * 2013; Master's, 2007, New York University
MAYO-WILSON, CONOR * 2014; Master's, 2009, Carnegie Mellon University
SCHNEE, IAN PAUL, 2015; Bachelor's, 1999, Middlebury College

Assistant Professors

FEINTZEIG, BENJAMIN H * 2016; Bachelor's, 2011, Dartmouth College
FOURIE, CARINA * 2015; Doctorate, 2006, University College London
FRANCO, PAUL L, 2012; Doctorate, 2011, University of Pennsylvania; Philosophy
MENDOZA, JOSE JORGE * 2020
NOVICK, AARON MICHAEL * 2020
WIRTS, AMELIA MARIE * 2020

Lecturer

CLARKE, ANDREA, 2018

Physics

For complete faculty listing, please visit <https://phys.washington.edu/people/faculty>

Professors

ANDREEV, ANTON * 2004; Master's, 1993, Johns Hopkins University
BAKER, MARSHALL, 1982; Bachelor's, 1953, Harvard University
BEANE, SILAS R * 1999; Bachelor's, 1988, Lafayette College
BOULWARE, DAVID G, 1982; Bachelor's, 1958, California State University
BROWN, LOWELL S, 1968; Master's, 1958, Harvard University
BULGAC, AUREL * 1993; Master's, 1973, Leningrad State University AS Pushkin
COBDEN, DAVID * 2001; Doctorate, 1992, University of Cambridge
COOK, VICTOR, 1982; Bachelor's, 1956, University of California-Berkeley
CRAMER, JOHN G, 1982; Bachelor's, 1957, Rice University
DEN NIJS, MARCEL P * 1981; Bachelor's, 1976, Delft University of Technology
DOE, PETER J. * 1994; Master's, 1974, Durham University
FORTSON, E. NORVAL * 1982; Bachelor's, 1957, Duke University
GARCIA, ALEJANDRO * 1985; Bachelor's, 1984, Universidad Nacional de Tucumán
GOUSSIOU, ANNA * 2007; Bachelor's, 1989, Aristotle University of Thessaloniki
GUNDLACH, JENS * 1984; Bachelor's, 1983, University of Washington
GUPTA, SUBHADEEP * 2003; Bachelor's, 1997, Colgate University
HALPERN, ISAAC, 1953; Doctorate, 1948, Massachusetts Institute of Technology
HAXTON, WICK C., 1984; Master's, 1973, Stanford University
HENLEY, ERNEST M, 1954; Bachelor's, 1944, The Art Institute of New York City
HERON, PAULA * 1995; Bachelor's, 1990, University of Ottawa
HERTZOG, DAVID * 2008; Master's, 1979, College of William and Mary
INGALLS, ROBERT L, 1982; Master's, 1960, Carnegie Mellon University
KAMMEL, PETER * 2010; Doctorate, 1982, International University Vienna
KAPLAN, DAVID B. * 1994; Doctorate, 1985, Harvard University

KARCH, ANDREAS * 2002; Doctorate, 1998, Humboldt Universität zu Berlin
LUBATTI, HENRY J * 1969; Bachelor's, 1960, University of California-Berkeley
MCLERRAN, LARRY D * 1982; Bachelor's, 1971, University of Washington
MILLER, GERALD * 1975; Master's, 1968, Massachusetts Institute of Technology
MORALES, MIGUEL * 2008; Bachelor's, 1993, Swarthmore College
NELSON, ANN E, 1994; Master's, 1981, Harvard University
OLMSTEAD, MARJORIE A * 1991; Master's, 1979, Swarthmore College
PENGR, DAVID B. * 1986; Master's, 1988, University of Washington
REDDY, SANJAY K. * 1998; Master's, 1993, Indian Institute of Technology Delhi
ROBERTSON, R. G. HAMISH * 1994; Doctorate, 1971, McMaster University
SAVAGE, MARTIN J. * 1996; Doctorate, 1990, California Institute of Technology
SCHICK, MICHAEL * 1982; Master's, 1964, Stanford University
SEIDLER, GERALD T. * 1996; Master's, 1991, University of Chicago
SHAFFER, PETER S. * 1985; Bachelor's, 1982, Massachusetts Institute of Technology
SHARPE, STEPHEN R. * 1986; Doctorate, 1983, University of California-Berkeley
SNOVER, KURT ALBERT, 1982; Bachelor's, 1964, Florida State University
SPIVAK, BORIS * 1991; Doctorate, 1978, Saint Petersburg State Polytechnical University
STORM, DEREK, 1982; Bachelor's, 1963, Princeton University
VAN DYCK, ROBERT S * 1982; Bachelor's, 1966, University of California-Berkeley
VILCHES, OSCAR E * 1982; Doctorate, 1966, Universidad Nacional de Cuyo Mendoza
WATTS, GORDON T. * 1999; Bachelor's, 1989, The University of Texas
WEITKAMP, WILLIAM G, 1982; Bachelor's, 1956, St. Olaf College
WILKES, RICHARD JEFFREY * 1982; Bachelor's, 1967, University of Michigan-Ann Arbor
WILLIAMS, ROBERT W, 1982; Doctorate, 1948, Massachusetts Institute of Technology
XU, XIAODONG * 2010; Doctorate, 2008, University of Michigan-Ann Arbor
YAFFE, LAURENCE G * 1988; Bachelor's, 1976, California Institute of Technology

Associate Professors

BLINOV, BORIS B. * 2005; Doctorate, 2000, University of Michigan-Ann Arbor
DETWILER, JASON * 2004; Bachelor's, 1999, Occidental College
ENOMOTO, SANSHIRO * 2009; Bachelor's, 1997, Tohoku University
FIDKOWSKI, LUKASZ MICHAL * 2017; Doctorate, 2001, Stanford University; Physics
FU, KAI-MEI * 2010
HSU, SHIH-CHIEH * 2012; Bachelor's, 1999, National Taiwan University
RYBKA, GRAY * 2007; Bachelor's, 2002, California Institute of Technology
SMITH, DAVID P, 2009; Bachelor's, 2005, University College Dublin National University of Ireland
TAULU, SAMU JUHANA * 2014; Master's, 2000, University of Helsinki*
TOLICH, KAZUMI, 2008; Master's, 2006, Stanford University
TOLICH, NIKOLAI * 2007; Doctorate, 2005, Stanford University
WIGGINS, PAUL A * 2010; Doctorate, 2005, California Institute of Technology

Assistant Professors

AL-BINNI, USAMA A, 2016; Doctorate, 2011, The University of Tennessee
BARNARD, ARTHUR WILLIAM * 2019; Doctorate, 2015, Cornell University; Applied Physics
CHAVARRIA, ALVARO EUGENIO * 2017; Doctorate, 2012, Princeton University; Physics
CHU, JIUN-HAW * 2015; Bachelor's, 2004, National Chiao Tung University
MESSINA, DONNA L, 1994
NOURMOHAMMAD, ARMITA * 2017; Doctorate, 2012, Princeton University; Physics

PARNO, DIANA M S * 2011; Master's, 2006, Carnegie Mellon University
WHITE, SUZANNE M * 1984; Master's, 2013, Rutgers University-Camden
YANKOWITZ, MATTHEW * 2019; Doctorate, 2015, University of Arizona; Physics

Lecturers

PARK, MICHAEL, 2016
WINCHESTER, TIMOTHY J, 2018; Bachelor's, 2008, Grand Valley State University
ZIRUL, JEFFREY W, 2002

Political Science

For complete faculty listing, please visit <https://www.polisci.washington.edu/people/faculty>

Professors

BENNETT, WALTER LANCE * 1974; Bachelor's, 1970, University of California-Irvine
BRASS, PAUL R, 1982; Bachelor's, 1958, Harvard University
CAPORASO, JAMES A * 1988; Bachelor's, 1963, Pennsylvania State University-College of Medicine
CICHOWSKI, RACHEL A * 2001; Master's, 1997, University of California-Irvine
GILL, ANTHONY J * 1994; Bachelor's, 1987, Marquette University
GORE, WILLIAM J, 1966; Master's, 1950, University of Southern California
KIER, ELIZABETH L * 1998; Master's, 1985, Columbia University
LITFIN, KAREN T * 1991; Doctorate, 1992, University of California-Los Angeles
MAY, PETER J. * 1982; Bachelor's, 1972, Dartmouth College
MAYERFELD, JASON * 1991; Bachelor's, 1985, Oberlin College
MC CANN, MICHAEL W * 1982; Master's, 1976, University of California-Berkeley
MENALDO, VICTOR A * 2009; Master's, 2003, Claremont Graduate University
MERCER, JONATHAN L * 1996; Master's, 1987, Columbia University
PARKER, CHRISTOPHER S * 2006; Bachelor's, 1993, University of California-Los Angeles
PRAKASH, ASEEM * 2002; Master's, 1988, Indian Institute of Management Ahmedabad
SMITH, MARK A * 1997; Bachelor's, 1992, Massachusetts Institute of Technology
TAYLOR, MICHAEL JOHN, 1985; Master's, 1965, University of Essex
WILKERSON, JOHN D * 1990; Bachelor's, 1984, Portland State University

Associate Professors

ADOLPH, CHRISTOPHER A * 2004; Master's, 2000, Harvard University
DI STEFANO, CHRISTINE * 1985; Bachelor's, 1974, Ithaca College
FRANCIS, MEGAN M * 2014; Master's, 2005, Princeton University
LONG IV, JAMES D * 2012; Bachelor's, 2003, College of William and Mary
THORPE, REBECCA U * 2010; Bachelor's, 2004, Skidmore College
TURNER III, JACK * 2007; Bachelor's, 1998, Amherst College
WALLACE, GEOFFREY P * 2016; Master's, 2006, Cornell University
WALLACE, SOPHIA J * 2016; Master's, 2007, Cornell University
WHITING, SUSAN H * 1994; Doctorate, 1995, University of Michigan-Ann Arbor

Assistant Professors

AINSLEY, CAITLIN T * 2016; Bachelor's, 2010, Emory University

ARNOLD, JEFFREY B, 2014; Bachelor's, 2004, Dartmouth College
GRUMBACH, JACOB M. * 2019; Doctorate, 2018, University of California-Berkeley; Political Science
LEMIEUX, SCOTT E., 2017; Doctorate, 2004, University of Washington; Political Science

Psychology

For complete faculty listing, please visit <https://psych.uw.edu/directory>

Professors

AYLWARD, ELIZABETH H. * 1997; Doctorate, 1982, Cornell University
BARASH, DAVID P * 1982; Bachelor's, 1966, Harper College
BERNSTEIN, ILENE L * 1982; Master's, 1967, Columbia University
BOYNTON, GEOFFREY M * 2006; Bachelor's, 1987, University of California-San Diego
BRENOWITZ, ELIOT A. * 1987; Doctorate, 1982, Cornell University
BUCK, STEVEN L * 1979; Bachelor's, 1971, Reed College; Psychology
CASSEDAY, JOHN H * 1996; Master's, 1963, Indiana University-Bloomington
CAUCE, ANA MARI * 1986; Bachelor's, 1977, University of Miami
CHERYAN, SAPNA * 2007; Bachelor's, 1999, Northwestern University
COVEY, ELLEN * 1996; Doctorate, 1980, Duke University
DAWSON, GERALDINE * 1985; Bachelor's, 1974, University of Washington
DORSEY, SHANNON * 2007; Doctorate, 2003, University of Georgia
FAGAN, COREY N. * 1989; Bachelor's, 1979, Tufts University
FINE, IONE * 2007; Bachelor's, 1993, University of Oxford
GEORGE, WILLIAM H * 1982; Bachelor's, 1975, Rockford College
GOTTMAN, JOHN M * 1986; Bachelor's, 1962, Fairleigh Dickinson University
GURALNICK, MICHAEL J * 1986; Master's, 1964, Lehigh University
KAHN, PETER H. * 2000; Bachelor's, 1981, University of California-Berkeley
KAISER, CHERYL R * 2006; Bachelor's, 1996, SUNY at Albany
KATZ, LYNN FAINSILBER * 1986; Bachelor's, 1979, McGill University
KIM, JEANSOK J * 2003; Bachelor's, 1987, University of California-Los Angeles
KING, KEVIN M * 2007; Master's, 2002, Arizona State University
KOHLENBERG, ROBERT J. * 1968; Bachelor's, 1961, Milwaukee School of Engineering
KYES, RANDALL C. * 1993; Master's, 1985, Bucknell University
LENGUA, LILIANA J * 1993; Doctorate, 1994, Arizona State University
LITTLE, LAURA M. * 1997; Bachelor's, 1978, Rice University
LOCKARD, JOAN S * 1982; Bachelor's, 1959, San Diego State University
MCMAHON, ROBERT J. * 1987; Master's, 1977, University of Georgia
MELTZOFF, ANDREW N * 1977; Bachelor's, 1972, Harvard University
MIZUMORI, SHERI J * 2000; Master's, 1983, University of California-Berkeley
MURRAY, SCOTT O. * 2005; Doctorate, 2002, University of California-Davis
OLAVARRIA, JAIME F * 1990; Medical Doctorate, 1974, Universidad de Chile
OSTERHOUT, LEE E * 1991; Bachelor's, 1982, Eastern Arizona College
SACKETT, GENE P, 1982; Master's, 1961, Claremont Graduate University
SARASON, BARBARA R, 1982; Bachelor's, 1951, DePaul University
SARASON, IRWIN G * 1982; Doctorate, 1955, Indiana University-Bloomington
SHODA, YUICHI * 1996; Doctorate, 1990, Columbia University
SIMONI, JANE M * 2001; Bachelor's, 1986, Princeton University
SISNEROS, JOSEPH A. * 2003; Bachelor's, 1988, California State University-Long Beach

SMOLL, FRANK L * 1970; Bachelor's, 1963, Ripon College
SOMMERVILLE, JESSICA A, 2002; Master's, 2000, University of Chicago
STONE, WENDY L * 2009; Master's, 1978, University of Miami
ZOELLNER, LORI A * 2000; Bachelor's, 1990, Rice University

Associate Professors

BROWN, JONATHON D * 1989; Bachelor's, 1982, University of California-Los Angeles
CULLIGAN, ANN E., 1999; Bachelor's, 1998, Eastern University
FLAHERTY, BRIAN P * 2005; Bachelor's, 1992, New York University
HA, RENEE L. * 1992; Bachelor's, 1991, University of Washington
JOSLYN, SUSAN L * 1988; Bachelor's, 1975, University of Washington
KANTER, JONATHAN W * 1995; Master's, 1996, Humboldt State University
KERR, F BETH, 1974; Bachelor's, 1966, The College of Wooster
MCNICHOLS, NICOLE K, 2004; Bachelor's, 1997, Cornell University; Government
MIYAMOTO, JOHN M * 1984; Bachelor's, 1969, Harvard University
PASSER, MICHAEL W * 1977; Master's, 1972, University of California-Los Angeles
PRAT, CHANTEL * 2010; Master's, 2001, University of California-Davis
REPACHOLI, BETTY M * 2001; Doctorate, 1996, University of California-Berkeley
STOCCO, ANDREA * 2010; Master's, 2001, Università degli Studi di Trieste
TUROWSKI, TABITHA KIRKLAND, 2016; Master's, 2010, Ohio State University-Main Campus

Assistant Professors

FANG, ANGELA * 2020; Master's, 2010, Boston University; Clinical Psychology
FINOCCHIO, DOM V, 1980; Bachelor's, 1950, University of Pittsburgh-Bradford
FOSTER, KATHERINE * 2019; Bachelor's, 2006, Colorado College; Psychology
GIRE, DAVID HENRY * 2014; Bachelor's, 2002, University of California-Berkeley
GRAHAM, LAUREN KATHLEEN, 2006; Doctorate, 2012, University of Washington; Psychology
LEVINE, CYNTHIA S * 2019; Bachelor's, 2005, Princeton University
ROKEM, ARIEL S * 2015; Bachelor's, 2002, Hebrew University of Jerusalem; Biology
STARR, ARIEL * 2019; Doctorate, 2015, Duke University; Psychology

Lecturers

CHEW, BRANDI, 2017; Bachelor's, 2002, Chaminade University of Honolulu; Psychology
NELSON, DANA C, 1993; Bachelor's, 1993, University of California-Los Angeles; Psychology
SPECTOR, JACQUELINE, 1993; Bachelor's, 1994, University of Washington
XU, CAROL K, 2011
YAMASAKI, BRIANNA LYNN, 2011

Scandinavian Studies

For complete faculty listing, please visit <https://scandinavian.washington.edu/people/faculty>

Professors

GAVEL ADAMS, ANN-CHARLOTTE * 1986; Master's, 1975, Linköping University
INGEBRITSEN, CHRISTINE * 1992; Master's, 1986, Columbia University
LEIREN, TERJE I * 1977; Bachelor's, 1966, California State University

NESTINGEN, ANDREW * 1997; Bachelor's, 1994, St. Olaf College
 STECHER, MARIANNE T * 1986; Bachelor's, 1978, University of California-Berkeley
 STEENE, BIRGITTA, 1982; Master's, 1955, University of Washington

Associate Professor

SMIDCHENS, GUNTIS I. * 1993; Master's, 1988, Indiana University-Bloomington

Assistant Professors

DOXTATER, AMANDA * 2017
 GARBES, HEATHER M. * 2004
 GUNN, OLIVIA N * 2014; Master's, 2003, New York University
 POYER, LAUREN, 2018; Master's, 2007, San Francisco Art Institute

Lecturers

NYSTROM, PIA C, 2015

Slavic Languages and Literatures

For complete faculty listing, please visit <https://slavic.washington.edu/people/faculty>

Professors

ALANIZ, JOSE * 2003; Bachelor's, 1993, The University of Texas
 AUGEROT, JAMES E * 1982; Bachelor's, 1956, New Mexico Highlands University
 BELIC, BOJAN * 2005; Doctorate, 2005, Ohio State University Agricultural Technical Institute
 COATS, HERBERT S, 1982; Master's, 1964, Fordham University
 CRNKOVIC, GORDANA * 1993; Master's, 1991, Stanford University
 DIMENT, GALYA * 1989; Master's, 1978, Claremont Graduate University
 DZIWIWREK, KATARZYNA A. * 1993; Master's, 1987, University of California-San Diego
 KAPETANIC, DAVOR, 1972; Master's, 1954, University of Zagreb

Associate Professors

HENRY, BARBARA J * 2003; Bachelor's, 1988, Boston University
 POLACK, ZOYA M, 1973; Bachelor's, 1973, Chernivtsi National University named after Yuriy Fedkovych
 ZAITSEVA, VALENTINA A, 2005; Master's, 1988, Harvard University

Sociology

For complete faculty listing, please visit <https://soc.washington.edu/people/faculty>

Professors

BURSTEIN, PAUL * 1985; Master's, 1971, Harvard University
 COSTNER, HERBERT L, 1982; Master's, 1956, Indiana University-Bloomington
 CROWDER, KYLE * 1988; Doctorate, 1997, New York University
 HARRIS, ALEXES * 1995; Master's, 1999, University of California-Los Angeles
 HECHTER, MICHAEL N. * 1982; Bachelor's, 1965, Columbia University

HERTING, JERALD R. * 1982; Master's, 1977, Stony Brook University
 MORRIS, WANDA MARTINA * 2000; Bachelor's, 1980, Reed College
 PFAFF, STEVEN J * 1999; Bachelor's, 1992, New York University
 RESKIN, BARBARA F * 2002; Bachelor's, 1968, University of Washington
 SCHMITT, DAVID R, 1982; Bachelor's, 1960, Miami University-Oxford
 SCHWARTZ, PEPPER J * 1972; Bachelor's, 1967, Washington State University
 STOVEL, KATHERINE W. * 1997; Bachelor's, 1988, Stanford University
 WAGER, L WESLEY, 1982; Doctorate, 1959, University of Chicago

Associate Professors

BRINES, JULIE E * 1993; Master's, 1985, Harvard University
 BURT, CALLIE, 2015; Bachelor's, 2002, University of Georgia
 PITCHFORD, SUSAN * 1987; Bachelor's, 1987, University of Washington
 QUINN, SARAH L * 2010; Bachelor's, 1998, Smith College
 ROSENFELD, JAKE H * 2007; Bachelor's, 2000, Haverford College
 WILLIAMS, NATHALIE E * 2012; Doctorate, 2009, University of Michigan-Ann Arbor

Assistant Professors

ALMQUIST, ZACK, 2019
 CATRON, PETER * 2018
 LOUIE, PATRICIA, 2020

Lecturers

EVANS, HEATHER, 2005
 SOMASHEKHAR, MAHESH H, 2015; Bachelor's, 2005, Columbia University

Spanish and Portuguese Studies

For complete faculty listing, please visit <https://spanport.washington.edu/people/faculty>

Professors

ANDERSON, FARRIS FURMAN, 1967; Bachelor's, 1960, Duke University
 GEIST, ANTHONY L, 1987; Master's, 1969, University of California-Berkeley
 GILLMAN, MARIA, 1990; Master's, 1986, Oregon State University
 O'HARA, EDGAR * 1989; Bachelor's, 1978, Catholic University of America
 RAFTERY, ANA M * 2012; Bachelor's, 1986, Universidad Autónoma de Madrid
 RANEDA CUARTERO, MARIA I., 1997; Bachelor's, 1992, University of Wisconsin Colleges

Associate Professors

BRADLEY, SABRINA SPANNAGEL, 2006; Bachelor's, 1990, The University of Montana
 FERNANDEZ DOBAO, ANA M. * 2007; Bachelor's, 1996, Universidade de Santiago de Compostela
 GILBERT, DONALD W. * 2002; Bachelor's, 1989, University of California-Berkeley
 GONZALEZ-CASANOVA, JORGE, 1988; Bachelor's, 1983, Universidad Nacional Autónoma de México (UNAM)
 JAFFEE, SAMUEL J, 2013; Bachelor's, 2004, Kenyon College
 MEDIAVILLA, MARIA, 2006; Master's, 2000, Universidad Autónoma de Madrid
 MERCER, LEIGH K, 2005; Bachelor's, 1993, Boston University

RUEDA MESA, ANTONIO, 2016; Master's, 2009, Tulane University of Louisiana
SHIPLEY, GEORGE A, 1982; Bachelor's, 1959, Dartmouth College
VIANA DA SILVA, EDUARDO, 2015; Master's, 2005, Brigham Young University

Assistant Professor

ROBLES RIVERA, JOSE F * 2016; Master's, 2011, El Colegio de México (Colmex)

Lecturer

VILLANUEVA CHAVEZ, JUDITH, 2014; Bachelor's, 2003, The University of Texas at El Paso

Speech and Hearing Sciences

For complete faculty listing, please visit <https://sphsc.washington.edu/faculty>

Professors

BURNS, EDWARD M, 1984; Master's, 1966, University of Arizona
COGGINS, TRUMAN E * 1982; Bachelor's, 1970, University of Redlands
EADIE, TANYA L * 2003; Bachelor's, 1995, Queen's University
ESTES, ANNETTE M * 1991; Bachelor's, 1988, The Evergreen State College
KENDALL, DIANE L. * 2008; Master's, 1989, California State University-Fullerton
KUHL, PATRICIA K * 1976; Bachelor's, 1967, Rasmussen College-St Cloud
LEE, ADRIAN K * 2010; Doctorate, 2007, Massachusetts Institute of Technology
MAX, LUDO * 2009; Bachelor's, 1989, Artesis Hogeschool Antwerpen
MINIFIE, FRED D, 1982; Bachelor's, 1958, Linfield College
SPENCER, KRISTIE * 1999; Bachelor's, 1990, University of Pittsburgh-Bradford
STOEL-GAMMON, CAROL * 1983; Bachelor's, 1965, Smith College
TREMBLAY, KELLY L, 1998; Master's, 1987, Dalhousie University
WERNER, LYNNE A. * 1986; Doctorate, 1980, American University

Associate Professors

ANDERSON, SUSAN J, 2007; Bachelor's, 1988, University of Northern Colorado
BURNS, MICHAEL I, 2008; Bachelor's, 1998, California State University-Fresno
CARPENTER, ROBERT L, 1982; Bachelor's, 1964, Augustana College
COOKER, HARRY S, 1982; Bachelor's, 1957, New York University
DANIELS, JACQUELINE L., 2013; Bachelor's, 2003, University of Iowa
DUNLAP, JULIE A., 1992; Bachelor's, 1986, Northwestern University
HARNEY, MARTHA L., 1983; Bachelor's, 1978, San Jose State University
ILLICH, LISA L, 2006; Bachelor's, 1988, The University of Montana
KOVER, SARA T * 2014; Bachelor's, 2005, Johns Hopkins University
KRINGS, KATHERINE, 2001; Bachelor's, 2001, University of Missouri-St Louis
LEONARDO, JULIE D, 2006; Bachelor's, 1992, University of Massachusetts
NEVDAHL, MARTIN, 1983; Bachelor's, 1982, University of Washington
THORNE, JOHN C, 2003; Bachelor's, 1987, New Mexico State University-Grants

Assistant Professors

BROWN, ANDREW * 2018; Associate, 2005, Green River Community College

LEIGHTON, KELSEY, 2012; Master's, 2004, University of Washington
NEUFELD, TANNA LYNN, 2017; Associate, 2002, Broward College
PACE, AMY E * 2015; Bachelor's, 2003, University of California-San Diego
RODDA, AMY C, 2006; Master's, 2004, Truman State University; Communication Disorders
SHEN, YI * 2020; Doctorate, 2010, Indiana University-Bloomington; Speech Pathology

Lecturers

BOULSE, TERRA L, 2008; Master's, 1999, Truman State University
GRAY, JENNIFER, 2011; Doctorate, 2009, University of Arizona
JACOBSEN, KAREN M, 2010; Bachelor's, 1989, Portland State University
KING, DAELENE, 2017
NEHILLA, LAUREN, 2013; Master's, 2006, Emerson College
ROBINSON, DANA, 2001; Bachelor's, 1999, Rutgers University-Camden

Statistics

For complete faculty listing, please visit <https://stat.uw.edu/about-us/people/faculty>

Professors

BOOKSTEIN, FRED L * 2005; Master's, 1971, Harvard University
BRUCE, ANDREW G * 1990
DOBRA, ADRIAN * 2006; Doctorate, 2001, Carnegie Mellon University
DRTON, MATHIAS * 2001; Diploma, 2000, Universität Augsburg; Applied Mathematics
EROSHEVA, ELENA A. * 2002; Doctorate, 2002, Carnegie Mellon University
GNEITING, TILMANN J. * 1997; Master's, 1992, Boston University
GOTTARDO, RAPHAEL * 2002; Master's, 2001, Portland State University
GUTTORP, PETER * 1980; Bachelor's, 1974, Lund University
MEILA-PREDOVICIU, MARINA * 2000; Doctorate, 1999, Massachusetts Institute of Technology
PERCIVAL, DONALD B * 1979; Master's, 1976, George Washington University
PERLMAN, MICHAEL D * 1979; Bachelor's, 1963, California Institute of Technology
RAFTERY, ADRIAN ELMES * 1985; Doctorate, 1980, Collège de France
RICHARDSON, THOMAS S. * 1996; Master's, 1995, Carnegie Mellon University
RODRIGUEZ, ABEL * 2020; Doctorate, 2007, Duke University; Statistics
SAMPSON, PAUL D * 1981; Bachelor's, 1973, Brown University
SCHOLZ, FRIEDRICH-WILHELM * 1982; Doctorate, 1971, University of California-Berkeley
STUETZLE, WERNER * 1984; Doctorate, 1977, Swiss Federal Institute of Technology ETH Zürich
THOMPSON, ELIZABETH A * 1985; Bachelor's, 1970, University of Cambridge
WAKEFIELD, JONATHAN C * 1999; Bachelor's, 1985, University of Nottingham
WELLNER, JON A * 1983; Bachelor's, 1968, University of Idaho
WITTEN, DANIELA * 2010; Bachelor's, 2005, Stanford University
ZEH, JUDITH * 1982; Bachelor's, 1962, University of Washington

Associate Professors

GROVE, RANJINI, 2011
HARCHAOUI, ZAID * 2016; Master's, 2004, Collège de France
MCCORMICK, TYLER HARRIS * 2011; Master's, 2008, Columbia University

Assistant Professors

CHEN, YEN-CHI * 2016; Master's, 2013, Carnegie Mellon University

HAN, FANG * 2016; Doctorate, 2015, Johns Hopkins University

LEDERER, JOHANNES * 2015; Bachelor's, 2007, Universität Zürich

LUEDTKE, ALEX * 2018

NARAYANAN, HARIHARAN * 2012; Bachelor's, 2003, Indian Institute of Technology Delhi

PERKOVIC, EMILIJA * 2018

WANG, LINBO * 2019

Lecturers

CARDOSO, TAMRE, 1989; Bachelor's, 1980, California State University-Long Beach

MORITA, JUNE G * 1983; Bachelor's, 1976, University of California-Berkeley

TIU, FELICE, 1989

College of Built Environments

Architecture

For complete faculty listing, please visit <https://arch.be.uw.edu/faculty-staff/archpeople/>

Professors

BADANES, STEVEN P * 1988; Master's, 1971, Princeton University
CHENG, RENEE * 2018
LOVELAND, JOEL E. * 1982; Bachelor's, 1974, Arizona State University
OCHSNER, JEFFREY K * 1987; Bachelor's, 1973, Rice University
OSHIMA, KEN T * 2005; Master's, 1998, Columbia University
PRAKASH, VIKRAMADITYA * 1996; Master's, 1989, Cornell University
SIMONEN, KATHRINA L * 2009; Master's, 1991, University of California-Berkeley
SUTTON, SHARON E. * 1998; Master's, 1973, Columbia University

Associate Professors

ANDERSON, ALEX THOMAS * 1998; Bachelor's, 1987, Cornell University
BORYS, ANN MARIE * 2006; Master's, 1988, Syracuse University
BURPEE, HEATHER * 2005; Master's, 2008, University of Washington
COHAN, PETER SCOTT * 1982; Bachelor's, 1973, Augustana College
CORSER, ROBERT J * 2008; Master's, 2003, Harvard University
GOLDEN, ELIZABETH M * 2009; Master's, 1994, Columbia University
GRIGGS, JAMES KIMO SAFFORD * 2008; Bachelor's, 1979, Yale University
HEERWAGEN, DEAN REESE * 1975; Master's, 1967, Cambridge College
HUBER, NICOLE * 2005; Bachelor's, 1991, Technische Universität Darmstadt
HUPPERT, ANN C * 2008; Bachelor's, 1988, Vassar College
IAROCCHI, LOUISA M * 2004; Doctorate, 2003, Boston University
INANICI, MEHLIKA * 2005; Bachelor's, 1993, Middle East Technical University
LATOURELLE, ELAINE DAY, 1982; Bachelor's, 1961, University of Washington
LEBERT, EDGAR A, 1982; Master's, 1967, University of Washington
MCLAREN, BRIAN * 2001; Master's, 1986, Columbia University
MEEK, CHRISTOPHER * 2001; Bachelor's, 1996, University of Phoenix-New Mexico Campus
MERLINO, KATHRYN ROGERS * 1999; Bachelor's, 1995, University of Washington
MOHLER, RICHARD ERNEST J * 1986; Bachelor's, 1980, University of Pennsylvania
NICHOLLS, JAMES KEITH * 1995; Bachelor's, 1982, University of Alberta
PENA, ROBERT BERNARD * 2007; Master's, 1987, University of California-Berkeley
PROKSCH, GUNDULA * 2008; Master's, 2000, Cornell University
SPRAGUE, TYLER S * 2004; Bachelor's, 2003, University of California-Berkeley

Assistant Professor

MENDEZ ECHENAGUCIA, TOMAS IGNACIO * 2019; Master's, 2007, Politecnico di Torino; Architecture

Lecturers

FREEMAN, MICHAEL VINCENT, 2018

GLENN, LISA M, 2016
HAJI ESMAILI, YASAMAN, 2018
HAMMER, DAVIS L, 2018
KIKOSICKI, MATTHEW J, 2013
MATTHEIS, CORY D, 2009
NELSON, FRANCES, 1998
RICKER, KATHRYN SCHMITZ, 2018
SQUIRES, GREGORY ROBERT, 2018
SVETZ, ROBERT ANDREW, 2016
ZIMMERMAN, WILLIAM JAY, 2017

Construction Management

For complete faculty listing, please visit <https://cm.be.uw.edu/people/>

Professors

BENDER, WILLIAM J * 2014; Master's, 1989, Oregon State University
DANIALI, SAEED, 1997; Bachelor's, 1970, Amirkabir University of Technology
DOSSICK, CARRIE S * 2005; Bachelor's, 1997, Columbia University
KIM, YONG-WOO * 2007; Bachelor's, 1995, Honghe University
SCHAUFELBERGER, JOHN E. * 1994; Bachelor's, 1964, University of Idaho

Associate Professors

ABDEL AZIZ, AHMED * 2002; Doctorate, 2000, University of British Columbia
HOLM, ARNOLD L, 1993; Bachelor's, 1980, University of Washington
LEE, HYUN WOO * 2015; Bachelor's, 1999, Seoul National University
LIN, KEN-YU * 2008; Bachelor's, 1997, National Taiwan University
MIGLIACCIO, GIOVANNI C * 2010; Bachelor's, 2000, Politecnico di Bari
NEMATI, KAMRAN M., 1998; Bachelor's, 1980, California State University

Assistant Professor

SEPTELKA, DARLENE M, 2007; Bachelor's, 1986, University of Washington

Lecturer

SHAIMAN, JAMES L, 2005; Bachelor's, 1999, Rochester Institute of Technology; Photography

Landscape Architecture

For complete faculty listing, please visit <https://larch.be.uw.edu/people/>

Professors

HAAG, RICHARD, 1982; Bachelor's, 1950, California State University
HOU, JEFFREY * 2001; Bachelor's, 1990, Cooper Union for the Advancement of Science and Art
MANZO, LYNNE C * 2001; Master's, 1988, New York University
ROTTLE, NANCY D, 2001; Bachelor's, 1985, University of Oregon
WAY, THAISA * 2007; Doctorate, 2005, Cornell University

WINTERBOTTOM, DANIEL M. * 1993; Master's, 1988, Harvard University

Associate Professors

HORNER, RICHARD R. * 1981; Bachelor's, 1965, University of Pennsylvania

JOHNSON, JULIE M * 1995; Master's, 1988, Massachusetts Institute of Technology

PARRETT, JULIE L, 2002; Master's, 1997, University of Pennsylvania; Landscape Architecture

TORRENCE, GERARD R, 1954; Master's, 1950, Massachusetts Institute of Technology

YOCOM, KENNETH P * 2000; Bachelor's, 1996, Eastern Washington University

Assistant Professor

DE ALMEIDA, CATHERINE, 2019; Master's, 2011, Harvard University; Landscape Architecture

Lecturers

RUPIC, MATE, 2018

SHEN, XINYUAN, 2014

VELARDE, VICTOR A, 2017

Real Estate

For complete faculty listing, please visit <https://re.be.uw.edu/people/>

Professors

DERMISI, SOFIA * 2014; Master's, 1999, Harvard University

STEVENSON, SIMON A W, 2016; Bachelor's, 1992, Liverpool John Moores University

Associate Professor

WALTER, REBECCA JO * 2017; Master's, 2008, Florida Atlantic University; Urban Planning

Assistant Professors

ACOLIN, ARTHUR ACOCA, 2017; Master's, 2011, London School of Economics and Political Science

COLBURN, GREGG THEODORE, 2017; Bachelor's, 1995, Albion College; Economics

Lecturer

MCCABE, PATRICK A, 2015

Urban Design and Planning

For complete faculty listing, please visit <https://urbdp.be.uw.edu/people/>

Professors

ALBERTI, MARINA * 1996; Doctorate, 1992, Massachusetts Institute of Technology

BELL, EARL J, 1966; Bachelor's, 1952, California State University

BLANCO, HILDA J, 1996; Bachelor's, 1969, New York University

MILLER, DONALD H, 1982; Master's, 1960, University of California-Berkeley

MUGERAUER, ROBERT * 2000; Doctorate, 1973, The University of Texas
PURCELL, MARK H. * 1999; Bachelor's, 1992, Duke University
SHEN, QING * 2009; Master's, 1986, University of British Columbia
INTERMANN, RICHARD K, 1971; Master's, 1967, Harvard University

Associate Professors

ABRAMSON, DANIEL B * 2001; Bachelor's, 1985, Harvard University
BAE, CHRISTINE * 1996; Bachelor's, 1980, Korea University
BERNEY, RACHEL E. * 1992; Master's, 2002, University of California-Berkeley
BORN, BRANDEN M * 2003; Bachelor's, 1993, University of Wisconsin Colleges
CAMPBELL, CHRISTOPHER D * 1988; Master's, 1994, University of California-Los Angeles
CHALANA, MANISH * 2004; Bachelor's, 1993, Mangalore University
WHITTINGTON, JANICE M * 2005; Master's, 1993, California Polytechnic State University-San Luis Obispo

Assistant Professor

GROVER, HIMANSHU * 2014; Bachelor's, 1998, School of Planning and Architecture

Lecturer

THOMPSON, JAMES R, 2011

Michael G. Foster School of Business

For complete faculty listing, please visit <https://foster.uw.edu/faculty-research/directory/>

Professors

AGRAWAL, NIDHI * 2011; Bachelor's, 1997, Gujarat University
AVOLIO, BRUCE * 2008; Bachelor's, 1975, New York University
BARNES, CHRISTOPHER * 2013; Doctorate, 2009, Michigan State University
BOEKER, WARREN * 1998; Bachelor's, 1978, Rose-Hulman Institute of Technology
BOND, ALAN P * 2013; Doctorate, 1999, University of Chicago
BOWEN, ROBERT M, 1982; Bachelor's, 1968, Drury University
BUCK, VERNON E, 1968; Master's, 1960, Cornell University
BURGSTAHLER, DAVID C * 1980; Doctorate, 1981, University of Iowa
CHEN, XIAO-PING * 1999; Bachelor's, 1985, Hangzhou College of Professional Technology
DEY, DEBABRATA * 1997; Bachelor's, 1986, Indian Institute of Technology Delhi
DUCHIN, RAN, 2012; Bachelor's, 2001, Hebrew University of Jerusalem
DUKES, ROLAND E * 1979; Master's, 1970, Stanford University
ERICKSON, GARY, 1982; Master's, 1973, Stanford University
ETCHESON, WARREN W, 1982; Bachelor's, 1943, Indiana University-Bloomington
FONG, CHRISTINA T. * 2003; Master's, 2000, Stanford University
FOREHAND, MARK ROBECK * 1997; Bachelor's, 1992, Stanford University
GE, WEILI * 2006; Bachelor's, 1999, Shanghai Medical University
GLASSMAN, DEBRA A, 1989; Bachelor's, 1975, University of Michigan-Ann Arbor
HALEY, CHARLES, 1982; Master's, 1964, Stanford University
HARFORD, JARRAD * 2001; Bachelor's, 1993, Pennsylvania State University-College of Medicine
HEATH, LOYD C, 1962; Master's, 1953, Northwestern University
HENNING, DALE A, 1955; Doctorate, 1954, University of Illinois at Urbana-Champaign
HIGGINS, ROBERT C * 1982; Master's, 1965, Harvard University
HILL, CHARLES WILLIAM L * 1988; Bachelor's, 1979, University of Manchester
HODGE, FRANK D * 2000; Bachelor's, 1988, Carroll College
JAIN, SHAILENDRA P * 2008; Bachelor's, 1982, Birla Institute of Technology and Science
JIAMBALVO, JAMES * 1977; Doctorate, 1977, Ohio State University Agricultural Technical Institute
JONES, THOMAS M * 1977; Doctorate, 1977, University of California-Berkeley
KAMARA, AVRAHAM * 1984; Master's, 1981, Columbia University
KARPOFF, JONATHAN M * 1983; Bachelor's, 1978, University of Alaska Southeast
KAST, FREMONT E, 1978; Bachelor's, 1946, San Jose State University
KLASTORIN, THEODORE * 1974; Bachelor's, 1969, Carnegie Mellon University
KOSKI, JENNIFER LYNCH * 1991; Bachelor's, 1983, Brown University
KOTHA, SURESH * 1996; Master's, 1982, Rensselaer Polytechnic Institute
LEE, THOMAS W * 1983; Master's, 1977, Bowling Green State University-Firelands
MACLACHLAN, DOUGLAS, 1982; Bachelor's, 1963, University of California-Berkeley
MALATESTA, PAUL H * 1980; Bachelor's, 1973, University of California-Santa Barbara
MAMANI, HAMED * 2008; Doctorate, 2008, Massachusetts Institute of Technology
MATSUMOTO, DAWN A * 1993; Bachelor's, 1989, University of Hawaii
MCVAY, SARAH E * 2012; Doctorate, 2004, University of Michigan-Ann Arbor
MIZIK, NATALIE * 1996; Master's, 1995, Moscow State Institute of International Relations
MOINZADEH, KAMRAN * 1984; Master's, 1982, Stanford University

MOXON, RICHARD W, 1982; Doctorate, 1973, Harvard University
MUELLER, GERHARD G, 1982; Bachelor's, 1956, University of California-Berkeley
NARVER, JOHN C, 1982; Bachelor's, 1957, Oregon State University
PALMATIER, ROBERT W * 2007; Bachelor's, 1983, Georgia Institute of Technology-Main Campus
PARSONS, CHRISTOPHER ALAN, 2018; Doctorate, 2008, The University of Texas at Austin; Finance
RAMANATHAN, K V, 1982; Master's, 1962, Northwestern University
REYNOLDS, SCOTT J. * 2002; Bachelor's, 1993, Brigham Young University
SCHLOSSER, ANN E. * 2000; Bachelor's, 1991, Carleton College
SEFCIK, STEPHAN E * 1986; Bachelor's, 1974, University of Illinois at Urbana-Champaign
SHULMAN, JEFFREY D * 2006; Bachelor's, 2001, Northwestern University
SIEGEL, STEPHAN * 2005; Master's, 2002, Columbia University
SPRATLEN, THADDEUS H, 1972; Bachelor's, 1956, Ohio State University Agricultural Technical Institute
STEENSMA, HARVEY K. * 2000; Doctorate, 1996, Indiana University-Bloomington
SULLIVAN, JEREMIAH J, 1982; Bachelor's, 1962, New York University
TAMURA, HIROKUNI, 1967; Bachelor's, 1960, University of Michigan-Ann Arbor
TAN, YONG * 1987; Bachelor's, 1987, Huazhong University of Science and Technology
TURNER, DANIEL J. * 1999; Doctorate, 2001, Northwestern University
UMPHRESS, ELIZABETH * 2011; Bachelor's, 1997, The University of Texas
YALCH, RICHARD F * 1982; Bachelor's, 1970, Carnegie Mellon University
YOGANARASIMHAN, HEMA * 2014; Bachelor's, 2004, Indian Institute of Technology Delhi
YOUNG, LANCE A, 1995; Master's, 1999, University of Rochester
ZHOU, YONGPIN * 2000; Master's, 1995, Johns Hopkins University

Associate Professors

BEARD, OLETA, 1982; Bachelor's, 1978, University of Washington
BIGLEY, GREGORY * 2000; Master's, 1991, University of California-Irvine
BLANKESPOOR, ELIZABETH ANN * 2018; Bachelor's, 2006, Dordt College; Accounting
BOEH, KEVIN K, 2018; Bachelor's, 1990, Colorado College; Economics
CHEN, SHI * 2013; Doctorate, 2013, Stanford University
CURTIS, ASHER B * 2012; Bachelor's, 2001, Australian School of Business University of New South Wales
DEHAAN, EDUARD * 2008; Master's, 2008, San Francisco State University
DEWENTER, KATHRYN L, 1992; Master's, 1985, Stanford University
FAN, MING * 2002; Bachelor's, 1987, Nanjing University
FEHR, RYAN * 2010
FINKELSTEIN, CRYSTAL L., 2004; Bachelor's, 2004, University of Washington
GILBERT, THOMAS * 2008; Master's, 2002, Imperial College
GUPTA, ABHINAV * 2015; Bachelor's, 2008, Aligarh Muslim University
HALLEN, BENJAMIN L * 2014; Doctorate, 2007, Stanford University
HILLIER, MARK S. * 1993; Master's, 1991, Stanford University
JAIN, APURVA * 1999; Bachelor's, 1988, Indian Institute of Technology Roorkee
JOHNSON, MICHAEL D. * 2006; Bachelor's, 1985, Hope College
KESKIN, TAYFUN, 2010; Bachelor's, 2001, Bogazici University
LEON DIMAS, ALEXIS, 2016; Doctorate, 2004, Massachusetts Institute of Technology; Economics
LEVIT, DORON YIZHAK, 2020; Master's, 2006, Hebrew University of Jerusalem; Finance
MADUNIC, MARKO, 2018; Master's, 2001, University of Central Florida
OU, SHAOSONG, 2007; Bachelor's, 1996, Huazhong University of Science and Technology
PAHNKE, EMILY * 2010; Bachelor's, 1998, Brigham Young University
PARAMESWARAN, MANOJ, 2010; Master's, 1994, All India Institute of Medical Sciences

PHILLIPS, THOMAS E., 1986; Bachelor's, 1988, University of Washington
RICE, EDWARD M * 1979; Doctorate, 1978, University of California-Los Angeles
RUTZ, OLIVER * 2011; Master's, 2003, University of California-Los Angeles
SAYEDI ROSH KHAR, SEYED AMIN * 2014; Master's, 2009, Carnegie Mellon University
SESLEN, TRACEY, 2012; Doctorate, 2003, Massachusetts Institute of Technology
SHORES, DONNA J * 1986; Doctorate, 1986, Stanford University
SIRICHAKWAL, ISSARIYA, 2006; Bachelor's, 2000, Chulalongkorn University
SIRMON, DAVID G. * 2012; Doctorate, 2004, Arizona State University
STEARNS, ELIZABETH P, 1995; Master's, 1978, New York University
TAN, DAVID * 2013; Bachelor's, 2004, Creighton University
WAGNER, MICHAEL * 2012; Bachelor's, 2000, Massachusetts Institute of Technology
WALKER, FRANKLIN RUSSELL, 2019; Doctorate, 1999, Cornell University; Civil Engineering
WEBER, ELIZABETH L, 2007; Bachelor's, 2011, University of Washington
WESTERFIELD, MARK M * 2012; Doctorate, 2004, Massachusetts Institute of Technology
ZHANG, CRYSTAL FARH * 2015; Bachelor's, 2005, Harvard University

Assistant Professors

ANANTHAKRISHNAN, UTTARA MADURAI, 2018; Bachelor's, 2010, Anna University
BERNARD, DARREN G., 2020; Bachelor's, 2008, University of Minnesota-Twin Cities; Business Administration/Management
BISWAS, SHIRSHO, 2020; Doctorate, 2020, University of Chicago; Business Administration/Management
BLACKBURNE, TERRENCE P, 2014; Master's, 2003, Stanford University
BORAH, ABHISHEK, 2013; Bachelor's, 2002, University of Delhi
BROGAARD, JONATHAN A., 2011; Doctorate, 2012, Northwestern University
CHOY, BYONG-JEAN, 1983
DE KOK, TIES, 2019; Bachelor's, 2013, University of Tilburg; Business Administration/Management
DEMERJIAN, PETER R, 2013; Bachelor's, 1996, Brandeis University
DESANTOLA, ALICIA, 2019
DUNN, LEA H * 2014; Bachelor's, 2007, Reed College
ERICKSON, BARRY J., 2017; Master's, 2008, Seattle University; Marketing
GALE, BRIAN THOMAS, 2019; Bachelor's, 2006, Miami University-Oxford; Accounting
GOLI, ALI, 2020; Doctorate, 2020, University of Chicago; Marketing
GRANT, STEPHANIE, 2016; Doctorate, 2016, University of Illinois at Urbana-Champaign
HAFENBRACK, ANDREW, 2019
HRDLICKA, CHRISTOPHER M, 2010; Doctorate, 2010, University of Chicago
HUANG, SHAN, 2018; Doctorate, 2018, Massachusetts Institute of Technology
HUWE, RUTH A, 1990; Bachelor's, 1986, San Diego State University
HWANG, HYEUNJUNG * 2015; Doctorate, 2015, Carnegie Mellon University
IRAVANI, FOAD * 2012; Bachelor's, 2003, Sharif University of Technology
JAIN, LALIT KUMAR * 2018; Doctorate, 2016, University of Wisconsin-Madison; Mathematics
KREMENS, LUKAS, 2019; Bachelor's, 2011, City University London; Business Administration/Management
LEE, STEPHANIE, 2017; Bachelor's, 2011, Stanford University; Economics
MALOY, FRANCES, 1987; Bachelor's, 1981, New York University
MARIN, MONICA, 2013; Bachelor's, 2003, Augusta State University
MATTHEWS, MARTHA N., 1992; Bachelor's, 1982, Appalachian State University
MCPHERSON, RICHARD S., 2005; Bachelor's, 1979, Arizona State University
MUMMALANENI, NARASIMHA * 2016; Master's, 2012, Northwestern University
NAGESWARAN, LEELA, 2018; Doctorate, 2018, Carnegie Mellon University; Operations Management

NICHOLS, CHRISTINA, 2016; Master's, 2012, Texas A & M University; Marketing
 OLSON, DANIEL M., 2016; Bachelor's, 2000, Brigham Young University
 PATRICK, PAIGE H, 2013; Master's, 2002, Arizona State University
 QUINN, PHILLIP J, 2014; Bachelor's, 2005, Drake University
 SCHABRAM, KIRA * 2016; Master's, 2010, Concordia University
 SCHULZ, FLORIAN, 2014; Master's, 2008, London Business School
 SEONG, SORAH, 2018; Bachelor's, 2009, Harvard University; Sociology
 SHAIKH, SARAH, 2015; Bachelor's, 2004, Drake University
 SHUNKO, MARIA * 2015; Master's, 2007, Carnegie Mellon University
 SONG, YANG, 2018; Bachelor's, 2011, Fudan University; Mathematics
 STERN, LEA H, 2016; Bachelor's, 2007, Canadian University College
 VALSESIA, FRANCESCA, 2018; Master's, London School of Economics and Political Science; Political Science
 WALLACE, SCOTT GORDON * 2018; Doctorate, 2018, Duke University; Marketing
 WANG, YINGFEI, 2017; Bachelor's, 2012, Peking University; Computer and Information Science
 WEE, XUN MING ELIJAH, 2017; Bachelor's, 2004, National University of Singapore
 YANG, MINGWEN, 2019; Master's, 2013, Georgia Institute of Technology-Main Campus
 ZENG, YAO, 2016; Bachelor's, 2007, Beijing University of Technology
 ZHANG, ZAOZAO, 2010; Master's, 2007, Columbia University
 ZUZUL, TIONA WHITE, 2017; Bachelor's, 2005, Harvard University

Senior Lecturers

DATTA, SUMON, 2018; Master's, 2004, Indian Institute of Technology Madras; Chemical Engineering
 LI, SAILU, 2017; Master's, 2008, Boston College; Economics
 PILCHER, MARTHA G, 1987; Bachelor's, 1976, Georgia Institute of Technology-Main Campus
 RACHAMADUGU, RAM-MOHAN, 2016; Master's, 1980, Carnegie Mellon University
 STUDER-ELLIS, ERICH, 2009; Doctorate, 1996, Duke University

Lecturers

BARNES, MARIA, 2018; Master's, 2006, Gonzaga University; Accounting
 BERGSTROM, TOD, 1999
 BERMAN, JOEL CHARLES, 2017
 BETTIN, PATRICK J, 1988
 BYERS, MARILEE, 2017
 CARTER, JAMES, 2018
 CONLEY, BRIAN THOMAS, 2011
 CORMICK, GERALD W, 1975
 DASHKEEV, VLADIMIR V, 2008; Doctorate, 2017, University of Washington; Economics
 EGUCHI, MICHAEL S, 2004
 FIRESTONE, PATRICK, 2016
 GIAMBATTISTA, MICHELE DONATO, 1995; Master's, 1969, Harvard University
 GRIMSTAD, GARY, 2015
 GUSCHIN, ANDREI G, 2014
 HECKEL, JASON, 2016; Diploma, 2002, University of Washington; Accounting
 HOCHBERG, LEE E, 2008
 JENSEN, ANDREW, 2003
 KOKTA, THOMAS L, 1986
 LEGG, DIANE, 2008; Bachelor's, 1987, College of William and Mary
 LEONG, ALAN, 1995; Bachelor's, 1994, Simon Fraser University

MALARKEY, SUSANNAH, 2016; Bachelor's, 1978, University of Oregon

MARQUEZ, ERIKA J, 2011

MCCANN, T.A., 2018

MCCORMACK, TIMOTHY B, 2014

MCREYNOLDS, EMILY C, 2013

MCREYNOLDS, NEIL L, 2002

NASRABADI, EBRAHIM, 2017; Doctorate, 2009, Technische Universität Berlin; Mathematics

PAPERMAN, JOSEPH B., 1995

SIMON, MICHAEL A, 2005; Bachelor's, 1990, University of Idaho

VITASEK, KATE, 2017; Master's, 1994, The University of Tennessee

WEEDE, ROBERT, 2013; Bachelor's, 1979, University of California-Davis; Accounting

School of Dentistry

For complete faculty listing, please visit <https://dental.washington.edu/people-directory/>

Professors

BEIRNE, OWEN ROSS * 1985; Medical Doctorate, 1972, Harvard University
BERG, JOEL H. * 2000; Medical Doctorate, 1983, University of Iowa
BOLENDER, CHARLES L, 1959; Medical Doctorate, 1956, University of Iowa
BOLLEN, ANNE-MARIE * 1990; Medical Doctorate, 1984, Université Libre de Bruxelles
BRUDVIK, JAMES S * 1979; Medical Doctorate, 1957, University of Minnesota-Duluth
CHAN, DANIEL C. N. * 2008; Master's, 1984, University of Iowa
CHEN, SSU-KUANG * 1988; Medical Doctorate, 1986, National Taiwan University
CHI, DONALD L * 2002; Bachelor's, 2000, Cornell University
CHIODO, GARY T, 2018
CHUNG, KWOK-HUNG * 2005; Medical Doctorate, 1979, National United University
CHUNG, WHASUN O. * 1994; Master's, 1989, Maranatha Baptist Bible College
COHENCA, NESTOR * 2005; Medical Doctorate, 1990, Universidad Nacional de Asunción
COLDWELL, SUSAN E. * 1994; Bachelor's, 1989, Duke University
DALE-CRUNK, BEVERLY, 1982; Bachelor's, 1964, University of Michigan-Ann Arbor
DARVEAU, RICHARD P. * 1989; Bachelor's, 1975, Northern Illinois University
DE ROUEN, TIMOTHY * 1982; Bachelor's, 1967, McNeese State University
DODSON, THOMAS B, 2013; Master's, 1984, Harvard University
DOMOTO, PETER K, 1982; Medical Doctorate, 1964, University of California-San Francisco
DRANGSHOLT, MARK T. * 1983; Bachelor's, 1981, University of Washington
DWORKIN, SAMUEL F, 1974; Bachelor's, 1954, New York University
FALES, MARTHA H, 1959; Bachelor's, 1943, University of Michigan-Ann Arbor
FRANK, RICHARD P, 1971; Medical Doctorate, 1962, University of Iowa
GHRIG, JOHN D, 1982; Medical Doctorate, 1946, University of Minnesota-Duluth
GORDON, SARA CHRISTINE * 2003; Bachelor's, 1981, Dalhousie University
HARRINGTON, GERALD W, 1982; Medical Doctorate, 1959, University of Missouri-St Louis
HUANG, GREG J., 1987; Bachelor's, 1983, Emory University
HUJOEL, PHILIPPE P * 1989; Medical Doctorate, 1984, Université Libre de Bruxelles
IZUTSU, KENNETH, 1982; Bachelor's, 1964, University of Washington
JOHNSON, JAMES D * 2003; Medical Doctorate, 1969, Northwestern University
KRONSTROM, MATS HENRIK * 2006; Medical Doctorate, 1980, Lund University
LE RESCHE, LINDA A * 1983; Bachelor's, 1969, Carleton College
LEGGOTT, PENELOPE J, 1993; Medical Doctorate, 1969, University of Bristol
LEROUX, BRIAN * 1991; Bachelor's, 1982, Carleton University
LITTLE, ROBERT M, 1982; Medical Doctorate, 1966, Northwestern University
LIU, ZIJUN * 1997; Medical Doctorate, 1983, Nanjing University
MILGROM, PETER M, 1974; Bachelor's, 1969, University of California-Los Angeles
MORRISON, KENNETH N, 1948; Medical Doctorate, 1943, University of Toronto
MORTON, THOMAS H, 1982; Medical Doctorate, 1972, Creighton University
NATKIN, EUGENE, 1982; Bachelor's, 1953, Columbia University
NICHOLLS, JACK I, 1982; Doctorate, 1966, Purdue University-Main Campus
ODA, DOLPHINE * 1985; Medical Doctorate, 1975, University of Iraq
PARANJPE, AVINA * 2009; Bachelor's, 2000, Mumbai University

PERSSON, GOSTA RUTGER * 1985; Medical Doctorate, 1967, Lund University
 RAMSAY, DOUGLAS S * 1983; Bachelor's, 1979, Franklin and Marshall College
 ROBERTSON, PAUL B. * 1992; Bachelor's, 1963, The University of Texas
 ROBINOVITCH, MURRAY * 1982; Bachelor's, 1959, University of Minnesota-Duluth
 RUBENSTEIN, JEFFREY E. * 1989; Bachelor's, 1972, Rutgers University-Camden
 SORENSEN, JOHN ALAN * 2012; Medical Doctorate, 1980, Tufts University
 TRUELOVE, EDMOND L * 1972; Doctorate, 1967, Indiana State University
 WORTHINGTON, PHILIP, 1982; Bachelor's, 1953, University of Liverpool

Associate Professors

ANDERSON, J MARTIN, 1981; Bachelor's, 1960, Pacific Lutheran University
 AW, TAR C., 1995; Medical Doctorate, 1990, Northwestern University
 BLOOMQUIST, DALE S, 1972; Master's, 1972, Georgetown University
 CHASTEEN, JOSEPH E, 1989; Medical Doctorate, 1967, University of Michigan-Ann Arbor
 CHEN, YEN-WEI, 2008; Medical Doctorate, 1998, Taipei Medical University
 DAVIS, JOHN M, 1982; Medical Doctorate, 1961, University of Washington
 DOGAN, SAMI, 2000; Medical Doctorate, 1991, Ankara University
 EGBERT, MARK A, 1982; Bachelor's, 1976, Pacific Lutheran University
 FLAKE, NATASHA M. * 2006; Doctorate, 2005, University of Maryland-University College
 GANDARA, BEATRICE K * 1982; Medical Doctorate, 1978, University of Southern California
 GARCIA, MARIELLA * 2008; Medical Doctorate, 2000, Universidad Peruana Cayetano Heredia
 JOONDEPH, DONALD R * 1982; Bachelor's, 1963, Northwestern University
 LEPE, XAVIER * 1993; Master's, 1987, Loyola University Chicago
 MANCL, LLOYD A. * 1986; Bachelor's, 1985, Pomona College
 MCLEAN, JEFFREY S * 2014; Master's, 2000, University of Guelph
 NELSON, TRAVIS M. * 2007; Medical Doctorate, 2007, Loma Linda University
 PHILLIPS, SANDRA L., 1982; Bachelor's, 1982, University of Washington
 PITTS, DAVID LEROY, 1982; Bachelor's, 1967, Indiana University-Bloomington
 POPOWICS, TRACY * 1997; Doctorate, 1997, Brown University
 PRESLAND, RICHARD B * 1989; Doctorate, 1987, University of Adelaide
 RAFFERTY, KATHERINE L., 1997; Bachelor's, 1986, Indiana University-Bloomington
 RAMOS JR, SERVANDO * 2016; Medical Doctorate, 1985, The University of Texas Health Science Center at Houston
 ROBERTS, FRANK A. * 1996; Bachelor's, 1986, Davidson College
 SADR, ALIREZA * 2015; Medical Doctorate, 2002, Shahid Beheshti University
 SEMINARIO, ANA LUCIA * 2007; Doctorate, 2006, Charles University
 SHELLER, BARBARA L * 1981; Medical Doctorate, 1981, University of Washington
 SILVA, JOANA CUNHA CRUZ * 2004; Medical Doctorate, 1999, Universidade de Pernambuco (UPE)
 STIEFEL, DORIS, 1982; Bachelor's, 1951, University of Washington
 TOOLSON, LEIGH, 1982; Medical Doctorate, 1967, University of Washington
 WANG, I-CHUNG * 2002; Medical Doctorate, 1985, Chung Shan Medical and Dental University
 XU, ZHENG * 2014; Master's, 1999, Peking University
 ZHANG, HAI * 2004; Medical Doctorate, 1992, Sichuan University

Assistant Professors

CHIGURUPATI, KAVITA, 2000
 CHREPA, VARVARA, 2015; Medical Doctorate, 2009, American University of Athens
 DEAN, DAVID * 2007; Doctorate, 2010, University of Washington
 HEATON, LISA J * 2005; Master's, 2002, University of Kentucky

LEE, PEGGY PEI-FUN, 1985; Bachelor's, 1982, National Yang Ming University

MIDDAUGH, DAN, 1967; Bachelor's, 1955, University of Minnesota-Duluth

PALMER, ELIZABETH * 2014; Medical Doctorate, 2008, Oregon Health & Science University

College of Education

For complete faculty listing, please visit <https://education.uw.edu/people/core-faculty>

Professors

ABBOTT, ROBERT D * 1975; Master's, 1968, University of Washington
BANG, MEGAN * 2011; Doctorate, 2009, Northwestern University
BEADIE, NANCY ELIZABETH * 1993; Master's, 1987, Syracuse University
BELL, PHILIP L * 1998; Master's, 1996, University of California-Berkeley
BILLINGSLEY, FELIX F * 1982; Doctorate, 1974, University of Washington
BOLTON, DALE LEROY, 1965; Bachelor's, 1950, Southeastern Oklahoma State University
BRAMMER, LAWRENCE M, 1963; Bachelor's, 1943, Rasmussen College-St Cloud
BROWN, SHARAN E * 1983; Master's, 1979, Seattle University
BURGESS, CHARLES O, 1982; Bachelor's, 1957, University of Oregon
CRAIG, ANTHONY * 2018; Doctorate, 2012, University of Washington; Education
DAVIS, CAROL * 1998; Bachelor's, 1984, The University of Texas
DRISCOLL, JOHN P, 1967; Doctorate, 1957, Pennsylvania State University-College of Medicine
GAY, GENEVA * 1989; Doctorate, 1972, The University of Texas
GLENN, ALLEN D., 1989; Master's, 1968, Kansas State University
HALVERSON, THOMAS J * 1992; Doctorate, 1996, University of Washington
HARING, NORRIS GROVER, 1982; Bachelor's, 1948, American College
HERRENKOHL, LESLIE R. * 1996; Master's, 1991, Clark University
HERTZOG, NANCY * 2010; Master's, 1981, University of Connecticut
HONIG, MEREDITH I. * 2006; Bachelor's, 1993, Brown University
HUDSON, ROXANNE * 2006; Bachelor's, 1989, Gonzaga University
JENKINS, JOSEPH R * 1982; Bachelor's, 1964, Gonzaga University
JONES, DIANE CARLSON * 1996; Bachelor's, 1966, Purdue University-Main Campus
JONES, JANINE * 2002; Bachelor's, 1991, The University of Texas
KAZEMI, ELHAM * 1999; Bachelor's, 1992, Duke University
KERDEMAN, DEBORAH * 1990; Master's, 1981, Hebrew College
KERR, DONNA H, 1982; Doctorate, 1973, Columbia University
KERR, STEPHEN T * 1985; Master's, 1969, Columbia University
KLOCKARS, ALAN J, 1982; Bachelor's, 1962, Oregon State University
LOPEZ, SARA L. * 2000; Bachelor's, 1983, Pacific Lutheran University
MADSEN, DAVID L, 1982; Master's, 1954, University of Chicago
MAZZA, JAMES J. * 1996; Bachelor's, 1986, St Johns College
MC CARTIN, ROSEMARIE E, 1969; Master's, 1960, Immaculata University
MCCUTCHEN, DEBORAH ELAINE * 1986; Master's, 1978, University of Pittsburgh-Bradford
MISSALL, KRISTEN * 2015; Master's, 1999, University of Minnesota-Duluth
MORISHIMA, JAMES K, 1982; Bachelor's, 1962, University of Washington
NOLEN, SUSAN B. * 1990; Master's, 1976, Lewis and Clark Community College
O'DOHERTY, ANN * 2012; Bachelor's, 1981, Illinois State University
PARKER, WALTER C * 1985; Bachelor's, 1970, University of Colorado at Boulder
PECK, CHARLES A * 2003; Master's, 1976, Sonoma State University
PECKHAM, PERCY D, 1982; Doctorate, 1968, University of Colorado Denver
PLECKI, MARGARET L * 1994; Doctorate, 1991, University of California-Berkeley
SANDALL, SUSAN R., 1982; Bachelor's, 1974, University of California-Berkeley

SCHWARTZ, ILENE SHARON * 1991; Bachelor's, 1981, University of California-Santa Barbara
SEBESTA, SAM L, 1982; Master's, 1960, Northwestern University
STANDAL, TIMOTHY, 1982; Doctorate, 1976, University of Minnesota-Duluth
STOWITSCHKEK, JOSEPH JAMES * 1986; Bachelor's, 1965, Monmouth College
TAYLOR, CATHERINE S., 1991; Bachelor's, 1974, University of Kansas
TAYLOR, EDWARD * 1985; Bachelor's, 1982, Gonzaga University
TOSTBERG, ROBERT E, 1962; Bachelor's, 1956, University of Oregon
TUAN, MIA, 2015; Bachelor's, 1990, University of California-Berkeley
VALENCIA, SHEILA DENISE W * 1987; Bachelor's, 1971, New York University
VARGHESE, MANKA M * 2000; Bachelor's, 1990, University of Bristol
WASLEY, PATRICIA A, 1986; Doctorate, 1989, University of Washington
WILLIAMS, DONALD T, 1969; Master's, 1957, Stanford University
WILLIAMSON-LOTT, JOY ANN * 2007; Bachelor's, 1993, University of Illinois at Urbana-Champaign
WINDSCHITL, MARK A * 1996; Bachelor's, 1979, Iowa State University
ZEICHNER, KENNETH * 2009; Master's, 1970, Syracuse University

Associate Professors

BARAJAS, FILIBERTO * 2010; Master's, 2001, Claremont Graduate University
BEAL, JACK L, 1982; Bachelor's, 1957, University of Kansas
BEAM-CONROY, TEDDI, 2016; Bachelor's, 1984, University of Wisconsin-Milwaukee
BEITLERS, ANNE, 1994; Doctorate, 2014, New York University
CHEN, JONDOU * 2014; Master's, 2010, Columbia University
CLEVINGER-BRIGHT, MARY, 2004; Bachelor's, 1978, Iowa State University
DABACH, DAFNEY BLANCA * 2010
DIETRICH, LYNN, 2015; Bachelor's, 1984, Emory University
ELFERS, ANN M. * 1995; Master's, 1993, University of Belgrade
FETTIG, ANGEL * 2017
FREY, KARIN S. * 1983; Bachelor's, 1971, University of Washington
GALLUCCI, CHRYSAN J., 1986; Bachelor's, 1971, University of Oregon
HOFFMAN, JENNIFER L * 1989; Master's, 1998, Seattle University
ISHIMARU, ANN * 2012; Master's, 2008, Harvard University
JACKSON, KARA * 2013; Bachelor's, 1997, Bates College
JEGATHEESAN, BRINDA INDIA * 2006; Bachelor's, 1985, Bangalore University
JOSEPH, GAIL * 1987; Bachelor's, 1991, University of Washington
KELLEY-PETERSEN, MEGAN M, 2005; Bachelor's, 2000, Seattle University
LEWIS, KATHERINE * 2012; Master's, 2007, University of California-Berkeley
LI, MIN * 2001; Bachelor's, 1994, Beijing Normal University
LOTT, JOE * 2007; Master's, 2000, Louisiana State University
MCDONALD, MORVA A, 2006; Master's, 1999, Stanford University
MEEKER, KATHLEEN * 2013; Bachelor's, 2002, Ohio State University Agricultural Technical Institute
NEWMAN, JODI, 1999; Bachelor's, 1995, Haverford College
PARIS, DJANGO * 2018; Doctorate, 2008, Stanford University; Philosophy
POWELL, SELMA, 2014; Doctorate, 2012, University of Central Florida
RIGBY, JESSICA * 2014; Bachelor's, 1998, Oberlin College
ROBERTS, CARLY * 2015; Master's, 2010, University of Alaska Southeast
ROSENBERG, NANCY E * 2003; Bachelor's, 1987, Stanford University
SANDERS, ELIZABETH * 2004
SCHINDLER, HOLLY S * 2012; Doctorate, 2007, Boston College

SPAULDING, SCOTT * 2009; Bachelor's, 1989, The University of Tennessee
SUN, MIN * 2014; Master's, 2006, Beijing Normal University
TAYLOR, KATHERINE * 2015; Bachelor's, 2003, New York University
THOMPSON, JESSICA J * 1992; Master's, 2001, University of Washington
WANG, CHUN * 2018

Assistant Professors

ASTIVIA, OSCAR OLVERA * 2020; Doctorate, 2017, University of British Columbia
BENEKE, MARGARET R * 2017
DUNCHEON, JULIA * 2019
ELLIOTT-GROVES, EMMA * 2019; Doctorate, 2016, University of Washington; Educational Psychology
KAUERZ, KRISTIE * 2011; Master's, 1995, American University
KNIGHT, DAVID * 2019; Doctorate, 2015, University of Southern California; Education
MACHADO, EMILY, 2018; Master's, 2011, American University
MARTINEZ, CARLOS RICARDO * 2020; Doctorate, 2019, University of Pennsylvania; Education
NICKSON, DANA * 2020
PARK, SOOJIN OH * 2015; Master's, 2010, Harvard University
ROCHA, TOMAS DE REZENDE * 2020
SANTIAGO, MARIBEL * 2020
SHAH, NIRAL * 2019; Doctorate, 2013, University of California-Berkeley; Education
SHEA, MOLLY * 2019; Doctorate, 2013, University of Colorado at Boulder; Education
WASHINGTON, SHANEE ADRIENNE * 2019; Doctorate, 2019, Boston College; Education

Senior Lecturer

BRENNAN, CAROLYN, 2008; Bachelor's, 2003, University of Colorado at Boulder

Lecturers

IVES, CHARLES, 2013
MATLACK, ALEXA, 2013
OLSON, ERIN, 2002
PARKIN, JASON R, 2017

College of Engineering

Aeronautics and Astronautics

For complete faculty listing, please visit <https://www.aa.washington.edu/facultyfinder>

Professors

ACIKMESE, BEHCET * 2015; Master's, 1996, Indiana University-Purdue University-Indianapolis
BRAGG, MICHAEL B * 2013; Doctorate, 1981, Ohio State University Agricultural Technical Institute
BREIDENTHAL, ROBERT E * 1980; Master's, 1974, California Institute of Technology
BRUCKNER, ADAM * 1972; Bachelor's, 1966, McGill University
DABIRI, DANA * 2002; Master's, 1987, University of California-Berkeley
DECHER, REINER, 1982; Master's, 1962, Massachusetts Institute of Technology
FYFE, IAN M, 1982; Doctorate, 1957, Stanford University
HERMANSON, JAMES C. * 1986; Master's, 1980, California Institute of Technology
HILL, KRISTI MORGANSEN * 2002; Bachelor's, 1993, Boston University
HOLSAPPLE, KEITH A * 1982; Bachelor's, 1960, University of Washington
JARBOE, THOMAS R. * 1989; Doctorate, 1974, University of California-Berkeley
KUROSAKA, MITSURU * 1987; Doctorate, 1968, California Institute of Technology
LIVNE, ELI * 1990; Bachelor's, 1974, Technion Israel Institute of Technology
MESBAHI, MEHRAN * 2002; Bachelor's, 1989, California State University-Northridge
PARMERTER, R REID, 1963; Bachelor's, 1958, California Institute of Technology
SHUMLAK, URI * 1994; Bachelor's, 1987, The University of Texas
VAGNERS, JURIS * 1982; Master's, 1963, Stanford University
WAAS, MODERAGE ANTHONY * 2014; Master's, 1983, California Institute of Technology

Associate Professors

FERRANTE, ANTONINO * 2008
HURLEN, ERIK, 2020
KNOWLEN, CARL * 1983; Bachelor's, 1983, University of Washington
MATTICK, ARTHUR T., 1982; Bachelor's, 1971, Massachusetts Institute of Technology
YANG, JINKYU * 2013; Bachelor's, 2000, Korea University

Assistant Professors

HABTOUR, ED MANSOUR * 2020
LITTLE, JUSTIN M * 2015
LUM, CHRISTOPHER W. M. * 2001; Bachelor's, 2003, University of Washington
NARANG, ANSHU, 2013; Master's, 2008, Indian Institute of Technology Delhi
SALVIATO, MARCO * 2015; Bachelor's, 2007, Università degli Studi di Padova
WILLIAMS, OWEN JAMES * 2016; Master's, 2008, Imperial College
YOU, SETTHIVOINE, 2008

Lecturers

NAGABHUSHAN, VIVEK, 2018
RICHARD, LUKE I, 2008

SPETZLER, MAX GEORG, 2011

Chemical Engineering

For complete faculty listing, please visit <https://www.cheme.washington.edu/facresearch/core-faculty.html>

Professors

BANEYX, FRANCOIS * 1992

BERG, JOHN C * 1964; Bachelor's, 1960, Carnegie Mellon University

BOWEN, J RAY, 1982; Bachelor's, 1956, Massachusetts Institute of Technology

CASTNER, DAVID G. * 1986; Bachelor's, 1975, Oregon State University

DAVIS, E JAMES * 1983; Bachelor's, 1956, Gonzaga University

FINLAYSON, BRUCE A, 1982; Bachelor's, 1961, Rice University

HEIDEGER, WILLIAM J, 1957; Bachelor's, 1954, Carnegie Mellon University

HILLHOUSE, HUGH * 1995; Bachelor's, 1995, Clemson University

JENEKHE, SAMSON A * 2000; Bachelor's, 1977, Michigan Technological University

LIDSTROM, MARY E. * 1982; Master's, 1975, University of Wisconsin-Madison

OVERNEY, RENE M * 1996; Bachelor's, 1987, Universität Basel

PFAENDTNER, WALTER JAMES * 2009; Bachelor's, 2001, Georgia Institute of Technology-Main Campus

POZZO, LILO D. * 2007; Bachelor's, 2001, American University of Puerto Rico

RIBE, FRED L, 1977; Bachelor's, 1944, The University of Texas

RICKER, NEIL L, 1982; Master's, 1972, University of California-Berkeley

SCHWARTZ, DANIEL T. * 1991; Master's, 1985, University of California-Davis

SLEICHER, CHARLES A, 1982; Bachelor's, 1944, Brown University

STUVE, ERIC M * 1985; Master's, 1979, Stanford University

SUBRAMANIAN, VENKAT * 2014; Bachelor's, 1997, Madurai Kamaraj University

WOODRUFF, GENE L, 1982; Master's, 1963, Massachusetts Institute of Technology

Associate Professors

ADLER, STUART B. * 2001; Master's, 1989, University of California-Berkeley

BECK, DAVID * 2000; Bachelor's, 2000, Drexel University

CAROTHERS, JAMES * 2012; Doctorate, 2005, Harvard University

DEFORREST, COLE ALEXANDER * 2013; Bachelor's, 2006, Princeton University

KRIEGER-BROCKETT, BARBARA, 1982; Bachelor's, 1968, University of Wisconsin Colleges

Assistant Professors

BERGSMAN, DAVID STEVENS * 2020

HOLMBERG, VINCENT * 2015; Master's, 2010, The University of Texas

NANCE, ELIZABETH * 2015; Doctorate, 2012, Johns Hopkins University

VALLEAU, STEPHANIE * 2019; Doctorate, 2016, Harvard University; Chemical Physics

Lecturers

KIM, ANTHONY YOUNG, 1987; Master's, 1993, University of California-Davis

MURBACH, MATTHEW, 2013

Civil and Environmental Engineering

For complete faculty listing, please visit <https://www.ce.washington.edu/facultyfinder>

Professors

ARDUINO, PEDRO * 1997; Master's, 1992, American University of Puerto Rico
BAN, XUEGANG * 2016; Bachelor's, 1997, Tsinghua University
BENJAMIN, MARK M * 1982; Bachelor's, 1972, Carnegie Mellon University
BERMAN, JEFFREY WILLIAM * 2006; Bachelor's, 2000, New York University
BRETT, MICHAEL T * 1997; Bachelor's, 1983, Humboldt State University
CARLSON, DALE A, 1955; Bachelor's, 1950, University of Washington
CHEN, QIUZI * 2009; Bachelor's, 1992, Nankai University
EBERHARD, MARC O * 1989; Bachelor's, 1984, University of California-Berkeley
GOODCHILD, ANNE V. * 2005; Master's, 2002, University of California-Berkeley
HORNER-DEVINE, ALEXANDER * 2004; Bachelor's, 1995, Princeton University
HOSSAIN, FAISAL * 2014; Bachelor's, 1996, Indian Institute of Technology Delhi
ISTANBULLUOGLU, ERKAN * 2009; Bachelor's, 1996, Uludag University
KORSHIN, GREGORY * 1991; Bachelor's, 1978, Kazan State University
LARSON, TIMOTHY * 1970; Bachelor's, 1968, Lehigh University
LEHMAN, DAWN E * 1998; Bachelor's, 1989, Tufts University
LETTENMAIER, DENNIS P * 1982; Master's, 1973, George Washington University
LOWES, LAURA N * 1989; Doctorate, 1999, University of California-Berkeley
LUNDQUIST, JESSICA D * 2006; Bachelor's, 1999, University of California-Davis
MAHONEY, JOE PAUL * 1978; Bachelor's, 1968, The University of Texas
MARSHALL, JULIAN * 2015; Bachelor's, 1996, Princeton University
MILLER, GREGORY * 1983; Master's, 1981, Northwestern University
MUENCH, STEPHEN T * 1990; Bachelor's, 1990, University of Washington
NECE, RONALD E, 1982; Master's, 1951, Lehigh University
NIHAN, NANCY L * 1982; Bachelor's, 1964, Northwestern University
NIJSSSEN, BART * 1994; Doctorate, 2000, University of Washington
REED, DOROTHY * 1983; Master's, 1977, Princeton University
RUTHERFORD, G. SCOTT, 1981; Doctorate, 1974, Northwestern University
STAHL, DAVID A * 2000; Master's, 1975, University of Illinois at Urbana-Champaign
STANTON, JOHN * 1978; Master's, 1975, Cornell University
WANG, YINHAI * 1998; Bachelor's, 1989, Tsinghua University
WARTMAN, JOSEPH * 2010; Master's, 1996, University of California-Berkeley

Associate Professors

DODD, MICHAEL * 2009; Bachelor's, 2001, Georgia Institute of Technology-Main Campus
KAMINSKY, JESSICA A * 2014; Bachelor's, 2004, Rice University
MACKENZIE, DONALD W * 2013; Master's, 2009, Massachusetts Institute of Technology
MACKENZIE-HELNWEIN, PETER * 2003; Doctorate, 1997, International University Vienna
MCCORMACK, EDWARD D * 1982; Bachelor's, 1979, University of Washington
MOTLEY, MICHAEL * 2012; Bachelor's, 2003, Citadel Military College of South Carolina
NEUMANN, REBECCA B * 2010; Doctorate, 2009, Massachusetts Institute of Technology

Assistant Professors

CALVI, PAOLO * 2015; Bachelor's, 2008, Università degli Studi di Pavia
 GOMEZ, MICHAEL GREGORY * 2017; Bachelor's, 2011, University of California-Davis
 KIM, AMY AHIM * 2014; Master's, 2008, Illinois Institute of Technology
 MAURER, BRETT W * 2017; Bachelor's, 2009, Syracuse University
 NIRNIMESH KUMAR, UNKNOWN, 2016; Bachelor's, 2007, Indian Institute of Technology Kharagpur
 RAY, JESSICA R. * 2019; Doctorate, 2015, Washington University in St Louis; Chemical Engineering
 SHEAN, DAVID E * 2011; Bachelor's, 2004, Brown University
 THONSTAD, TRAVIS E. * 2020; Doctorate, 2016, University of Washington; Civil Engineering
 WIEBE, RICHARD * 2014; Doctorate, 2012, Duke University
 WINKLER, MARIKAROLIINA H * 2015; Doctorate, 2012, Delft University of Technology
 YAMAURA, JULIAN TAKASHI, 2009; Doctorate, 2018, University of Washington; Civil Engineering

Computer Science and Engineering

For complete faculty listing, please visit <https://www.cs.washington.edu/people/faculty/>

Professors

ANDERSON, RICHARD J. * 1986; Bachelor's, 1981, Reed College
 ANDERSON, THOMAS E. * 1987; Bachelor's, 1983, Harvard University
 BAER, JEAN-LOUP, 1969; Bachelor's, 1961, École Supérieure d'Ingenierie Informatique Grenoble
 BALAZINSKA, MAGDALENA * 2005; Bachelor's, 1998, École Polytechnique de Montréal
 BEAME, PAUL W. * 1987; Bachelor's, 1981, University of Toronto
 BODIK, RASTISLAV * 2015; Master's, 1994, University of Pittsburgh-Bradford
 BURGER, DOUGLAS CHRISTOPHE * 2008; Master's, 1993, University of Wisconsin-Madison
 CEZE, LUIS HENRIQUE DE BAR * 2007; Bachelor's, 2000, Universidade de São Paulo (USP)
 COHEN, MICHAEL F * 1998; Bachelor's, 1976, Beloit College
 CURLESS, BRIAN L. * 1997; Master's, 1991, Stanford University
 DOMINGOS, PEDRO MORAIS DEL * 1999; Master's, 1992, Universidade Técnica de Lisboa
 EGGERS, SUSAN JANE * 1989; Bachelor's, 1965, Connecticut College
 ERNST, MICHAEL D * 1996; Bachelor's, 1989, Massachusetts Institute of Technology
 ETZIONI, OREN * 1991; Master's, 1988, Carnegie Mellon University
 FOGARTY, JAMES A * 2006; Master's, 2005, Carnegie Mellon University
 FOX, DIETER * 2000; Bachelor's, 1990, Rheinische Friedrich Wilhelms Universität Bonn
 FOX, EMILY * 2012; Bachelor's, 2004, Massachusetts Institute of Technology
 GROSSMAN, DANIEL JOSEPH * 2003; Master's, 2001, Cornell University
 GUESTRIN, CARLOS E * 2012; Master's, 2000, Stanford University
 HEER, JEFFREY M * 2013; Bachelor's, 2001, University of California-Berkeley
 KAKADE, SHAM * 2015; Bachelor's, 1997, California Institute of Technology
 KARLIN, ANNA R. * 1994; Bachelor's, 1981, Stanford University
 KEHL, THEODORE, 1982; Bachelor's, 1956, University of Wisconsin Colleges
 KHULLER, SAMIR * 2011; Master's, 1989, Cornell University
 KOHNO, TADAYOSHI * 2006; Master's, 2004, University of California-San Diego
 KRISHNAMURTHY, ARVIND * 2005; Bachelor's, 1991, Indian Institute of Information Technology
 LADNER, RICHARD E * 1971; Bachelor's, 1965, St Marys University
 LANDAY, JAMES ANTHONY * 2003; Master's, 1993, Carnegie Mellon University
 LAZOWSKA, EDWARD D * 1977; Bachelor's, 1972, Brown University

LEE, JAMES RUSSELL * 2006; Bachelor's, 2001, Purdue University-Main Campus
LEVY, HENRY M * 1983; Bachelor's, 1974, Carnegie Mellon University
MANKOFF, JENNIFER CAROLYN * 2017; Doctorate, 2001, Georgia Institute of Technology-Main Campus
MONES, BARBARA ELLEN, 1999; Master's, 1979, Rhode Island School of Design
MORRIS, MEREDITH JUNE * 2008; Bachelor's, 2001, Brown University
PATEL, SHWETAK NARAN * 2008; Bachelor's, 2003, Georgia Institute of Technology-Main Campus
POPOVIC, ZORAN * 1999; Bachelor's, 1991, Brown University
RAO, RAJESH P.N. * 2000; Bachelor's, 1992, Angelo State University
REGES, STUART THOMAS, 2004; Bachelor's, 1979, Case Western Reserve University
RUZZO, WALTER L * 1977; Bachelor's, 1968, California Institute of Technology
SALESIN, DAVID HENRY * 1992; Bachelor's, 1983, Brown University
SEITZ, STEVEN M * 2000; Bachelor's, 1991, University of California-Berkeley
SHAPIRO, LINDA G. * 1986; Bachelor's, 1970, University of Illinois at Urbana-Champaign
SHAW, ALAN CARY, 1971; Master's, 1962, Stanford University
SMITH, JOSHUA R. * 2005; Master's, 1995, Massachusetts Institute of Technology
SMITH, NOAH A * 2014; Master's, 2004, Johns Hopkins University
SNYDER, LAWRENCE * 1983; Doctorate, 1973, Carnegie Mellon University
SUCIU, DAN * 2000; Master's, 1991, University of Bucharest
TAN, DESNEY SWEE-LEONG * 2007; Doctorate, 2004, Carnegie Mellon University
TANIMOTO, STEVEN L * 1977; Bachelor's, 1971, Harvard University
TODOROV, EMANUIL V * 2009; Bachelor's, 1993, West Virginia Wesleyan College
TOMPA, MARTIN * 1982; Bachelor's, 1974, Harvard University
WELD, DANIEL SABEY * 1988; Master's, 1984, Massachusetts Institute of Technology
ZAHORJAN, JOHN * 1980; Bachelor's, 1975, Brown University
ZETTLEMOYER, LUKE S * 2010; Master's, 2003, Massachusetts Institute of Technology

Associate Professors

ANDERSON, RUTH ELIZABETH, 1991; Bachelor's, 1991, University of North Carolina
BOOTS, BYRON EMERETH * 2019; Doctorate, 2012, Carnegie Mellon University
CAKMAK, MAYA * 2013; Doctorate, 2012, Georgia Institute of Technology-Main Campus
CHOI, YEJIN * 2014; Master's, 2009, Cornell University
FARHADI, ALI * 2012; Doctorate, 2011, University of Illinois at Urbana-Champaign
FROELICH, JON E * 2017
GOLLAKOTA, SHYAMNATH V * 2012; Bachelor's, 2006, Indian Institute of Technology Delhi
HEMINGWAY, BRUCE RAY, 2002
KEMELMAHER, IRENA * 2009; Bachelor's, 2001, Bar Ilan University
LEE, SU-IN * 2009; Bachelor's, 2001, Korea University
LIN, HUIJIA * 2019
MAHAJAN, RATUL * 1999; Bachelor's, 1999, Indian Institute of Technology Delhi
MAUSAM, MAUSAM * 2001; Bachelor's, 2001, Indian Institute of Technology Delhi
MOSTAFAVI, SARA * 2020
OH, SEWOONG * 2019
OSKIN, MARK H. * 2001; Bachelor's, 1996, University of California-Davis
OVEIS GHARAN, SHAYAN * 2015; Bachelor's, 2008, Sharif University of Technology
PERKINS, JOHN H. JR., 1998; Bachelor's, 1975, Arizona State University
RAO, ANUP * 2010; Bachelor's, 2002, Georgia Institute of Technology-Main Campus
REINECKE, KATHARINA * 2015; Master's, 2006, Universität Koblenz Landau
ROESNER, FRANZISKA * 2009; Bachelor's, 2008, The University of Texas

SRINIVASA, SIDDHARTHA * 2017; Master's, 2001, Carnegie Mellon University
TATLOCK, ZACHARY L * 2013; Bachelor's, 2007, Purdue University-Main Campus
TAYLOR, MICHAEL BEDFORD * 2017; Bachelor's, 1996, Dartmouth College
TESSARO, STEFANO MASSIMO * 2019
TORLAK, EMINA * 2014; Bachelor's, 2003, Massachusetts Institute of Technology
WANG, XI * 2014; Doctorate, 2014, Massachusetts Institute of Technology

Assistant Professors

AGARWAL, SAMEER * 2006; Master's, 2000, Indian Institute of Technology Delhi
ALTHOFF, CHRISTOPHER TIM * 2019
BRICKER, LAUREN J, 2017; Bachelor's, 1985, University of Michigan-Ann Arbor
CHEUNG, ALVIN K * 2014; Doctorate, 2015, Massachusetts Institute of Technology
DU, SIMON S * 2020; Doctorate, 2019, Carnegie Mellon University
HAJISHIRZI, HANNANEH * 2012; Bachelor's, 2003, Sharif University of Technology
HARROW, ARAM WETTROTH * 2010; Bachelor's, 2001, Massachusetts Institute of Technology
HEIMERL, KURTIS L. * 2002; Master's, 2009, University of California-Berkeley
HSIA, JUSTIN EZEKIEL, 2016; Bachelor's, 2007, University of California-Berkeley
JAMIESON, KEVIN G * 2017; Master's, 2010, Columbia University in the City of New York
JUST, RENE * 2018; Doctorate, 2013, Universität Ulm; Computer and Information Science
KOHLEBRENNER, DAVID WILLIAM * 2020
LEE, YIN TAT * 2017; Bachelor's, 2012, Chinese University of Hong Kong
LIN, KEVIN, 2019
MAAS, RYAN W., 2006
MORGENSTERN, JAMIE * 2019; Doctorate, 2015, Carnegie Mellon University
PORTS, DANIEL ROBERT KENNE * 2012; Bachelor's, 2005, Massachusetts Institute of Technology
RATNER, ALEXANDER J. * 2019; Doctorate, Stanford University
SCHAFFER, HUNTER A, 2014; Master's, 2018, University of Washington; Computer Engineering
SCHMIDT, LUDWIG * 2020
SCHULZ, ADRIANA * 2018; Doctorate, 2018, Massachusetts Institute of Technology
THACHUK, CHRISTOPHER * 2020
WANG, YULIANG * 2016; Bachelor's, 2009, Tianjin University
WEBER, ROBERT THOMAS, 2015
WORTZMAN, BRETT G. B., 2017; Bachelor's, 2006, Harvard University
ZHANG, AMY XIAN * 2019

Lecturers

BLANK, ADAM DAVID, 2014; Bachelor's, 2012, Carnegie Mellon University
COHN, GABRIEL ADAM, 2018; Bachelor's, 2009, California Institute of Technology; Electrical Engineering
EVANS, SUSAN R, 2011; Bachelor's, 2008, University of Arizona
HESS, CRYSTAL, 2017
MARTIN BRUALLA, RICARDO, 2018; Doctorate, 2016, University of Washington; Computer and Information Science
MCCARTY, EVAN JAMES, 2014
WINSTANLEY, MELISSA R, 2018
ZATLOUKAL, KEVIN, 1997

Electrical and Computer Engineering

For complete faculty listing, please visit <https://www.ece.uw.edu/faculty/>

Professors

AFROMOWITZ, MARTIN * 1982; Bachelor's, 1965, Career School of NY
ALEXANDRO, FRANK J * 1982; Bachelor's, 1956, New York University
ANANTRAM, MANJERI * 2008; Bachelor's, 1986, Anna University
ANDERSEN, JONNY * 1967; Master's, 1962, Massachusetts Institute of Technology
ATLAS, LES EUGENE * 1983; Master's, 1978, Stanford University
BERNARD, GARY D * 1989; Bachelor's, 1959, University of Washington
BILMES, JEFFREY A * 1999; Master's, 1993, Massachusetts Institute of Technology
BOHRINGER, KARL F. * 1998; Master's, 1992, Cornell University
BUSHNELL, LINDA GRACE * 2000; Master's, 1989, University of California-Berkeley
CHIZECK, HOWARD JAY * 1998; Bachelor's, 1974, Case Western Reserve University
DAMBORG, MARK J * 1982; Bachelor's, 1962, Iowa State University
DARLING, ROBERT B * 1985; Bachelor's, 1980, Georgia Institute of Technology-Main Campus
DOW, DANIEL G * 1968; Doctorate, 1958, Stanford University
DUNHAM, SCOTT T. * 1999; Bachelor's, 1979, Cornell University
FAZEL SARJOU, MARYAM * 2007; Bachelor's, 1995, Sharif University of Technology
HANNAFORD, BLAKE * 1989; Master's, 1982, University of California-Berkeley
HARALICK, ROBERT M * 1986; Bachelor's, 1964, University of Kansas
HAUCK, SCOTT * 1990; Bachelor's, 1990, University of California-Berkeley
HENDERSON, THOMAS R * 2002; Bachelor's, 1990, Stanford University
HWANG, JENQ-NENG * 1989; Bachelor's, 1981, National Taiwan University
KIRSCHEN, DANIEL SADI * 2011; Master's, 1980, University of Wisconsin-Madison
KLAVINS, ERIC * 2003; Bachelor's, 1991, San Francisco State University
KUGA, YASUO * 1982; Bachelor's, 1977, University of Washington
LAURITZEN, PETER O * 1982; Bachelor's, 1956, California Institute of Technology
LIN, LIH-YUAN * 2003; Bachelor's, 1990, National Taiwan University
LIU, HUI * 1998; Bachelor's, 1988, Fudan University
MAMISHEV, ALEXANDER V * 1999; Doctorate, 1999, Massachusetts Institute of Technology
MORITZ, WILLIAM E, 1982; Bachelor's, 1965, Rensselaer Polytechnic Institute
OSTENDORF, MARI * 1999; Bachelor's, 1980, Stanford University
PARVIZ, BABAK AMIR * 2003; Bachelor's, 1995, Sharif University of Technology
POOVENDRAN, RAADHAKRISHNAN * 2000; Bachelor's, 1988, Indian Institute of Technology Delhi
RISKIN, EVE A * 1990; Bachelor's, 1984, Massachusetts Institute of Technology
RITCEY, JAMES A * 1985; Bachelor's, 1976, Duke University
ROY, SUMIT * 1998; Bachelor's, 1983, Indian Institute of Technology Delhi
SAHR, JOHN D., 1991; Bachelor's, 1984, California Institute of Technology
SEELIG, GEORG * 2009; Doctorate, 2003, Switzerland University of Business and International Studies Geneva
SHI, CHUAN-JIN RICHARD * 1998; Bachelor's, 1985, Fudan University
SOMA, MANI * 1982; Bachelor's, 1975, California State University
SUN, MING-TING * 1996; Bachelor's, 1976, National Taiwan University
WILSON, DENISE M * 1999; Master's, 1989, Georgia Institute of Technology-Main Campus
ZURK, LISA, 2018

Associate Professors

CHEN, TAI-CHANG, 1991; Bachelor's, 1988, National Tsing Hua University Taiwan
 CHRISTIE, RICHARD DUNSTAN * 1989; Doctorate, 1989, Carnegie Mellon University
 HELMS, WARD J * 1982; Master's, 1963, University of Washington
 LI, MO * 2018; Doctorate, 2007, California Institute of Technology; Applied Physics
 MAJUMDAR, ARKA * 2013; Master's, 2009, Stanford University
 MORITZ, CHET T * 1998; Doctorate, 2003, University of California-Berkeley
 REYNOLDS, MATTHEW STEPHEN * 2013; Bachelor's, 1998, Massachusetts Institute of Technology
 ROSEN, JACOB * 1997; Bachelor's, 1988, Tel Aviv University
 RUDELL, JACQUES CHRISTOPHE * 2009; Master's, 1994, University of California-Berkeley
 SATHE, VISVESH * 2013; Bachelor's, 2001, Indian Institute of Technology Delhi

Assistant Professors

BURDEN, SAMUEL A. * 2004; Doctorate, 2014, University of California-Berkeley
 HINKE, PENNY ELIZABETH, 2011
 HUSSEIN, RANIA, 2012
 JOHNSON, BRIAN * 2017
 KANNAN, SREERAM * 2014; Master's, 2008, All India Institute of Medical Sciences
 MOAZENI, SAJJAD, 2019
 ORSBORN, AMY * 2016; Bachelor's, 2007, Case Western Reserve University
 RAITI, JOHN GIULIAN, 2017
 RATLIFF, LILLIAN JANE * 2015; Doctorate, 2015, University of California-Berkeley
 ZHANG, BAOSEN * 2015; Doctorate, 2013, University of California-Berkeley

Lecturer

ECKER, ALLAN C., 2003

Human Centered Design and Engineering

For complete faculty listing, please visit <https://www.hcde.washington.edu/faculty>

Professors

ARAGON, CECILIA * 2010; Bachelor's, 1982, California Institute of Technology
 ATMAN, CYNTHIA J. * 1998; Doctorate, 1990, Carnegie Mellon University
 BEREANO, PHIL, 1982; Doctorate, 1965, Columbia University
 CONEY, MARY B, 1982; Master's, 1963, University of Illinois at Urbana-Champaign
 FARKAS, DAVID K * 1983; Master's, 1969, University of Chicago
 HASELKORN, MARK P * 1985; Bachelor's, 1971, Columbia University
 KIENTZ, JULIE A * 2008; Doctorate, 2008, Georgia Institute of Technology-Main Campus
 KOLKO, BETH E * 2000; Bachelor's, 1989, Oberlin College
 MCDONALD, DAVID W * 2002; Master's, 1992, California State University
 RAMEY, JUDITH A * 1983; Bachelor's, 1969, The University of Texas
 SPYRIDAKIS, JAN * 1982; Bachelor's, 1970, University of Washington
 TSUTSUI, MICHIO * 1990; Bachelor's, 1970, Osaka University
 TURNS, JENNIFER A. * 1999; Doctorate, 1999, Georgia Institute of Technology-Main Campus
 ZACHRY, MARK R * 2006; Master's, 1992, Arizona State University

Associate Professors

CRAFT, BROCK R * 2015; Bachelor's, 1992, Columbia College
DAVIDSON, ANDREW H., 2006; Master's, 1982, University of Pennsylvania
FINDLATER, LEAH K * 2017; Master's, 2004, University of British Columbia; Computer and Information Science
FOX, TYLER STEVEN * 1998; Doctorate, 2015, Simon Fraser University
HENDRICKS, DIANNE G., 2013; Doctorate, 2010, Duke University
HSIEH, GARY * 2013; Doctorate, 2010, Carnegie Mellon University
LEE, CHARLOTTE P * 2008; Master's, 1997, San Jose State University
MUNSON, SEAN A * 2010; Bachelor's, 2006, Franklin W. Olin College of Engineering
RIBES, DAVID * 2015; Master's, 2000, McGill University
ROSNER, DANIELA K * 2013; Bachelor's, 2003, Rhode Island School of Design
STARBIRD, CATHARINE E * 2012; Bachelor's, 1999, Stanford University
WAGNER, LINDA E, 2013; Master's, 1998, Illinois Institute of Technology

Assistant Professors

COPPOLA, SARAH MARIE, 2020; Doctorate, 2019, Harvard University
DEW, KRISTIN N * 2011
PEEK, NADYA M * 2018; Doctorate, 2016, Massachusetts Institute of Technology
SPYRIDAKIS, IRINI K, 2007

Senior Lecturer

SANOCKI, ELIZABETH, 1988; Bachelor's, 1985, Michigan State University

Lecturers

BARBOZA, LAURA M, 2017; Bachelor's, 2006, Florida International University
BRUNDRETT, ALEXANDER, 2018; Master's, 2018, University of Washington
CAMPBELL, JASON, 2006; Master's, 2007, University of Washington; Art
FERRO, TONI DIANE, 2008; Master's, 2010, University of Washington
FLEISHER, JACOB, 2017
GEISTWEIDT, JASON, 2017
HUTCHINSON, BLAIR NEVILLE, 2017; Bachelor's, 2015, University of Vermont; Computer and Information Science
IRANI, XERXES, 2018; Bachelor's, 1998, Alberta Vocational College
JENKINS, MARY-COLLEEN, 2010
KAYES, JEREMY, 2017; Bachelor's, 2000, Virginia Commonwealth University
LOUCKS-JARET, CHRISTINE M, 1997
MARTIN-EMERSON, ROBIN, 2015
MARX, JUSTIN ANDREW, 2017; Bachelor's, 2003, New York University; Music
MOBRAND, KATHRYN A, 2005
NEELY, TAMARA L, 2018; Master's, 2000, American University; Journalism
SHI, KEVIN, 2017; Master's, 2018, University of Washington
SLOTA, STEPHEN C, 2017
SPENCE, JEANINE, 2018; Master's, Rhode Island School of Design; Industrial Design

Industrial and Systems Engineering

For complete faculty listing, please visit <https://ise.washington.edu/facultyfinder>

Professors

BOYLE, LINDA T. * 1992; Bachelor's, 1986, University at Buffalo
FURNESS, THOMAS A * 1989; Bachelor's, 1966, Duke University
GHATE, ARCHIS VIJAY * 2006; Bachelor's, 2001, Indian Institute of Technology Delhi
KAPUR, KAILASH C. * 1992; Master's, 1965, Indian Institute of Technology Delhi
STORCH, RICHARD * 1982; Master's, 1968, Massachusetts Institute of Technology
ZABINSKY, ZELDA * 1985; Master's, 1984, University of Michigan-Ann Arbor

Associate Professors

DRUI, ALBERT B, 1959; Bachelor's, 1949, Washington State University
HUANG, SHUAI * 2014; Doctorate, 2012, Arizona State University
LIU, SHAN * 2013; Master's, 2008, Massachusetts Institute of Technology
MASTRANGELO, CHRISTINA M. * 2002; Bachelor's, 1986, Arizona State University

Assistant Professors

BANERJEE, ASHIS G * 2015; Bachelor's, 2004, Indian Institute of Technology Delhi
BUCHANAN, PATRICIA CECILIA, 2016; Doctorate, 2014, University of Central Florida
CHOE, YOUNGJUN * 2016; Bachelor's, 2010, Korea Advanced Institute of Science & Technology
KIM, JI-EUN * 2017; Doctorate, 2017, Pennsylvania State University-Main Campus; Industrial Engineering
RAJIVAN, PRASHANTH * 2018; Bachelor's, 2007, Anna University; Information Technology
YAN, CHIWEI * 2019; Doctorate, 2017, Massachusetts Institute of Technology
ZHAO, CHAOYUE * 2019; Doctorate, 2014, University of Florida; Industrial Engineering

Materials Science and Engineering

For complete faculty listing, please visit <https://mse.washington.edu/facultyfinder>

Professors

CAO, GUOZHONG * 1996; Bachelor's, 1982, East China University of Science and Technology
HINDS, BRUCE JACKSON III * 2014; Bachelor's, 1991, Harvey Mudd College
JEN, ALEX K-Y. * 1999; Bachelor's, 1978, National Tsing Hua University Taiwan
KRISHNAN, KANNAN * 2001; Bachelor's, 1978, Indian Institute of Technology Delhi
LIU, JUN * 2019; Bachelor's, 1982, Hunan University; Chemical Engineering
LUSCOMBE, CHRISTINE K. * 2006; Master's, 2000, University of Cambridge
OHUCHI, FUMIO * 1992; Bachelor's, 1972, Sophia University
POLONIS, DOUGLAS H, 1955; Bachelor's, 1951, University of British Columbia
SARIKAYA, MEHMET * 1984; Bachelor's, 1976, Middle East Technical University
STOEBE, THOMAS GAINES, 1966; Bachelor's, 1961, Stanford University
TAMERLER-BEHAR, CANDAN * 2002; Master's, 1971, Bogazici University
YANG, JIHUI * 2011; Bachelor's, 1989, Fudan University
ZHANG, MIQIN * 1999; Bachelor's, 1983, Jiangxi University of Science and Technology

Associate Professors

AROLA, DWAYNE D * 1991; Bachelor's, 1989, University of Washington
 BRUSH, LUCIEN N * 1990; Master's, 1984, Carnegie Mellon University
 FLINN, BRIAN D. * 1991; Bachelor's, 1984, Colorado School of Mines
 MACKENZIE, JOHN DEVIN * 2015; Bachelor's, 1994, Massachusetts Institute of Technology
 MILLER, ALAN D, 1967; Bachelor's, 1957, University of Washington
 PAUZAUSKIE, PETER JOHN * 2010

Assistant Professors

CAO, TING * 2018; Bachelor's, 2012, Peking University; Physics
 HUANG, YUE, 2017
 ROLANDI, MARCO * 2008; Doctorate, 2005, Stanford University
 ROUMELI, ELEFThERIA * 2019; Doctorate, 2014, Aristotle University of Thessaloniki
 ZOBEIRY, NAVID * 2019; Master's, 2005, University of British Columbia

Lecturer

ROHATGI, AASHISH, 2017

Mechanical Engineering

For complete faculty listing, please visit <https://www.me.washington.edu/facultyfinder>

Professors

ALISEDA, ALBERTO * 2006; Master's, 1998, Polytechnic University of Puerto Rico San Juan
 BALISE, PETER, 1950; Bachelor's, 1948, Massachusetts Institute of Technology
 CHALUPNIK, JAMES, 1964; Bachelor's, 1953, Texas Tech University
 COOPER, JOYCE S. * 1998; Master's, 1992, Duke University
 DALY, COLIN H., 1982; Bachelor's, 1963, University of Glasgow
 DEL ALAMO DE PEDRO, JUAN CARLOS, 2019; Bachelor's, 2000, Universidad Politécnica de Madrid; Aerospace Engineering
 DEVASIA, SANTOSH * 2000; Bachelor's, 1988, Indian Institute of Technology Delhi
 EMERY, ASHLEY F * 1961; Bachelor's, 1956, University of California-Berkeley
 FORSTER, FRED * 1982; Master's, 1968, Stanford University
 GALLE, KURT R, 1982; Bachelor's, 1946, Purdue University-Main Campus
 GANTER, MARK * 1986; Bachelor's, 1979, University of Wisconsin Colleges
 GAO, DAYONG * 2004; Doctorate, 1991, Concordia College
 GARBINI, JOSEPH * 1979; Bachelor's, 1971, University of Washington
 KLUTE, GLENN K. * 1985; Master's, 1990, Pennsylvania State University-College of Medicine
 KOBAYASHI, ALBERT S * 1982; Doctorate, 1958, Illinois Institute of Technology
 KRAMLICH, JOHN C. * 1991; Bachelor's, 1973, Washington State University
 KUMAR, VIPIN * 1988; Bachelor's, 1970, Indian Institute of Technology Delhi
 LEDOUX, WILLIAM R. * 1999; Master's, 1993, University of Pennsylvania
 LI, JIANGYU * 2006; Bachelor's, 1994, Tsinghua University
 MAMIDALA, RAMULU * 1978; Master's, 1976, Indian Institute of Technology Delhi
 MC CORMICK, NORMAN J, 1982; Bachelor's, 1960, University of Illinois at Urbana-Champaign
 POSNER, JONATHAN D * 2011

PRATT, DAVID T, 1981; Master's, 1962, University of California-Berkeley
REINHALL, PER G * 1982; Master's, 1978, California Institute of Technology
SEIBEL, ERIC J. * 1988; Bachelor's, 1983, Cornell University
SHEN, I-YEU * 1993; Bachelor's, 1981, National Taiwan University
SNIADOCKI, NATHAN JOHN * 2007; Doctorate, 2003, University of Maryland-College Park
STORTI, DUANE W * 1983; Bachelor's, 1979, Cornell University
TUTTLE, MARK E * 1985; Bachelor's, 1975, Michigan Technological University
WANG, JUNLAN * 2008; Bachelor's, 1994, Huazhong University of Science and Technology

Associate Professors

BERG, MARTIN C * 1986; Doctorate, 1986, Stanford University
BRUNTON, STEVEN L. * 2012; Bachelor's, 2006, California Institute of Technology
CHUNG, JAEHYUN * 2005; Doctorate, 2004, Northwestern University
COBB, CORIE * 2016; Bachelor's, 2002, Stanford University
HOLT, RICHARD, 1947; Bachelor's, 1947, University of Washington
JONES, JULIA H, 1983; Bachelor's, 1984, University of Washington
LIU, JONATHAN * 2014; Bachelor's, 1999, Princeton University
MESCHER, ANN M * 1996; Bachelor's, 1988, Ohio State University Agricultural Technical Institute
NOVOSELOV, IGOR * 1999; Master's, 2002, University of Washington
POLAGYE, BRIAN L * 2002; Bachelor's, 2000, Princeton University
STEELE, KATHERINE M. * 2012; Bachelor's, 2007, Colorado School of Mines

Assistant Professors

AUBIN, PATRICK M. * 2004; Bachelor's, 2004, University of Washington
BOEHLER, NICHOLAS S. * 2012; Master's, 2008, California Institute of Technology
CHEN, XU * 2019; Bachelor's, 2008, Tsinghua University; Mechanical Engineering
FULLER, SAWYER BUCKMINSTER * 2015; Doctorate, 2011, California Institute of Technology
KANG, SOYOUNG, 2014
LIPTON, JEFFREY IAN * 2018; Bachelor's, 2010, Cornell University; Applied Physics
MALAKOOTI, MOHAMMAD H * 2019; Bachelor's, 2008, Iran University of Science and Technology (IUST);
Mechanical Engineering
MANOHAR, KRITHIKA * 2013; Bachelor's, 2013, University of Washington; Mathematics
MEZA, LUCAS R. * 2018; Master's, 2013, California Institute of Technology; Mechanical Engineering
ROMBOKAS, ERIC SCOTT * 2005; Bachelor's, 2001, Rice University
VASHISTH, ANIRUDDH * 2020; Doctorate, 2018, Pennsylvania State University-Main Campus; Philosophy

Lecturer

PRABHAKAR, RENUKA, 2008

College of the Environment

Aquatic and Fishery Sciences

For complete faculty listing, please visit <https://fish.uw.edu/faculty-research/>

Professors

ANDERSON, CHRISTOPHER M. * 2012; Bachelor's, 1996, Brown University
ANDERSON, JAMES J * 1969; Bachelor's, 1969, University of Washington
CONQUEST, LOVEDAY L * 1976; Bachelor's, 1970, Pomona College
ESSINGTON, TIMOTHY E. * 2003; Bachelor's, 1991, University of Michigan-Ann Arbor
FRIEDMAN, CAROLYN * 1984; Doctorate, 1990, University of California-Davis
GALLUCCI, VINCENT * 1976; Master's, 1966, New York University
GUNDERSON, DONALD R, 1982; Bachelor's, 1963, Montana State University
HAUSER, LORENZ * 2002; Master's, 1989, International University Vienna
HILBORN, RAY * 1987; Bachelor's, 1969, Grinnell College
HORNE, JOHN K. * 1999; Bachelor's, 1985, Dalhousie University
KARR, JAMES, 1991; Bachelor's, 1965, Iowa State University
LISTON, JOHN, 1957; Doctorate, 1955, University of Aberdeen
MILLER, BRUCE S, 1971; Bachelor's, 1958, Grinnell College
NAIMAN, ROBERT J, 1988; Doctorate, 1974, Arizona State University
NAISH, KERRY-ANN * 2000; Bachelor's, 1988, Rhodes University
OLDEN, JULIAN D. * 2006; Doctorate, 2004, Colorado State University
PARRISH, JULIA * 1990; Bachelor's, 1982, Carnegie Mellon University
PIETSCH, THEODORE * 1978; Bachelor's, 1967, University of Michigan-Ann Arbor
PLISETSKAYA, ERIKA, 1982; Bachelor's, 1952, Leningrad State University AS Pushkin
PUNT, ANDRE * 1992; Bachelor's, 1985, University of Cape Town
QUINN, THOMAS P. * 1986; Bachelor's, 1976, Swarthmore College
SCHINDLER, DANIEL E. * 1997; Bachelor's, 1990, University of British Columbia
SEEB, JAMES * 2007; Bachelor's, 1974, University of Puget Sound
SEEB, LISA * 2007; Master's, 1977, The University of Montana
SIMENSTAD, CHARLES * 1969; Bachelor's, 1969, University of Washington
SKALSKI, JOHN RAYMOND * 1987; Master's, 1978, Cornell University
SMITH, LYNWOOD S, 1982; Bachelor's, 1952, University of Washington
SWARTZMAN, GORDON LENI, 1982; Bachelor's, 1964, Cooper Union for the Advancement of Science and Art
WISSMAR, ROBERT C * 1982; Master's, 1968, University of Idaho
YOUNG, GRAHAM * 2004; Bachelor's, 1975, University of Sheffield

Associate Professors

BRANCH, TREVOR * 2000; Bachelor's, 1994, University of Cape Town
HOLTGRIEVE, GORDON W. * 2003; Bachelor's, 1999, Stanford University
ROBERTS, STEVEN * 2006; Bachelor's, 1997, North Carolina A & T State University
SCHEUERELL, MARK D. * 1997; Master's, 1996, Cornell University

Assistant Professors

BERDAHL, ANDREW * 2017; Doctorate, 2014, Princeton University
 BRAUN, CAMRIN, 2018; Master's, 2013, King Abdullah University of Science & Technology; Marine Science
 GUZMAN JIMENEZ, JOSE M, 2015; Doctorate, 2010, Universidad de Cádiz
 PADILLA GAMINO, JACQUELINE * 2016; Master's, 2005, California State University-Northridge
 TORNABENE, LUKE M. * 2016; Bachelor's, 2007, Hofstra University
 WOOD, CHELSEA L. * 2016; Doctorate, 2013, Stanford University

Atmospheric Sciences

For complete faculty listing, please visit <https://atmos.uw.edu/people-and-research/core-faculty/>

Professors

BATTISTI, DAVID S * 1983; Bachelor's, 1978, University of Massachusetts
 BITZ, CECILIA * 1988; Bachelor's, 1988, Oregon State University
 BRETHERTON, CHRISTOPHER S * 1984; Bachelor's, 1980, California Institute of Technology
 BROWN, ROBERT A, 1971; Bachelor's, 1957, University of California-Berkeley
 BUSINGER, JOOST A, 1958; Doctorate, 1954, Utrecht University
 CHEN, SHUYI * 2001
 COVERT, DAVID S, 1982; Bachelor's, 1970, University of Washington
 DURRAN, DALE R * 1987; Bachelor's, 1974, California Polytechnic State University-San Luis Obispo
 FU, QIANG * 2000; Bachelor's, 1983, Peking University
 HAKIM, GREGORY J * 1999; Bachelor's, 1990, SUNY at Albany
 HARTMANN, DENNIS L * 1977; Master's, 1973, Princeton University
 HEGG, DEAN A * 1975; Bachelor's, 1969, University of Chicago
 JAEGLE, LYATT * 2000; Master's, 1992, California Institute of Technology
 MARCHAND, ROGER T * 2007; Bachelor's, 1990, Virginia Polytechnic Institute and State University
 MASS, CLIFFORD F * 1981; Bachelor's, 1974, Cornell University
 SARACHIK, EDWARD, 1984; Master's, 1963, Brandeis University
 SUESS, BECKY ALEXANDER * 2004; Bachelor's, 1997, Colgate Rochester Crozer Divinity School
 THORNTON, JOEL A. * 2004; Bachelor's, 1996, Dartmouth College
 WALLACE, JOHN M * 1982; Doctorate, 1966, Massachusetts Institute of Technology
 WARREN, STEPHEN G * 1981; Bachelor's, 1967, Cornell University
 WOOD, ROBERT * 2001; Bachelor's, 1992, University of Cambridge

Associate Professors

FRIERSON, DARGAN M * 2007; Bachelor's, 2000, North Carolina A & T State University
 HARRISON, HALSTEAD, 1971; Bachelor's, 1955, Stanford University
 KIM, DAEHYUN * 2014; Bachelor's, 2003, Seoul National University
 MC MURDIE, LYNN A * 1982
 SWANN, ABIGAIL * 2012; Master's, 2005, Columbia University

Assistant Professors

ANDERSON-FREY, ALEXANDRA * 2019
 BLANCHARD, EDWARD * 2007; Bachelor's, 2003, University of Cambridge
 TURNER, ALEXANDER JAY, 2020; Doctorate, 2017, Harvard University; Atmospheric Science

Lecturer

WARNER, MICHAEL DAVID, 2006; Bachelor's, 2007, University of Washington

Earth and Space Sciences

For complete faculty listing, please visit <https://www.ess.washington.edu/people/directory.php>

Professors

ADAMS, JOHN B, 1975; Bachelor's, 1956, Stanford University
ANDERSON, PATRICIA M * 1982; Master's, 1976, Brown University
ATWATER, BRIAN F * 1986; Bachelor's, 1974, Stanford University
BAKER, MARCIA * 1980; Bachelor's, 1959, Cornell University
BERGANTZ, GEORGE W * 1988; Master's, 1985, Georgia Institute of Technology-Main Campus
BODIN, PAUL A * 2006; Master's, 1981, Humboldt State University
BOOKER, JOHN R, 1982; Bachelor's, 1963, Stanford University
BOOTH, DEREK B * 1982; Bachelor's, 1974, Hampshire College
BROWN, J MICHAEL * 1984; Doctorate, 1980, University of Minnesota-Duluth
BUICK, ROGER * 2001; Bachelor's, 1976, University of Western Australia
CATLING, DAVID C. * 2001; Bachelor's, 1990, University of Birmingham
CHENEY, ERIC S * 1982; Bachelor's, 1956, Yale University
COWAN, DARREL S * 1974; Bachelor's, 1966, Stanford University
CREAGER, KENNETH C * 1986; Bachelor's, 1978, Pomona College
CROSSON, ROBERT S, 1982; Doctorate, 1966, Stanford University
EVANS, BERNARD W, 1982; Bachelor's, 1955, University of London
GILLESPIE, ALAN R * 1985; Master's, 1977, California Institute of Technology
GOMBERG, JOAN * 2006; Bachelor's, 1979, Massachusetts Institute of Technology
GONZALEZ, FRANK IGNACIO * 2005; Bachelor's, 1967, St Marys University
GREENE, MOTT T * 1984; Bachelor's, 1967, Columbia College
HALLET, BERNARD * 1980; Bachelor's, 1970, University of California-Los Angeles
HOLZWORTH, ROBERT * 1982; Master's, 1974, University of California-Berkeley
HOUSTON, HEIDI B * 2006; Doctorate, 1987, California Institute of Technology
HUNTINGTON, KATHARINE W * 2008; Doctorate, 2006, Massachusetts Institute of Technology
MALONE, STEPHEN * 1982; Bachelor's, 1966, Occidental College
MONTGOMERY, DAVID R * 1991; Bachelor's, 1984, Stanford University
NELSON, BRUCE K. * 1986; Bachelor's, 1977, Carleton College
PARKS, GEORGE K, 1982; Bachelor's, 1961, University of California-Berkeley
RAYMOND, CHARLES F, 1982; Doctorate, 1969, California Institute of Technology
RENSBERGER, JOHN M, 1982; Master's, 1961, California State University
RICHARDS, MARK ALAN, 2018
ROE, GERARD H * 1999; Doctorate, 1999, Massachusetts Institute of Technology
SCHMIDT, DAVID A * 2012; Doctorate, 2002, University of California-Berkeley
SMITH, STEWART W, 1982; Master's, 1958, California Institute of Technology
STEIG, ERIC J * 1989; Bachelor's, 1988, Hampshire College
STUIVER, MINZE, 1969; Bachelor's, 1953, University of Groningen
SWANSON, TERRY W * 1988; Associate, 1981, Santa Rosa Junior College
TENG, FANGZHEN * 2012; Bachelor's, 2001, Huazhong University of Science and Technology
TOBIN, HAROLD JAMES * 2018; Doctorate, 1995, University of California-Santa Cruz; Geology

VIDALE, JOHN E * 2006; Doctorate, 1987, California Institute of Technology
 WADDINGTON, EDWIN D * 1984; Master's, 1973, University of Alberta
 WINGLEE, ROBERT M, 1991; Bachelor's, 1980, University of Sydney

Associate Professors

ABRAMSON, EVAN H. * 1988; Doctorate, 1985, Massachusetts Institute of Technology
 COLLINS, BRIAN D * 1983; Bachelor's, 1979, Oberlin College
 CRIDER, JULIET G * 1991; Bachelor's, 1989, Amherst College
 DUVAL, ALISON R * 2012; Master's, 2003, University of California-Santa Barbara
 GORMAN-LEWIS, DREW J * 2008; Doctorate, 2006, University of Notre Dame
 KOUTNIK, MICHELLE R * 2002; Bachelor's, 2001, University of California-Los Angeles
 MCCARTHY, MICHAEL P * 1978; Doctorate, 1988, University of Washington
 NESBITT, ELIZABETH A., 1993; Doctorate, 1982, University of California-Berkeley
 SLETTEN, RONALD S * 1983; Bachelor's, 1979, University of Washington
 STONE, JOHN O.H. * 1998; Doctorate, 1986, University of Cambridge
 SWANSON, BRIAN, 1982; Bachelor's, 1981, University of Washington
 TROOST, KATHY G. * 1996; Bachelor's, 1979, Indiana State University
 VANCE, JOSEPH A, 1982; Bachelor's, 1951, University of Washington
 WALTERS, STEVEN * 2006; Bachelor's, 1991, Carnegie Mellon University

Assistant Professors

CHRISTIANSON, KNUT * 2014; Doctorate, 2012, Pennsylvania State University-College of Medicine
 CONDIT, CAILEY, 2018; Doctorate, University of Colorado at Boulder; Geology
 DECOSMO, JANICE M, 1984; Bachelor's, 1979, University of Iowa
 DENOLLE, MARINE, 2020
 FUDGE, TYLER JEFFREY * 2007; Bachelor's, 2002, Bowdoin College
 LICHT, ALEXIS GERMAIN A * 2015; Master's, 2009, École des Mines de Paris
 LIPOVSKY, BRADLEY PAUL, 2020
 MORIARTY, ERIN W * 2014; Bachelor's, 2009, New York University
 SHERROD, BRIAN L * 1995; Bachelor's, 1986, James Madison University

Lecturer

MARTIN, RUTH A., 2004

Program on the Environment

For complete faculty listing, please visit <https://envstudies.uw.edu/people/faculty/>

Associate Professors

MCDONALD, PATRICK S. * 1998; Doctorate, 2006, University of Washington
 STRAUS, KRISTINA M, 2003; Bachelor's, 1998, Colby College

Lecturers

BILLO, TIMOTHY, 2001; Doctorate, 2011, University of Washington
 SCHAUMBERG, EDWARD, 2010
 WENG, YEN-CHU, 2013; Doctorate, 2011, University of Wisconsin-Madison; Geography

WHEAT, ELIZABETH E, 2004; Master's, 2001, New York University

Environmental and Forest Sciences

For complete faculty listing, please visit <https://sefs.uw.edu/research/faculty/>

Professors

ALLAN, G GRAHAM, 1966; Bachelor's, 1952, University of Glasgow
BAKKER, JONATHAN * 2006; Bachelor's, 1994, Dordt College
BARE, B BRUCE, 1982; Bachelor's, 1964, Purdue University-Main Campus
BOLTON, SUSAN M * 1992; Master's, 1985, New Mexico State University-Grants
BORMANN, BERNARD * 1984; Doctorate, 1981, Oregon State University
BRADLEY, GORDON A * 1982; Bachelor's, 1969, Pomona College
BROWN, DANIEL G * 2018; Bachelor's, 1987, Shippensburg University of Pennsylvania
BROWN, SALLY L. * 1998; Master's, 1993, University of Maryland-University College
BURA, RENATA * 2006; Bachelor's, 1997, Ryerson University
DOTY, SHARON L * 1989; Bachelor's, 1989, University of California-Davis
EASTIN, IVAN * 1987; Bachelor's, 1983, Michigan Technological University
EDMONDS, ROBERT L * 1982; Bachelor's, 1964, University of Sydney
EWING, KERN * 1983; Bachelor's, 1962, Texas Tech University
FORD, E DAVID * 1985; Doctorate, 1968, University College London
FRANKLIN, JERRY F * 1986; Bachelor's, 1959, Oregon State University
FRIDLEY, JAMES * 1982; Master's, 1980, Michigan State University
GARA, ROBERT I * 1968; Master's, 1962, Oregon State University
GRAUMLICH, LISA J * 2010; Doctorate, 1985, University of Washington
GUSTAFSON, RICHARD ROY * 1986; Bachelor's, 1977, University of Washington
HALPERN, CHARLES * 1991; Bachelor's, 1980, Cornell University
HARRELL, STEVAN * 1974; Master's, 1971, Stanford University
HINCKLEY, THOMAS M * 1980; Bachelor's, 1966, Carleton College
JOHNSON, JAY A, 1983; Master's, 1970, New York University
KIM, SOO-HYUNG * 2006; Bachelor's, 1992, Seoul National University
LAWLER, JOSHUA J * 2007; Bachelor's, 1993, Bowdoin College
LEVIN, PHILLIP SCOTT * 2016; Bachelor's, 1984, The University of Texas
MARZLUFF, JOHN M. * 1997; Master's, 1983, Northern Arizona University
MCKEAN, WILLIAM T * 1982; Bachelor's, 1960, University of Colorado
MOSKAL, LUDMILA M. * 2006; Master's, 2000, University of Calgary
PETERSON, DAVID L * 1989; Bachelor's, 1976, University of Illinois at Urbana-Champaign
RYAN, CLARE * 1984; Master's, 1990, University of Michigan-Ann Arbor
SCHREUDER, GERARD FRITZ, 1982; Master's, 1967, University of North Carolina
TORGERSEN, CHRISTIAN E. * 2006; Master's, 1996, Oregon State University
VOGT, KRISTIINA * 1982; Master's, 1974, New Mexico State University-Grants
WEST, STEPHEN D * 1979; Master's, 1974, University of Alaska Southeast
WIRSING, AARON * 1996; Bachelor's, 1996, Bowdoin College
WOTT, JOHN A * 1981; Master's, 1966, Cornell University
ZABOWSKI, DARLENE * 1982; Bachelor's, 1981, University of Washington

Associate Professors

ALVARADO-CELESTIN, ERNESTO * 1988; Bachelor's, 1980, Universidad Autónoma Chapingo
 ASAH, STANLEY TANYI * 2009; Master's, 2003, University of Minnesota-Duluth
 BUTMAN, DAVID E * 2014; Bachelor's, 2000, Connecticut College
 CONVERSE, SARAH J * 2017; Doctorate, 2005, Colorado State University
 Ettl, GREGORY J * 1988; Master's, 1989, University of Washington
 GANGULY, INDRONEIL * 2002; Bachelor's, 1996, University of Calcutta
 GARDNER, BETH ANN * 2016; Bachelor's, 1999, Allegheny College
 GOUGH, HEIDI LOIS * 2004; Bachelor's, 1993, Northwestern University
 PRUGH, LAURA RYANNE * 2015; Bachelor's, 1996, Earlham College
 RABOTYAGOV, SERGEY S. * 2007; Master's, 2002, Iowa State University
 TOBIN, PATRICK C * 2014; Master's, 1997, Pennsylvania State University-College of Medicine
 TOTH, SANDOR F. * 2007; Master's, 1994, Mendel University of Agriculture and Forestry Brno
 TURNBLOM, ERIC * 1994; Master's, 1986, University of British Columbia
 VOGT, DANIEL * 1982; Bachelor's, 1968, New Mexico State University-Grants
 WHEELER, KENT WILLIAM * 2017; Doctorate, 1994, The University of Texas at Austin; Marketing

Assistant Professors

ANDERSEN, HANS * 1995; Master's, 1997, University of Washington
 BRATMAN, GREGORY NELSON * 2017; Bachelor's, 1997, Princeton University
 COMBS, JULIE * 1998; Bachelor's, 1994, University of California-Davis; Environmental Science
 DICHARA, ANTHONY BRUNO * 2015; Doctorate, 2012, École Centrale Paris
 HARVEY, BRIAN J * 2016; Master's, 2010, San Francisco State University
 JOHNSON, BRITTANY * 2018; Bachelor's, 2007, Concordia College at Moorhead
 KANE, VAN R * 2004; Bachelor's, 1977, Pennsylvania State University-College of Medicine
 MCKENZIE, DONALD * 1992; Bachelor's, 1971, University of California-Berkeley
 PACHECO DE RESENDE, FERNAN, 2011; Bachelor's, 2000, Universidade Estadual de Campinas (Unicamp)

Lecturers

EWANICK, SHANNON M, 2007
 SUGDEN, EVAN A, 1998; Doctorate, 1984, University of California-Davis; Entomology

Marine and Environmental Affairs

For complete faculty listing, please visit <https://smea.uw.edu/faculty-and-research/faculty/>

Professors

CHRISTIE, PATRICK JOHN * 1999; Master's, 1993, University of Michigan-Ann Arbor
 DOLSAK, NIVES * 2002; Doctorate, 2000, Indiana University-Bloomington
 HUPPERT, DANIEL D., 1987; Bachelor's, 1968, University of Redlands
 KLINGER, TERRIE * 1993; Master's, 1984, University of British Columbia
 MILLER, MARC * 1979; Bachelor's, 1971, University of California-Irvine

Associate Professors

BEAUDREAU, ANNE HOUSTON, 2020; Doctorate, 2009, University of Washington

COPPING, ANDREA * 1982; Bachelor's, 1974, McGill University
 FLUHARTY, DAVID L * 1983; Doctorate, 1977, University of Michigan-Ann Arbor
 KELLY, RYAN P * 2013; Master's, 2003, Columbia University

Assistant Professors

ACEVES BUENO, ERENDIRA * 2020; Doctorate, 2017, University of California-Santa Barbara; Environmental Science
 GRIFFIN, P. JOSHUA * 2011; Doctorate, 2019, University of Washington
 JARDINE, SUNNY L * 2016; Bachelor's, 2002, New York University
 OTA, YOSHITAKA * 2017; Doctorate, 2006, University of London; Anthropology
 WOELFLE-HAZARD, CLEO ASTER * 2016; Bachelor's, 2009, The University of Montana

Oceanography

For complete faculty listing, please visit <https://www.ocean.washington.edu/person/faculty>

Professors

ANDERSON, GEORGE C, 1972; Bachelor's, 1947, University of British Columbia
 ARMBRUST, E. VIRGINIA * 1995; Doctorate, 1990, Massachusetts Institute of Technology
 BAROSS, JOHN A * 1984; Bachelor's, 1963, San Francisco State University
 CANNON, GLENN A * 1983; Bachelor's, 1963, Drexel University
 DELANEY, JOHN R. * 1977; Bachelor's, 1964, Lehigh University
 DEMING, JODY W * 1988; Bachelor's, 1974, Smith College
 DEUTSCH, CURTIS A. * 2003; Bachelor's, 1996, Oberlin College
 DEVOL, ALLAN * 1975; Bachelor's, 1967, Knox College
 FEELY, RICHARD A * 1983; Master's, 1971, The University of Texas
 HARRISON, DON EDMUNDS * 1985; Master's, 1973, Harvard University
 HEATH, G ROSS, 1984; Doctorate, 1968, Scripps College
 HICKEY, BARBARA M * 1982; Master's, 1969, University of California-San Diego
 HOLMES, MARK L, 1984; Bachelor's, 1960, Princeton University
 INGALLS, ANITRA E. * 2003; Bachelor's, 1992, Reed College
 JOHNSON, GREGORY C * 1990; Bachelor's, 1985, Bates College
 JOHNSON, HARLAN PAUL * 1976; Master's, 1966, Southern Illinois University
 KEIL, RICHARD G * 1991; Bachelor's, 1986, Drake University
 KELLEY, DEBORAH S. * 1983; Doctorate, 1990, Dalhousie University
 KESSLER, WILLIAM S * 1983; Bachelor's, 1982, San Francisco State University
 LESSARD, EVELYN J. * 1989; Bachelor's, 1976, Middlebury College
 LEWIN, JOYCE C, 1965; Bachelor's, 1948, Cornell University
 LEWIS, BRIAN T, 1982; Bachelor's, 1961, University of Cape Town
 MACCREADY, PARKER * 1986; Master's, 1986, California Institute of Technology
 MARTIN, SEELYE * 1982; Bachelor's, 1962, Harvard University
 MC DUFF, RUSSELL E * 1982; Bachelor's, 1973, California Institute of Technology
 MC PHADEN, MICHAEL J * 1982; Bachelor's, 1953, New York University
 NOWELL, ARTHUR R.M. * 1978; Bachelor's, 1969, Trinity College Carmarthen
 OGSTON, ANDREA S * 1990; Bachelor's, 1987, Eastern Oregon University
 RISER, STEPHEN C * 1981; Master's, 1974, Massachusetts Institute of Technology
 ROCAP, GABRIELLE L * 2001; Bachelor's, 1992, Massachusetts Institute of Technology
 SACHS, JULIAN P. * 2006; Bachelor's, 1991, Massachusetts Institute of Technology

STEPIEN, CAROL * 2017; Doctorate, 1982, University of Southern California; Marine Biology
THOMPSON, LUANNE * 1990; Master's, 1986, Harvard University
WILCOCK, WILLIAM S D * 1993; Master's, 1986, Imperial College

Associate Professors

ARMOUR, KYLE C. * 2004; Bachelor's, 2005, University of California-San Diego
CRONIN, MEGHAN * 1998; Bachelor's, 1986, Columbia University
DUXBURY, ALYN C, 1982; Doctorate, 1963, The University of Texas
HAUTALA, SUSAN L * 1985; Bachelor's, 1984, Brown University
KAWASE, MITSUHIRO * 1988; Master's, 1983, Princeton University
MORRIS, ROBERT * 2007; Bachelor's, 1995, George Mason University
NUWER, MIKELLE, 1997; Bachelor's, 1999, University of Washington
SANDELL, JULIE EILEEN * 1996; Doctorate, 2008, Oregon State University
SOLOMON, EVAN A * 2009; Doctorate, 2007, Scripps College
WARNER, MARK J * 1989; Bachelor's, 1981, Florida Institute of Technology

Assistant Professors

BUNDY, RANDELLE MAY * 2016; Bachelor's, 2008, University of California-San Diego
GAGNON, ALEXANDER C. * 2012; Doctorate, 2010, California Institute of Technology
GRAY, ALISON R. * 2006; Bachelor's, 2002, Rice University
LAUER, JOHN WESLEY * 2009; Master's, 1998, University of California-Berkeley
MANUCHARYAN, GEORGY * 2018; Doctorate, 2014, Yale University; Oceanography
YOUNG, JODI N * 2016; Bachelor's, 2002, Murdoch University

Lecturers

LELONG, MARIE-PASCALE * 1982; Bachelor's, 1981, University of Washington
LOGSDON, MILES G. * 1987; Bachelor's, 1976, Southeastern Oklahoma State University

The Information School

For complete faculty listing, please visit <https://ischool.uw.edu/people/faculty>

Professors

BOIKO, ROBERT B, 2000; Bachelor's, 1983, Humboldt State University
BRUCE, HARRY * 1998; Master's, 1993, Australian School of Business University of New South Wales
CUTRELL, EDWARD BRYAN * 2011; Bachelor's, 1992, Rice University
CZERWINSKI, MARY P * 1998; Bachelor's, 1981, Ball State University
DEY, ANIND KUMAR * 2018; Master's, 2000, Georgia Institute of Technology-Main Campus; Computer and Information Science
EISENBERG, MICHAEL. * 1998; Bachelor's, 1971, New York University
FIDEL, RAYA * 1982; Master's, 1976, Hebrew University of Jerusalem
FISHER, KAREN E * 1999; Bachelor's, 1989, Memorial University of Newfoundland
FRIEDMAN, BATYA * 1999; Bachelor's, 1979, University of California-Berkeley
KO, AMY JENSEN * 2008; Doctorate, 2008, Carnegie Mellon University
LEVY, DAVID M * 2000; Bachelor's, 1971, Dartmouth College
LUKE, JESSICA * 2012; Bachelor's, 1995, Queen's University
MARTIN, MICHELLE H * 2016; Bachelor's, 1988, College of William and Mary
MCGANN, SEAN, 2015; Bachelor's, 1992, Bowling Green State University-Firelands
MOORE, ADAM DANIEL * 2003; Bachelor's, 1990, Ohio State University Agricultural Technical Institute
PALMER, CAROLE L * 2014; Bachelor's, 1979, Southern Illinois University
PRATT, WANDA * 2002; Doctorate, 1999, Stanford University
SCHOLL, HANS JOACHIM * 2002; Doctorate, 2002, New York University
TENNIS, JOSEPH T. * 2001; Master's, 1999, Indiana University-Bloomington
WILLIAMS, HELENE C., 1995; Master's, 1989, Indiana University-Bloomington
WOBBROCK, JACOB O * 2006; Doctorate, 2006, Carnegie Mellon University

Associate Professors

ANNABI, HALA P * 2004; Bachelor's, 1997, Le Moyne College
BARKER, SCOTT F, 1999; Bachelor's, 1984, Syracuse University
CARLYLE, ALLYSON, 1996; Master's, 1986, University of California-Los Angeles
CARTER, MICHELLE SUZANNE * 2014; Bachelor's, 2000, Anglia Ruskin University
DAVIS, KATHARINE E. * 2012; Master's, 2002, Harvard University
DOANE, MICHAEL, 2008; Bachelor's, 1983, San Francisco State University
FREEMAN, MICHAEL, 2010; Bachelor's, 2010, Colorado College
GOMEZ, RICARDO J * 2007; Doctorate, 1997, Cornell University
HENDRY, DAVID * 2002; Doctorate, 1996, Robert Gordon University
HILL, TRENT G., 2000; Bachelor's, 1985, Duke University
HOWE, WILLIAM GREGORY * 2009; Bachelor's, 1999, Georgia Institute of Technology-Main Campus
HUNT, CHANCE, 1991; Bachelor's, 1985, University of California-San Diego
JANES, JOSEPH W * 1998; Bachelor's, 1982, Syracuse University
JOHNSON, RONALD A., 1986; Master's, 1972, University of Chicago
JONES, WILLIAM P. * 2000; Bachelor's, 1975, University of Kansas
LEE, JIN HA * 2009; Bachelor's, 2000, Ewha Womens University
MENKING, AMANDA * 2012; Master's, 2002, Hardin-Simmons University; English
METOYER, CHERYL * 2003; Bachelor's, 1968, Immaculata University; English

NAHON, KARINE * 2004; Bachelor's, 1997, Tel Aviv University
 REIFERS, ANDREW, 2019; Doctorate, 2010, Pennsylvania State University-Main Campus; Information Science
 ROSS, JOEL, 2015; Bachelor's, 2006, Colorado College
 SAXTON, MATTHEW * 2000; Bachelor's, 1991, Occidental College
 SEARLE, MARGARET A, 2009; Bachelor's, 1966, University of Iowa
 SHAH, CHIRAG * 2019; Bachelor's, 2000, Dharamsinh Desai University; Computer Engineering
 SPIRO, EMMA STUART * 2013; Bachelor's, 2007, Pomona College
 SUTTON, STUART, 1999; Doctorate, 1981, Golden Gate University
 TEEVAN, JAIME * 2016; Master's, 2001, Massachusetts Institute of Technology
 WALE, CARLA PRITCHETT * 2020; Juris Doctor, 2006, Loyola University New Orleans
 WEST, JEVIN D * 2005; Doctorate, 2010, University of Washington

Assistant Professors

ALTHOUSE, BENJAMIN M * 2007; Doctorate, 2013, Johns Hopkins University; Epidemiology
 BELARDE-LEWIS, MIRANDA H. * 2017; Bachelor's, 2002, University of Arizona; Anthropology
 BLUMENSTOCK, JOSHUA E * 2012; Master's, 2010, University of California-Berkeley
 CIFOR, MARIKA L * 2019; Bachelor's, 2007, Mills College; Political Communication
 DAHYA, NEGIN * 2014; Bachelor's, 2005, University of British Columbia
 FINN, MEGAN * 2014; Master's, 2005, University of California-Berkeley
 HAY, GREGORY THOMAS, 2008; Bachelor's, 2005, University of Washington
 HINIKER, ALEXIS * 2012; Bachelor's, 2005, Harvard University; Computer and Information Science
 HOFFMANN, ANNA LAUREN * 2017; Bachelor's, 2005, University of Minnesota-Twin Cities
 HULLMAN, JESSICA * 2015; Master's, 2006, Naropa University
 LEFTHAND-BEGAY, CLARITA * 2005; Bachelor's, 2002, University of Arizona
 LITTLETREE, SANDRA D, 2012; Master's, 2004, New Mexico State University-Main Campus
 MITRA, TANUSHREE * 2020; Doctorate, 2017, Georgia Institute of Technology-Main Campus; Computer and Information Science
 NELSON, JEROLD A, 1982; Doctorate, 1971, University of California-Berkeley
 SCHILDKRAUT, LAURA B., 1996; Bachelor's, 1982, New York University
 SELVAKUMAR, MEENA * 2017; Bachelor's, 1990, Osmania University
 SNYDER, JAIME * 2014; Master's, 1997, Stanford University
 SOPER, MARY E, 1982; Bachelor's, 1955, University of Illinois at Urbana-Champaign
 STURMAN, RICHARD O, 2017; Master's, 2013, RMIT University
 THAYER, KYLE M, 2014; Bachelor's, 2006, Colorado State University; Computer and Information Science
 TOOMET, OTT S., 2015; Doctorate, 2005, Aarhus University
 WEBER, NICHOLAS M * 2015; Bachelor's, 2005, University of Illinois at Urbana-Champaign
 YIP, JASON * 2015; Doctorate, 2014, University of Maryland-University College

Senior Lecturers

LARSON, ROBERT E, 1983; Bachelor's, 1983, Central Washington University
 MANRIQUE, EDMUND, 2019; Master's, 1999, Benedictine University; Management Information Systems
 STEARNS, DAVID L, 2013; Bachelor's, 1991, Pacific Lutheran University

Lecturers

ANKNEY, DONALD J, 1993
 BRAUN, LINDA W, 2016; Master's, 1996, Lesley University
 BROOK, FREEDA, 2017; Bachelor's, 2007, Grinnell College

CHAFFIN, KRISTIN, 2017; Bachelor's, 1990, Louisiana State University; Anthropology
CHAN, JOHN, 2018
DEL VECCHIO, STEPHEN V., 2017; Master's, 1987, Columbia University; Library Science
DRAVID, AVNIEL, 2006
FRIMER, DANIEL DAVID, 2018; Master's, 2018, University of Washington; Information Technology
GOLDSMITH, ANNETTE, 2009; Doctorate, 2009, Florida State University
HIMMA, KENNETH E, 1992
LALAIAN, MICHAEL G, 2017; Master's, Azerbaijan Technical University; Mechanical Engineering
LUNG, JANNIE, 2018; Bachelor's, 1998, University of Illinois at Urbana-Champaign; Finance
MCKENNA, ANDREW CHARLES, 2009; Bachelor's, 2012, University of Washington; Political Science
MORRISSEY, KRISTINE A., 2007; Bachelor's, 1974, Michigan State University
NICKLAS, ROBERT, 2003; Bachelor's, 1974, The College of Wooster
PAJEWSKI, AMY L, 2017; Master's, 2010, Clarion University of Pennsylvania
PARK, NAM HO, 2014; Master's, Columbia University; Architecture
PATEL, SHOPEN, 2012
SWAMINATHAN, GANDHINATH, 2018; Bachelor's, 1997, University of Madras; Business
Administration/Management
TIBBETTS, TODD, 2017
TROTТА, VICTORIA, 2017
WANG, CHUN-KAI, 2013; Master's, 2007, Stanford University; Computer and Information Science
WHEELER, RONALD E, 2018; Juris Doctor, University of Michigan-Ann Arbor; Pre-Law
YI, MYONGHO, 2017; Doctorate, 2006, Florida State University
ZIEMER, MARIA L., 2015; Master's, 2006, Dominican University; Library Science
ZIMMERMAN, JOHN, 2017

Interschool or Intercollege Programs

Bioengineering

For complete faculty listing, please visit <https://bioe.uw.edu/faculty-staff/faculty-directory/>

Professors

ALLBRITTON, NANCY LYNN, 2019; Medical Doctorate, 1985, Johns Hopkins University
BASSINGTHWAIGHTE, JAMES, 1975; Doctorate, 1964, Mayo Graduate School
BRYERS, JAMES D * 2004; Doctorate, 1980, Rice University
DAGGETT, VALERIE D. * 1993; Bachelor's, 1983, Reed College
FOLCH, ALBERT * 2000; Bachelor's, 1989, Universitat de Barcelona
FOSTER, DAVID M, 1982; Bachelor's, 1962, Northwestern University
GAO, XIAOHU * 2005; Doctorate, 2004, Indiana University-Bloomington
GIACHELLI, CECILIA * 1982; Bachelor's, 1982, University of California-Davis
HORBETT, THOMAS A * 1982; Doctorate, 1970, University of Washington
O'DONNELL, MATTHEW * 2006; Bachelor's, 1972, University of Notre Dame
POLLACK, GERALD H * 1968; Bachelor's, 1961, American Institute
PUN, SUZIE H * 2003; Master's, 1998, California Institute of Technology
RATNER, BUDDY D * 1972; Doctorate, 1972, American Institute
RATNER, DANIEL M. * 1993; Doctorate, 2004, Massachusetts Institute of Technology
REGNIER, MICHAEL * 1995; Bachelor's, 1980, Portland State University
SANDERS, JOAN ELIZABETH * 1985; Master's, 1985, Northwestern University
SAURO, HERBERT M * 2007; Bachelor's, 1981, University of Kent
SIMS, CHRISTOPHER E, 2020; Bachelor's, 1980, Auburn University-Montgomery
SPELMAN, FRANCIS A, 1982; Bachelor's, 1959, Stanford University
STAYTON, PATRICK * 1992; Bachelor's, 1984, Illinois State University
THOMAS, WENDY * 1998; Bachelor's, 1987, Princeton University
WANG, RUIKANG * 2010; Bachelor's, 1988, Tianjin University of Commerce China
YAGER, PAUL * 1987; Bachelor's, 1975, Princeton University

Associate Professors

AVERKIOU, MICHALAKIS A * 1994; Bachelor's, 1987, The University of Texas
CHUDLER, ERIC H * 1982; Bachelor's, 1980, University of California-Los Angeles
GAMBLE, LARA J. * 1991; Bachelor's, 1990, University of California-Santa Cruz
KIM, DEOK-HO, 2011
LAI, JR-IUAN * 2005; Master's, 2003, American Institute
LUTZ, BARRY R. * 1998; Bachelor's, 1998, The University of Texas
NEILS, CHRISTOPHER * 2001; Bachelor's, 1990, Massachusetts Institute of Technology
PELIVANOV, IVAN * 2010; Master's, 1998, Moscow State Technical University
PRICE, NATHAN * 1999; Bachelor's, 2000, Brigham Young University
SCATENA, MARTA * 1996; Bachelor's, 1989, Università degli Studi di Padova
SPEER, YANFENG * 2000; Medical Doctorate, 1982, Huazhong University of Science and Technology
TAYLOR AMOS, ALYSSA, 2010; Bachelor's, 2003, University of California-Davis
WOODROW, KIM A. * 2009; Master's, 2001, Stanford University
ZHENG, YING * 2011; Doctorate, 2008, University of Michigan-Ann Arbor

Assistant Professors

BAILEY, SORAYA, 2018; Bachelor's, 2009, University of Calgary
 BERNDT, ANDRE * 2016; Bachelor's, 2003, Humboldt Universität zu Berlin
 BOYLE, PATRICK MICHAEL JOSEPH * 2018
 GIBBONS, SEAN M * 2020; Doctorate, 2015, University of Chicago
 INTERLANDI, GIANLUCA * 2007; Master's, 2000, Universität Zürich
 KUEH, HAO YUAN * 2016; Doctorate, 2008, Harvard University
 STEVENS, KELLY R. * 2003; Doctorate, 2008, University of Washington
 YAZDAN-SHAHMORAD, AZADEH * 2016; Doctorate, 2011, University of Michigan-Ann Arbor

Lecturer

BLANK, MOLLY ANNEISE B., 2010; Doctorate, 2016, Carnegie Mellon University

Global Health

For complete faculty listing, please visit <https://globalhealth.washington.edu/faculty>

Professors

BAETEN, JARED * 1995; Doctorate, 2001, University of Washington
 BAEZA, CRISTIAN C, 2014; Master's, 1994, Johns Hopkins University
 BUKUSI, ELIZABETH ANNE * 1996; Medical Doctorate, 1987, University of Nairobi
 CAMPBELL, LEE ANN * 1985; Bachelor's, 1977, Pennsylvania State University-College of Medicine
 CELUM, CONNIE L. * 1987; Bachelor's, 1979, Stanford University
 COLER, RHEA N. * 1994; Master's, 1990, London School of Hygiene & Tropical Medicine
 EBI, KRISTIE L * 2014; Master's, 1976, Massachusetts Institute of Technology
 FARQUHAR, CAREY * 1994; Bachelor's, 1989, Brown University
 GIMBEL-SHERR, KENNETH * 1999; Bachelor's, 1995, Kenyon College
 GLOYD, STEPHEN S. * 1985; Bachelor's, 1969, Harvard University
 HAKOMORI, SEN-ITIROH, 1982; Medical Doctorate, 1951, Tohoku University
 HOLMES, KING K. * 1967; Medical Doctorate, 1963, Cornell University
 JOHN STEWART, GRACE C. * 1992; Bachelor's, 1983, University of Michigan-Ann Arbor
 KENNY, GEORGE E * 1982; Bachelor's, 1952, Fordham University
 LAMPE, PAUL D * 1996; Bachelor's, 1979, Carleton College
 LINGAPPA, JAIRAM R. * 1991; Doctorate, 1987, Harvard University
 LINGAPPA, JAISRI * 1999; Doctorate, 1985, Harvard University
 MURRAY, CHRISTOPHER J * 2007; Bachelor's, 1984, Harvard University
 PFEIFFER, JAMES T. * 2004; Master's, 1989, University of California-Los Angeles
 RAO, DEEPA * 2009; Doctorate, 2004, Illinois Institute of Technology
 STAMATATOS, LEONIDAS * 2001; Master's, 1983, American University of Paris
 UNUTZER, JURGEN * 1994; Bachelor's, 1983, Iowa State University
 WALSON, JUDD L. * 2004; Bachelor's, 1993, Pitzer College
 WASSERHEIT, JUDITH N. * 1982; Medical Doctorate, 1978, Harvard University
 WEINER, BRYAN * 2016; Bachelor's, 1989, University of California-Santa Cruz

Associate Professors

BABIGUMIRA, JOSEPH BRIAN, 2006; Master's, 2004, Case Western Reserve University

BARNABAS, RUANNE V. * 2009; Medical Doctorate, 1997, University of Cape Town
DONNELL, DEBORAH J * 1982; Bachelor's, 1980, University of Auckland
DRAIN, PAUL K * 1999; Bachelor's, 1996, Miami University-Oxford; Microbiology
FRAHM, NICOLE, 2008; Doctorate, 2003, Universität Hamburg
FRIESEN, JENNIFER LUND * 2006; Bachelor's, 2001, Macalester College
GORSTEIN, JONATHAN L. * 2003; Bachelor's, 1982, The Evergreen State College
GRAHAM, SUSAN M. * 2003; Master's, 1990, Boston University
HANSEN, JOHN D. * 2004; Doctorate, 1996, Oregon State University
HEFFRON, RENEE * 2008; Bachelor's, 2000, Boston University
KURTH, ANN E. * 1998; Master's, 1987, Columbia University
LEVIN, CAROL E. * 2003; Doctorate, 1992, Cornell University
MUGO, NELLY * 1998; Medical Doctorate, 1987, University of Nairobi
O'MALLEY, GABRIELLE E. * 1992; Master's, 1989, Johns Hopkins University
RIVIN, BETH E. * 1996; Medical Doctorate, 1982, East Carolina University
SLYKER, JENNIFER A. * 2000; Bachelor's, 1997, Colgate University

Assistant Professors

COWAN, JAMES FAIRMAN, 2008; Bachelor's, 2003, Brown University
DRAKE, ALISON LOUISE * 2005; Bachelor's, 2000, University of Michigan-Ann Arbor
FELDKER, CARYL B, 2010; Master's, 2001, Tulane University of Louisiana
GUTHRIE, BRANDON L * 2003; Bachelor's, 2000, Macalester College
HERBECK, JOSHUA THOMAS, 2004; Bachelor's, 1995, Tufts University
JOHNSON, WENDY L. * 2006; Master's, 2004, Johns Hopkins University
LANE, JEFFREY PATRICK, 2008; Bachelor's, 2005, Boston College
MCGRATH, CHRISTINE J, 2005; Bachelor's, 1996, The University of Texas
MCGUIRE, ANDREW * 2018; Doctorate, 2011, University of Guelph
MUGAMBI, MELISSA, 2015; Doctorate, 2013, Case Western Reserve University
MUGWANYA, KENNETH, 2011; Master's, 2009, Case Western Reserve University
NG, TAN HUNG MARIE, 2002; Master's, 2006, University of Southern California
PAVLINAC, PATRICIA B. * 2008; Bachelor's, 2005, Colgate University
PERRONE, LUCY A., 2012; Bachelor's, 1999, Fordham University
PUTTKAMMER, NANCY * 2002; Bachelor's, 1989, Princeton University
SOGÉ, OLUSEGUN O., 2003; Master's, 2001, University of Ibadan
WAGENAAR, BRADLEY H. * 2012; Master's, 2012, Emory University

School of Law

For complete faculty listing, please visit <https://www.law.uw.edu/directory>

Professors

ALBERS, NANCY * 2018

ALLEN, CRAIG H. * 1994; Bachelor's, 1979, Portland State University

AMBROSE, KIMBERLY D * 2002; Bachelor's, 1984, University of Washington

ANDERSEN, WILLIAM, 1982; Bachelor's, 1956, University of Colorado Denver

ANDREWS, THOMAS R * 1985; Master's, 1973, Northwestern University

ARONSON, ROBERT H, 1982; Doctorate, 1973, University of Pennsylvania

BARNES, MARIO LAMOUNT * 2018

BOXX, KAREN E * 1996; Bachelor's, 1976, University of Phoenix-New Mexico Campus

CALANDRILLO, STEVE P * 2000; Doctorate, 1998, Harvard University

CALO, MICHAEL R * 2012; Bachelor's, 1999, Dartmouth College

CIMINI, CHRISTINE N. * 2015; Bachelor's, 1989, Clark University

COVINGTON, WILLIAM EDWARD * 2003; Bachelor's, 1972, New York University

EDDY, JONATHAN * 1989; Bachelor's, 1966, Harvard University

FAN, MARY D * 2010; Bachelor's, 2000, University of Arizona

GOMULKIEWICZ, ROBERT W * 1997; Bachelor's, 1983, Pacific Lutheran University

HALEY, JOHN O * 1982; Bachelor's, 1964, Princeton University

HARDISTY, JAMES, 1982; Bachelor's, 1963, Harvard University

HATFIELD, MICHAEL W * 2012; Doctorate, 1996, New York University

HAZELTON, PENELOPE A * 1985; Doctorate, 1975, Lewis and Clark Community College

HICKS, GREGORY A * 1984; Doctorate, 1978, The University of Texas

HJORTH, ROLAND L, 1982; Bachelor's, 1957, American University

HOTCHKISS, MARY A * 1989; Master's, 1978, Catholic University of America

HOWARD, MAUREEN A * 1994; Bachelor's, 1982, Gonzaga University

HUME, LINDA S., 1982; Bachelor's, 1967, California State University

HUSTON, JOHN, 1967; Master's, 1955, New York University

JAY, STEWART * 1980; Bachelor's, 1973, Georgetown University

JUNKER, JOHN M, 1982; Associate, 1957, Clark College

KELLY, LISA A. * 2002; Doctorate, 1982, University of Pennsylvania

KNUDSEN, SANNE H * 2011; Bachelor's, 1998, Northwestern University

KUSZLER, PATRICIA CAROL * 1994; Medical Doctorate, 1978, Mayo Graduate School

LOMBARDI, CLARK B * 2004; Doctorate, 1998, Columbia University

MARANVILLE, DEBORAH * 1989; Doctorate, 1975, Harvard University

MASTROIANNI, ANNA C. * 1996; Bachelor's, 1982, University of Pennsylvania

MCCORMACK, SHANNON W * 2012; Master's, 2006, Georgetown University

MCGINNIS, KATHLEEN M * 1994; Doctorate, 1984, University of California-Berkeley

MCMURTRIE, JACQUELINE * 1989; Bachelor's, 1978, University of Michigan-Ann Arbor

MYHRE, THEODORE A * 1994; Master's, 1994, Boston College

NICOLAS, PETER * 2000; Doctorate, 1999, Harvard University

O'CONNOR, SEAN M, 2002; Master's, 1995, Arizona State University

O'NEILL, KATHLEEN M. * 1993; Doctorate, 1980, Columbia University

RAMASASTRY, ANITA G. * 1996; Bachelor's, 1988, Harvard University

RIEDINGER, JEFFREY M * 2013; Bachelor's, 1977, Dartmouth College

RODGERS, WILLIAM H * 1979; Bachelor's, 1965, Columbia University
SAID, ZAHR KASSIM * 2011; Doctorate, 2008, Columbia University
SCHNAPPER, ERIC * 1995; Bachelor's, 1962, Johns Hopkins University
SCHUMACHER, SCOTT A * 2000; Bachelor's, 1986, Loyola Marymount University
SMITH, FRANK W, 1968; Master's, 1968, Harvard University
TAKENAKA, TOSHIKO * 1992; Bachelor's, 1981, Seikei University
TAYLOR, VERONICA * 2001; Bachelor's, 1986, Monash University
TESTY, KELLYE, 2009; Bachelor's, 1982, Indiana University-Bloomington
VAUGHN, LEA B * 1984; Bachelor's, 1975, Princeton University
WATTS, KATHRYN A * 2007; Bachelor's, 1998, Northwestern University
WINN, JANE K * 2002; Doctorate, 1987, Harvard University
WOLCHER, LOUIS E., 1986; Doctorate, 1973, Harvard University

Associate Professors

CLYNCH, JOHN ALFRED * 2005; Bachelor's, 1985, University of Washington
COBB, THOMAS DILLON * 2004; Master's, 1993, Reed College
HALASZ, BENJAMIN S * 2013; Bachelor's, 1999, Dartmouth College
KIRTLEY, ALAN, 1984; Bachelor's, 1969, Indiana University-Bloomington
MANHEIM, ELISABETH * 2011; Bachelor's, 2002, Yale University
PORTER, ELIZABETH G * 2010; Bachelor's, 1991, Brown University
SANCKEN, LAUREN ELIZABETH * 2008; Bachelor's, 2005, Harvard University
SANFORD, SALLIE T * 2002; Bachelor's, 1986, Brown University
TOWNSEND, MICHAEL E. * 1992; Bachelor's, 1973, University of Michigan-Ann Arbor
WALSH, WALTER J * 1996; Bachelor's, 1979, University College Dublin National University of Ireland
WILLIAMS, BRENDA E * 1996; Bachelor's, 1994, University of Washington
ZANG, DONGSHENG * 2005; Master's, 1996, Harvard University
ZIFF, DAVID J * 2012; Bachelor's, 2000, Brown University

Assistant Professors

BAILEY, WILLIAM S * 1993; Doctorate, 1974, Northwestern University
CHAZARO, ANGELICA * 2013; Doctorate, 2006, Columbia University
FAN, JENNIFER * 2010; Bachelor's, 1995, Stanford University; Political Science
GARDNER II, TREVOR G, 2016; Doctorate, 2003, Harvard University
NGUGI, JOEL M * 2004; Master's, 1999, Harvard University
RAIGRODSKI, DANA * 2004; Bachelor's, 1995, Tel Aviv University
WILDERMUTH, TODD * 2011; Bachelor's, 1997, Northwestern University

Lecturers

BEHNKE, LANCE WYRILL, 2006; Doctorate, 1977, Georgetown University
BENJAMIN, G. ANDREW H., 1984; Master's, 1982, University of Arizona
BLANCHARD, TIMOTHY P, 2017
DE SA E SILVA, MARCO, 2016
LEVEZU, ALICIA, 2014
MANNING, MARGARET M, 2017
MORENO, PETER SHAWN, 2005
SHAW, MELISSA A, 2014
SPITZER, HUGH D * 1986

WOOL, JEFFREY A., 1994

School of Medicine

Anesthesiology

For complete faculty listing, please visit <http://depts.washington.edu/anesth/administration/faculty/index.shtml>

Professors

ANDERSON, CORRIE, 2001; Master's, 1985, Boston University
ARTRU, ALAN A, 1980; Medical Doctorate, 1975, Medical College of Wisconsin
BHAGWANJEE, SATISH, 2009; Medical Doctorate, 1983, University of South Africa
BHANANKER, SANJAY M., 2002
BISHOP, MICHAEL J, 1982; Bachelor's, 1970, Harvard University
BOSENBERG, ADRIAN T, 1983; Medical Doctorate, 1973, University of Cape Town
BOWDLE, T. ANDREW, 1981; Bachelor's, 1974, University of California-Davis
BRUCHAS, MICHAEL R * 2018; Doctorate, 2004, Creighton University; Pharmacology
BYERS, MARGARET R, 1982; Bachelor's, 1963, Briarcliffe College
CHENEY, FREDERICK W, 1982; Bachelor's, 1956, Tufts University
CROWDER, CHARLES M, 1990; Bachelor's, 1982, Hendrix College
CULLEN, BRUCE F., 1984; Bachelor's, 1962, Stanford University
CURATOLO, MICHELE, 2013; Doctorate, 1998, Aalborg University
DAGAL, ARMAN, 2008; Medical Doctorate, 1993, Dokuz Eylul University
DAVIES, JOANNA M., 2001; Medical Doctorate, 1991, University College London
DOMINO, KAREN B., 1986; Medical Doctorate, 1978, University of Michigan-Ann Arbor
EDWARDS, WILLIAM T., 1990; Doctorate, 1968, Massachusetts Institute of Technology
FITZGIBBON, DERMOT R., 1992; Medical Doctorate, 1983, University College Dublin National University of Ireland
GEIDUSCHEK, JEREMY M, 1983
HABERKERN, CHARLES M., 1988; Medical Doctorate, 1974, Columbia University
HORNBEIN, THOMAS F, 1982; Bachelor's, 1952, University of Colorado at Boulder
JOFFE, AARON M, 2010; Medical Doctorate, 1998, Midwestern University
JOFFE, DENISE C, 2006; Medical Doctorate, 1986, McGill University
KARL, HELEN W., 1990; Bachelor's, 1970, Smith College
LELE, ABHIJIT, 2015; Medical Doctorate, 1994, Gujarat University
LOLAND, VANESSA J, 1997; Medical Doctorate, 2002, New York Medical College
MACKENSEN, GEORG B, 2012; Doctorate, 2005, Technische Universität Berlin
MARTIN, LYNN D, 1994; Medical Doctorate, 1982, University of Washington
MORGAN, PHILIP G, 2008; Bachelor's, 1971, California Institute of Technology
NANDATE, KOICHIRO, 2008; Medical Doctorate, 1992, University of Occupational and Environmental Health
OXORN, DONALD C., 1998; Medical Doctorate, 1978, McGill University
PALERMO, TONYA M, 2010; Doctorate, 1998, Case Western Reserve University
PAVLIN, D JANET, 1982; Bachelor's, 1963, University of Manitoba
PAVLIN, EDWARD G, 1982; Bachelor's, 1961, University of Manitoba
POLANER, DAVID, 2019; Medical Doctorate, 1982, Mount Sinai School of Medicine
RAFTERY, MICHAEL D, 2012; Bachelor's, 1984, Harvard University
ROCHE, ANTHONY M, 2011; Medical Doctorate, 1993, Stellenbosch University
ROOKE, GEORGE ALEC, 1982; Bachelor's, 1973, Stanford University
ROZET, IRENA, 2002; Medical Doctorate, 1985, University of Latvia
SEDENSKY, MARGARET M * 2008; Bachelor's, 1971, New College of Florida

SHARAR, SAMUEL R, 1983; Bachelor's, 1979, Harvard University
SHARMA, DEEPAK, 2007; Medical Doctorate, 1997, University of Rajasthan
SIVARAJAN, MURALI, 1982; Medical Doctorate, 1967, Jawaharlal Nehru University
SOUTER, KAREN J., 2002; Medical Doctorate, 1985, Queen Mary University of London
SOUTER, MICHAEL J., 2001; Medical Doctorate, 1984, University of Edinburgh
STACEY, BRETT R, 2014; Bachelor's, 1982, Colorado College
STUBER, GARRET DANIEL * 2018; Doctorate, 2005, University of North Carolina at Chapel Hill; Neurobiology
TERMAN, GREGORY W. * 1987; Bachelor's, 1980, College of William and Mary
TIAN, RONG * 2009; Doctorate, 1992, Aarhus University
TURK, DENNIS C, 1996; Bachelor's, 1967, University of Florida
VAN NORMAN, GAIL, 1986; Bachelor's, 1977, University of Washington
VAVILALA, MONICA S., 1994; Medical Doctorate, 1991, The University of Texas Health Science Center at Houston
WALCO, GARY, 2009; Master's, 1982, Ohio State University Agricultural Technical Institute
WARD, RICHARD J, 1963; Medical Doctorate, 1949, University of Missouri-St Louis

Associate Professors

BENTOV, ITAY, 2007; Medical Doctorate, 1992, Hebrew University of Jerusalem
BOLLAG, LAURENT A., 2008; Medical Doctorate, 1999, Universität Zürich
BRAMHALL, JOHN S., 1995; Doctorate, 1976, Aston University
CHADWICK, HEATHCLIFF S., 1982; Bachelor's, 1973, Oregon State University
DEMBO, GREGORY, 2000; Medical Doctorate, 1978, Saint Petersburg State Pavlov Medical University
EISSES, MICHAEL J., 1992; Medical Doctorate, 1995, University of Washington
FERREIRA, RENATA G, 2012; Medical Doctorate, 2001, Universidade Federal do Rio de Janeiro (UFRJ)
FLACK, SEAN H., 2004; Medical Doctorate, 1992, University of Cape Town
FUKAZAWA, KYOTA, 2014; Medical Doctorate, 1999, Tokyo Medical and Dental University
GRABINSKY, ANDREAS, 2008; Medical Doctorate, 1995, Johann Wolfgang Goethe Universität Frankfurt am Main
GRIGG, ELIOT, 2007; Bachelor's, 2001, Dartmouth College
HALLMAN, MATTHEW R, 2010; Master's, 2001, Georgetown University
HECKER, JAMES G., 2010; Doctorate, 1982, University of Washington
HORIBE, MAYUMI, 2007; Medical Doctorate, 1984, Hiroshima University
HSIEH, VINCENT C., 2010; Bachelor's, 1996, Columbia University
HUNYADY, AGNES I., 2004; Medical Doctorate, 1993, Semmelweis University
JIMENEZ, NATHALIA, 2002; Medical Doctorate, 1994, Pontificia Universidad Javeriana
KASSEBAUM, NICHOLAS J., 2008; Bachelor's, 2001, Macalester College
KENT, CHRISTOPHER D, 2005; Medical Doctorate, 1988, University of Saskatchewan
KHANDELWAL, NITA, 2010; Bachelor's, 2002, Georgetown University
KIM, JERRY HYUN, 2006; Bachelor's, 1999, Pennsylvania State University-College of Medicine
LATHAM, GREGORY J., 2009; Bachelor's, 1994, Kansas State University
LAW, EMILY F, 2012; Bachelor's, 2004, Brandeis University
LOW, DANIEL K W, 2007; Medical Doctorate, 1997, University of Nottingham
MARTAY, KENNETH, 1999; Medical Doctorate, 1987, Universität Freiburg
MARTIN, LIZABETH D., 2010; Bachelor's, 2000, Dartmouth College
METZNER, IULIA IRINA, 2003; Medical Doctorate, 1986, University of Medicine and Pharmacy Victor Babes Timisoara
NIKRAVAN, SARA, 2020; Bachelor's, 2002, Austin College; Biology
NISHIO, ISUTA, 2004; Doctorate, 1997, Keio University
OBELCZ, YULIA, 2006; Medical Doctorate, 1989, Russian University of Cooperation Far Eastern Branch
O'REILLY-SHAH, VIKAS NAVIN, 2019; Medical Doctorate, 2007, Vanderbilt University

PITTAWAY, ANDREW J, 2002; Medical Doctorate, 1991, University of Nottingham
RABBITTS, JENNIFER A, 2011; Medical Doctorate, 2002, Stellenbosch University
RAMAIAH, RAMESH, 2006; Medical Doctorate, 1990, Jawaharlal Nehru University
RAMPERSAD, SALLY E., 1996; Medical Doctorate, 1986, University of Southampton
RICHARDS, MICHAEL J., 2003; Medical Doctorate, 1993, University of Southampton
RUBENS, DANIEL D, 1999; Medical Doctorate, 1992, University of New South Wales
THILEN, STEPHAN R, 2008; Medical Doctorate, 1981, Karolinska Institute
VATER, YOURI L., 1999; Medical Doctorate, 1977, Riga Medicine Collega
VITIN, ALEXANDER A., 2003; Bachelor's, 1981, Kharkov State Medical University
VON HOMEYER, PETER, 2008; Medical Doctorate, 2001, Freie Universität Berlin
WANG, WANG * 2010; Doctorate, 2002, Peking University
WEISS, KAREN E, 2016; Master's, 2006, University of Maryland-Baltimore
WRIGHT, DAVID R, 2011; Medical Doctorate, 1990, University of Southampton

Assistant Professors

ACCARDI-RAVID, MICHELLE C, 2014; Master's, 2010, SUNY at Binghamton
ADAMS, TREVOR L, 2013; Medical Doctorate, 2009, Eastern Virginia Medical School
ARORA, VIVEK, 2015
BEN-ARI, ALON Y, 2011; Bachelor's, 1997, Technion Israel Institute of Technology
BHALLA, PAUL I, 2011; Bachelor's, 1998, University of Bristol
CHIEM, JENNIFER LINH, 2015; Medical Doctorate, 2011, New York Medical College
DALE, REBECCA C, 2012; Bachelor's, 2003, Antioch College
DELGADO UPEGUI, CARLOS M, 2014; Medical Doctorate, 2007, Universidad CES
DINGES, EMILY, 2008; Medical Doctorate, 2007, Oregon Health & Science University
FRANZ, AMBER MICHELE, 2016; Medical Doctorate, 2012, University of North Carolina at Chapel Hill
GROENEWALD, CORNELIUS B, 2011; Medical Doctorate, 2002, Stellenbosch University
HALL, MICHAEL L, 2004; Bachelor's, 2003, Montana State University
HANSEN, ELIZABETH ERICA, 2012; Medical Doctorate, 2012, Washington University in St Louis
HELLER, KATHERINE O, 2015; Bachelor's, 2007, Duke University
HETMANIUK, MALI, 2008; Medical Doctorate, 2008, Stony Brook University
HOLLAND, ERICA L, 2017; Medical Doctorate, 2013, Dartmouth College
HSU, YU NING, 2018; Medical Doctorate, 2012, Royal College of Surgeons of Ireland
JELACIC, SRDJAN, 1997; Bachelor's, 1998, University of Washington
KAMATH, ARUNA M, 2015; Master's, 2006, Columbia University
KANMANTHREDDY, SIRI, 2015; Bachelor's, 2006, University of Missouri-St Louis
KOMATSU, RYU, 2018; Doctorate, 2009, Tokyo Medical University
LEE, ALEX T, 2011; Bachelor's, 2002, Columbia University
LEE, SARAH ANGELINE, 2014; Bachelor's, 2004, Yale University
LI, LI, 2014; Bachelor's, 2006, Stanford University
LISTON, DAVID E, 2009; Medical Doctorate, 1999, Baylor University
MCPOLAND, PAULA D., 2019
MEHTER, NAJMA S, 2014; Bachelor's, 2004, Brown University
NATHWANI, RAJEN V., 2019; Medical Doctorate, 2004, Imperial College
OJO, BUKOLA, 2016; Medical Doctorate, 2012, Mount Sinai School of Medicine
PATAK, LANCE S., 2015; Bachelor's, 1999, California State University-Los Angeles
PATRAO, FIONA M, 2011
PENNINGTON, MATTHEW W, 2011; Bachelor's, 2002, University of Michigan-Ann Arbor
PEPERZAK, KATHERIN A, 2014; Bachelor's, 2003, Carnegie Mellon University

ROSS, FAITH E, 2014; Bachelor's, 2004, University of Central Oklahoma
SHEU, RICHARD D, 2015; Bachelor's, 2006, Duke University
SLADE, IAN, 2003; Bachelor's, 2003, University of Washington
SONG, PINGPING, 2019; Master's, 2006, Duke University
STECK, DOMINIK T., 2017
STURGEON, JOHN ANDREW, 2017
SUHRE, WENDY M, 2014; Bachelor's, 1997, University of Arizona
SUNDER, RANI A, 2015
SUNSHINE, JACOB EUGENE, 2006; Master's, 2011, University of Washington
THAM, SEE WAN, 2009; Medical Doctorate, 2001, University of Sydney
TOGASHI, KEI, 2010; Master's, 2014, University of Washington
VAN CLEVE, WILLIAM C., 2006; Bachelor's, 2000, Columbia University
VAN GILST, MARC R, 2008; Bachelor's, 1993, Calvin College
WALTERS, ANDREW M, 2013; Medical Doctorate, 2013, University of Rochester
WU, JIANG, 2015; Master's, 1997, Jilin University
YANG, JEN-TING, 2017; Medical Doctorate, 2009, National Yang Ming University

Biochemistry

For complete faculty listing, please visit <https://sites.uw.edu/biochemistry/faculty/>

Professors

BAKER, DAVID * 1993; Bachelor's, 1984, Harvard University
BROCKERHOFF, SUSAN E. * 1987; Bachelor's, 1987, New York University
COOPER, JONATHAN A * 1987; Bachelor's, 1973, University of Cambridge
DAVIE, EARL WARREN, 1962; Bachelor's, 1950, University of Washington
FISCHER, EDMOND H, 1953; Doctorate, 1947, Switzerland University of Business and International Studies Geneva
HAHN, STEVEN M * 1994; Doctorate, 1984, Brandeis University
HAUSCHKA, STEPHEN D * 1966; Bachelor's, 1962, Amherst College
HOL, WILHELMUS G.J. * 1992; Master's, 1966, Eindhoven University of Technology
HURLEY, JAMES BRYANT * 1985; Bachelor's, 1975, New York University
KIMELMAN, DAVID * 1989; Doctorate, 1985, Harvard University
KLEVIT, RACHEL E * 1983; Bachelor's, 1978, Reed College
MERZ, ALEXEY JARRELL * 2004; Doctorate, 2000, Oregon Health & Science University
MORRIS, DAVID R * 1966; Bachelor's, 1961, University of California-Los Angeles
MULLER, TRISHA DAVIS * 1987; Bachelor's, 1976, University of California-Santa Cruz
PALMITER, RICHARD D * 1982; Bachelor's, 1964, Duke University
PARSON, WILLIAM W, 1971; Doctorate, 1965, Case Western Reserve University
PETRA, PHILIP H, 1966; Bachelor's, 1960, Tulane University of Louisiana
RUOHOLA-BAKER, HANNELE * 1993; Bachelor's, 1984, University of Helsinki*
STODDARD, BARRY L * 1994; Doctorate, 1990, Massachusetts Institute of Technology
TELLER, DAVID C, 1982; Bachelor's, 1960, Swarthmore College
TSUKIYAMA, TOSHIO * 1999; Doctorate, 1991, Hiroshima University
WALSH, KENNETH A, 1982; Bachelor's, 1951, McGill University
WEINER, ALAN * 2000; Doctorate, 1973, Harvard University
YOUNG, ELTON, 1982; Doctorate, 1967, California Institute of Technology

Associate Professors

AILION, MICHAEL * 1994; Bachelor's, 1993, University of Utah
BAI, JIHONG * 2011; Bachelor's, 1995, Beijing University of Agriculture
BRADLEY, PHILIP H. * 2001; Doctorate, 2001, Massachusetts Institute of Technology
BRZOVIC, PETER S * 1993; Doctorate, 1991, University of California-Riverside
DIMAIIO, FRANK * 2007; Bachelor's, 2001, Pennsylvania State University-College of Medicine
FAN, ERKANG * 1996; Bachelor's, 1987, Peking University
GONEN, TAMIR * 2005; Bachelor's, 1997, University of Auckland
HOPPINS, SUZANNE * 2013; Bachelor's, 2000, University of Alberta
KOLLMAN, JUSTIN M * 2014; Bachelor's, 1998, Menlo College
MILLER, DANA L * 2010; Doctorate, 2003, Johns Hopkins University
MULLER, ERIC G. * 1988; Bachelor's, 1975, Stony Brook University
ROTH, MARK * 1994; Doctorate, 1988, University of Colorado at Boulder
VEESLER, DAVID J * 2014; Master's, 2006, Université Aix-Marseille 3 Paul Cézanne
VERLINDE, CHRISTOPHE * 1992; Doctorate, 1988, Catholic University of Leuven

Assistant Professors

GU, LIANGCAI * 2015; Bachelor's, 1998, Lanzhou University
KENNEDY, BRIAN K. * 2001; Doctorate, 1996, Massachusetts Institute of Technology
KING, NEIL * 2010; Bachelor's, 2004, Northwestern University
KWON, YOUNG * 2015; Doctorate, 2008, Johns Hopkins University
WILLS, ANDREA * 2015; Bachelor's, 2002, Pomona College

Bioethics and Humanities

For complete faculty listing, please visit <http://depts.washington.edu/bhdept/people>

Professors

BERRYMAN, JACK W * 1982; Bachelor's, 1969, Lock Haven University
BOWEN, DEBORAH J * 1987; Doctorate, 1986, American University of Health Sciences
BURKE, WYLIE * 1982; Bachelor's, 1970, Brookline College
DUDZINSKI, DENISE M * 2001; Bachelor's, 1991, Emory University
EDWARDS, KELLY ALISON * 1993; Bachelor's, 1989, Occidental College
FULLERTON, STEPHANIE MALIA * 2005; Bachelor's, 1989, Occidental College
JECKER, NANCY A.S. * 1982; Bachelor's, 1982, Stanford University
WHORTON, JAMES C, 1982; Bachelor's, 1964, Duke University

Associate Professors

BLACKSHER, ERIKA A * 2010; Bachelor's, 1986, University of Kansas
STARKS, HELENE * 1989; Master's, 1989, University of California-Berkeley

Assistant Professor

CAMPEDIA, GEORGINA D * 2016; Bachelor's, 2007, Bowdoin College

Senior Lecturer

MC CORMICK, THOMAS R., 1974; Master's, 1960, Drake University

Biological Structure

For complete faculty listing, please visit <http://www.biostr.washington.edu/>

Professors

ADMAN, ELINOR T, 1982; Master's, 1964, Brandeis University
BERMINGHAM-MCDONOGH, OLIVIA * 1996; Bachelor's, 1980, University College Dublin National University of Ireland
BRINKLEY III, JAMES F. * 1988; Bachelor's, 1970, Amherst College
CLARK, JOHN I * 1982; Bachelor's, 1968, Dartmouth College
DACEY, DENNIS M. * 1986; Bachelor's, 1976, Swarthmore College
GRANEY, DANIEL O, 1982; Associate, 1957, University of California-Berkeley
KOEHLER, JAMES K, 1982; Master's, 1958, University of California-Berkeley
LEE, MINAKO Y, 1982; Medical Doctorate, 1963, Japan Women's University
MULLIGAN, KATHLEEN A., 1987; Bachelor's, 1979, University of New South Wales
PASUPATHY, ANITHA * 2006; Bachelor's, 1992, Indian Institute of Technology Delhi
RAIBLE, DAVID W. * 1995; Bachelor's, 1983, Cornell University
REH, THOMAS A. * 1989; Bachelor's, 1977, University of Illinois at Urbana-Champaign
REUVENI, ZIPORA * 1979; Bachelor's, 1972, Hebrew University of Jerusalem
ROBINSON, FARREL R. * 1986; Doctorate, 1982, Brown University
ROSSE, CORNELIUS, 1967; Bachelor's, 1961, University of Bristol
SHERK, HELEN, 1982; Doctorate, 1978, Massachusetts Institute of Technology
STENKAMP, RONALD E * 1978; Bachelor's, 1970, University of Oregon
WONG, RACHEL O * 2006; Doctorate, 1986, Australian National University
XU, WENQING * 1999; Bachelor's, 1985, Huazhong University of Science and Technology

Associate Professors

BAIR, WYETH DANIEL * 2011; Doctorate, 1996, California Institute of Technology
DE VITO, JUNE R, 1955; Bachelor's, 1947, University of British Columbia
DHAKA, AJAY K * 2009; Bachelor's, 1992, University of California-Los Angeles
GADDUM-ROSSE, PENELOPE, 1982; Doctorate, 1965, University of Liverpool
GALLAHER, ZACHARY, 2016; Bachelor's, 2007, Washington State University
PITTACK, CATRIN, 1989; Bachelor's, 1987, University of Massachusetts
PROTHERO, JOHN W, 1965; Bachelor's, 1956, University of Western Ontario
SUNDSTEN, JOHN WALLIN, 1982; Bachelor's, 1956, University of California-Los Angeles

Assistant Professors

GOLDEN, SAM A. * 2019; Bachelor's, 2006, Bates College
SINGHVI, AAKANKSHA * 2018; Bachelor's, 1998, Gujarat University
STEINMETZ, NICHOLAS A. * 2019; Doctorate, 2014, Stanford University; Neuroscience
WANG, LIGUO, 2011; Doctorate, 2003, Cornell University

Biomedical Informatics and Medical Education

For complete faculty listing, please visit http://bime.uw.edu/faculty_type/core-faculty/

Professors

CARLINE, JAN D. * 1977; Bachelor's, 1970, University of Michigan-Ann Arbor
COHEN, TREVOR A. * 2018; Doctorate, 2007, Columbia University in the City of New York; Biology
FULLER, SHERRILYNNE * 1988; Bachelor's, 1967, Indiana University-Bloomington
MOONEY, SEAN D * 2015; Doctorate, 2001, University of California-San Francisco
ROBINS, LYNNE S * 1999; Bachelor's, 1976, Cornell University
SCHAAD, DOUGLAS C. * 1975; Bachelor's, 1972, University of Washington
SCOTT, CRAIG S * 1979; Bachelor's, 1968, California State University-Sacramento
TARCZY-HORNOCH, PETER * 1992; Bachelor's, 1985, Stanford University
WILCOX, ADAM B * 2016; Master's, 1997, Columbia University
WOLF, FREDRIC M, 1997; Master's, 1977, Kent State University

Associate Professors

ABERNETHY, NEIL F * 2008; Bachelor's, 1993, North Carolina A & T State University
CROSSLIN, DAVID R. * 2009; Doctorate, 2009, Duke University
GENNARI, JOHN H * 2002; Bachelor's, 1983, Colgate University
HARTZLER, ANDREA L. * 2017; Bachelor's, 1996, University of Washington
LUO, GANG * 2016; Bachelor's, 1998, Shanghai Jiao Tong University
YETISGEN, MELIHA * 2002; Bachelor's, 1997, Bilkent University

Assistant Professors

CHEN, ANNIE T * 2015; Bachelor's, 1996, Harvard University
CUNNINGHAM, MATTHEW J., 1996; Doctorate, 2003, University of Washington
NAGASAWA, PAMELA * 2000; Master's, 2002, University of Washington

Comparative Medicine

For complete faculty listing, please visit <https://www.washington.edu/compmed/facultystaff/faculty-directory/>

Professors

BRABB, THEA L. * 1992; Bachelor's, 1982, University of Illinois at Urbana-Champaign
COLBY, LESLEY A * 2012; Bachelor's, 1992, Virginia Polytechnic Institute and State University
DENNIS, MELVIN B., 1982; Bachelor's, 1961, Washington State University
DI GIACOMO, RONALD F., 1974; Medical Doctorate, 1965, University of Pennsylvania
FREVERT, CHARLES W * 1995; Doctorate, 1994, Harvard University
IRITANI, BRIAN M * 1983; Doctorate, 1997, University of Washington
KNOWLES, DONALD P * 2005; Bachelor's, 1978, University of Illinois at Urbana-Champaign
LADIGES, WARREN C. * 1982; Medical Doctorate, 1971, Washington State University
LIGGITT, H DENNY * 1989; Bachelor's, 1970, Colorado State University
TREUTING, PIPER * 1996; Medical Doctorate, 1996, Louisiana State University
VAN HOOSIER, GERALD, 1982; Medical Doctorate, 1957, The University of Texas
WARE, CAROL B. * 1995; Doctorate, 1986, National University of Ireland; Physiology

Associate Professors

HAJJAR, ADELIN M * 1987; Bachelor's, 1986, University of Illinois at Urbana-Champaign
 HSU, CHARLIE C * 2012; Bachelor's, 1998, Massachusetts Institute of Technology
 PAIK, JISUN * 1994; Master's, 1994, University of Michigan-Ann Arbor
 SANDERS, GEORGE E., 1997; Medical Doctorate, 1997, Louisiana State University
 WASHINGTON, IDA M * 2006; Bachelor's, 1976, Duke University

Assistant Professors

DOWLING, SUSAN C., 1986; Bachelor's, 1981, University of Washington
 MATHIEU, JULIE M L * 2007
 PETTAN-BREWER, CHRISTINA * 2002
 REYES, NICHOLAS L, 2010; Bachelor's, 2003, University of California-Berkeley
 SNYDER, JESSICA M * 2011; Bachelor's, 1997, Harvard University

Lecturer

LUCAS, MOLLY K, 2005; Bachelor's, 1992, Duke University

Emergency Medicine

For complete faculty listing, please visit <https://em.uw.edu/people/faculty>

Professors

EISENBERG, MICKEY, 1978; Medical Doctorate, 1971, Case Western Reserve University
 HESS, JEREMY JOHNSON * 2015; Bachelor's, 1995, Brown University
 SAYRE, MICHAEL RICHARD, 2012; Medical Doctorate, 1984, University of Cincinnati-Clermont College
 STERN, SUSAN A, 2009; Medical Doctorate, 1987, Case Western Reserve University
 TOWNES, DAVID A., 2001; Master's, 1998, University of Illinois at Urbana-Champaign

Associate Professors

ADEDIPE, ADEYINKA, 2008; Bachelor's, 1995, Stanford University
 DUBER, HERBERT CHAD, 2011; Master's, 2005, Harvard University
 FERNANDEZ, ROSEMARIE, 2011; Bachelor's, 1992, Rutgers University-Camden
 FRANZEN, DOUGLAS, 2013; Bachelor's, 1995, University of Michigan-Ann Arbor
 GALLAHUE, FIONA E, 2008; Bachelor's, 1992, Washington State University
 GATEWOOD, MEDLEY, 2005; Medical Doctorate, 2001, University of Chicago
 ILGEN, JONATHAN SETH, 2010; Master's, 2010, Oregon Health & Science University
 JOBE, KATHLEEN A., 1986; Bachelor's, 1981, University of Colorado Denver
 LU, DAVE W, 2019
 MITCHELL, STEVEN H., 1984; Bachelor's, 1993, University of Washington
 SHAH, SACHITA P, 2004; Medical Doctorate, 2004, University of Washington
 SHANDRO, JAMIE RAE, 2006; Bachelor's, 1998, Dartmouth College
 STROTE, JARED, 2002; Master's, 1994, Duke University
 WHITE, NATHAN J * 2010; Bachelor's, 1999, University of Michigan-Ann Arbor

Assistant Professors

BACKLUND, BRANDON H, 1992; Medical Doctorate, 2000, University of Iowa
 CHIPMAN, ANNE, 2014; Bachelor's, 2003, Brown University
 HALL, MICHAEL K, 2015; Bachelor's, 2004, Pennsylvania State University-College of Medicine
 HENNING, DANIEL, 2014; Master's, 2014, Harvard University
 JAUREGUI, JOSHUA, 2013; Medical Doctorate, 2009, Loma Linda University
 JOHNSON, NICHOLAS J, 2014; Bachelor's, 2005, Santa Clara University
 KESSLER, ROSS A., 2019; Medical Doctorate, 2009, University of Chicago
 KWOK, HEEMUN, 2011; Bachelor's, 1995, University of California-Berkeley
 LATIMER, ANDREW, 2005; Medical Doctorate, 2012, University of Michigan-Ann Arbor
 MCCOY, ANDREW M, 2014; Master's, 2011, Case Western Reserve University
 MORRIS, STEPHEN C, 2000; Master's, 2011, Harvard University
 O'LAUGHLIN, KELLI NICOLE MCCARTAN, 2019; Master's, 2008, Harvard University
 ROSENMAN, ELIZABETH, 2011; Bachelor's, 2004, Cornell University
 SABBATINI, AMBER, 2014; Medical Doctorate, 2009, Loma Linda University
 ST. JOHN, ALEXANDER E., 2013; Medical Doctorate, 2010, University of Arizona
 VALENTO, BETTY CHEN, 2013; Medical Doctorate, 2007, University of Connecticut
 VALENTO, MATTHEW J, 2012; Medical Doctorate, 2005, New York University
 VRABLIK, MARIE, 2014; Master's, 2014, Indiana University-Purdue University-Indianapolis
 VRABLIK, MICHAEL, 2014; Medical Doctorate, 2008, A T Still University of Health Sciences
 WATASE, TAKETO, 2012; Medical Doctorate, 2003, Nagoya University
 WHITESIDE, LAUREN K, 2012; Bachelor's, 2002, University of Colorado at Boulder

Family Medicine

For complete faculty listing, please visit <https://familymedicine.uw.edu/about/faculty/>

Professors

BALDWIN, LAURA M., 1984; Bachelor's, 1976, Pomona College
 BENNETT, IAN M, 2015; Medical Doctorate, 1998, Jefferson College
 DREZNER, JONATHAN, 1999; Bachelor's, 1992, Brown University
 EVANS, DAVID V, 2012; Bachelor's, 1987, Pennsylvania State University-College of Medicine
 FITZPATRICK, ANNETTE L. * 1988; Bachelor's, 1975, Loyola University Chicago
 GEYMAN, JOHN P, 1982; Bachelor's, 1952, Princeton University
 HARMON, KIMBERLY G, 1988; Medical Doctorate, 1993, Indiana University-Bloomington
 JAMES, PAUL A, 2017; Bachelor's, 1980, University of North Carolina
 KEEN, MISBAH, 2006; Master's, 2009, Johns Hopkins University
 MAESTAS, RAMONCITA R., 1986; Bachelor's, 1977, New Mexico State University-Grants
 MARCHAND, LUCILLE R, 2014; Bachelor's, 1976, Brown University
 NORRIS, THOMAS E., 1988; Bachelor's, 1970, Texas State University-San Marcos
 O'KANE, JOHN, 1993; Bachelor's, 1989, Dartmouth College
 PAUWELS, JUDITH, 1995; Bachelor's, 1975, Catholic University of America
 STEVENS, NANCY GRAY, 1982; Bachelor's, 1973, The Evergreen State College
 THOMPSON, MATTHEW J, 1999; Bachelor's, 1986, University of Glasgow

Associate Professors

AL ACHKAR, MORHAF, 2017; Doctorate, 2018, Indiana State University; Education

BROCK, DOUGLAS MICHAEL, 1985; Bachelor's, 1983, The University of Montana
 CAWSE-LUCAS, JEANNE M., 2010; Bachelor's, 2001, Harvard University
 COLE, ALLISON M, 2010; Bachelor's, 1998, Kalamazoo College
 ELLSBURY, KATHLEEN E, 1982; Bachelor's, 1973, Colorado College
 FAUSTO, JAMES, 2015; Bachelor's, 2000, Grinnell College
 FROGNER, BIANCA K * 2014; Doctorate, 2008, Johns Hopkins University
 GODFREY, EMILY M, 2012; Medical Doctorate, 1997, Medical College of Wisconsin
 KOST, AMANDA, 2005; Bachelor's, 2001, Cornell University
 OLIVER, LYNN M., 1983; Bachelor's, 1978, University of Washington
 PENTIN, PAMELA L., 2007; Medical Doctorate, 1996, Jefferson College
 RAETZ, JAQUELINE, 2001; Medical Doctorate, 2001, Duke University
 RAO, ASHWIN L., 2003; Medical Doctorate, 2003, Case Western Reserve University
 ROSS, VALERIE R, 1982; Master's, 1994, Seattle Pacific University
 SANFORD, CHRISTOPHER A, 2000; Master's, 2005, Harvard University
 SHIH, GRACE, 2013; Bachelor's, 1998, Emory University
 STEPHENS, KARI A, 1993; Bachelor's, 1995, University of Washington

Assistant Professors

BENDER, MELISSA A, 2012; Bachelor's, 2002, Hanover College
 COLLINS, KIMBERLY, 2008; Bachelor's, 2002, Harvard University
 EVANS, DANIEL R, 2016; Master's, 2006, Arizona State University
 KEYS, ROBERT, 2003; Bachelor's, 1997, Eastern Oregon University
 OVERSTREET, FREDERICA C, 1992; Bachelor's, 1986, Goucher College
 PELTO, HENRY FRANCIS III, 2009; Bachelor's, 2002, Gonzaga University
 SAIRENJI, TOMOKO, 2015; Bachelor's, 2003, International Christian University
 SCOTT, TERRY B, 1983; Bachelor's, 1993, University of Washington
 SHIMKIN, GENYA N, 2012
 SIEBERT, DAVID, 2013; Medical Doctorate, 2013, University of Chicago
 WILSON, MEGAN LOHR, 2010; Bachelor's, 2005, Virginia University of Lynchburg
 ZHANG, YING, 2011; Bachelor's, 2007, Davidson College

Senior Lecturers

DAVIS, ARDIS, 1982; Bachelor's, 1973, University of Phoenix-New Mexico Campus
 HALPERIN, ABIGAIL CAROL, 1990; Bachelor's, 1977, Wellesley College
 QUIGLEY, TIMOTHY F., 2010; Bachelor's, 1987, Indiana University-Bloomington

Genome Sciences

For complete faculty listing, please visit <https://www.gs.washington.edu/faculty/index.htm>

Professors

AKEY, JOSHUA M, 2004; Doctorate, 2002, The University of Texas Health Science Center at Houston
 BERG, CELESTE A * 1990; Bachelor's, 1977, University of California-Santa Cruz
 BRENT, ROGER * 2010; Doctorate, 1982, Harvard University
 BREWER, BONITA J * 1982; Bachelor's, 1968, University of Missouri
 BRUCE, JAMES * 2008; Bachelor's, 1987, Troy University
 BYERS, BRECK E * 1982; Master's, 1963, Harvard University

DUNHAM, MAITREYA J * 2008; Bachelor's, 1999, Massachusetts Institute of Technology
EICHLER, EVAN E * 2004; Doctorate, 1995, Baylor University
FELSENSTEIN, JOSEPH * 1968; Doctorate, 1968, University of Chicago
FIELDS, STANLEY * 1995; Bachelor's, 1976, Middlebury College
GREEN, PHILIP * 1994; Bachelor's, 1972, Harvard University
HARTWELL, LELAND H * 1968; Bachelor's, 1961, California Institute of Technology
MACCOSS, MICHAEL * 2003; Bachelor's, 1996, University of Vermont
MANOIL, COLIN C. * 1986; Bachelor's, 1973, Princeton University
NICKERSON, DEBORAH A * 1992; Bachelor's, 1974, Adelphi University
NOBLE, WILLIAM S * 2002; Bachelor's, 1991, Stanford University
PALLANCK, LEO J. * 1997; Bachelor's, 1985, University of California-Davis
QUEITSCH, CHRISTINE H * 2007; Master's, 1993, Martin Luther Universität Halle Wittenberg
SHENDURE, JAY A * 2007; Doctorate, 2005, Harvard University
STAMATOYANNOPOULOS, JOHN A * 2005; Bachelor's, 1990, Stanford University
SWANSON, WILLIE J * 2002; Bachelor's, 1992, University of California-San Diego
THOMAS, JAMES H * 1988; Bachelor's, 1979, Haverford College
WATERSTON, ROBERT H * 2002; Bachelor's, 1965, Princeton University

Associate Professors

BLOOM, JESSE D * 2011; Doctorate, 2007, California Institute of Technology
FOWLER, DOUGLAS M * 2007; Bachelor's, 2001, Northwestern University
NUNN, BROOK L. * 1998; Bachelor's, 1998, Colorado College
TRAPNELL, BRUCE C * 2014; Bachelor's, 2005, University of Maryland-University College
VILLEN, JUDIT * 2010; Bachelor's, 1998, Universitat de Barcelona

Assistant Professors

BELIVEAU, BRIAN JOSEPH * 2018; Doctorate, 2015, Harvard University; Genetics
BRADLEY, ROBERT K * 2011; Bachelor's, 2004, Princeton University
CHEONG, KA YAN, 2011; Doctorate, 2010, Johns Hopkins University
HARRIS, KELLEY * 2018; Doctorate, 2015, University of California-Berkeley; Applied Mathematics
JORDT, HANNAH LILLIAN, 2009; Doctorate, 2019, University of Washington; Biology
SCHWEPPE, DEVIN KARL, 2016; Doctorate, 2013, Dartmouth College
WOLF YADLIN, ALEJANDRO M, 2010; Doctorate, 2007, Massachusetts Institute of Technology

Lecturers

LOVECLOUD, ATOM J LESIAK, 2013; Bachelor's, 2006, Colorado State University
MUNN, MAUREEN M., 1993; Doctorate, 1986, University of California-San Francisco

Health Metrics Sciences

For complete faculty listing, please visit https://depts.washington.edu/healthms/people_directory/

Professors

GAKIDOU, EMMANUELA * 2007; Bachelor's, 1995, Harvard University
HAY, SIMON IAIN * 2015; Bachelor's, 1992, University of Bristol
LIM, STEPHEN SZE-PING * 2007; Bachelor's, 1998, Monash University

LOZANO, RAFAEL * 2008; Medical Doctorate, 1979, Universidad Autónoma de Yucatán (UADY)
 MOKDAD, ALI H. * 2008; Bachelor's, 1984, American University of Beirut
 NAGHAVI, MOHSEN * 2007; Medical Doctorate, 1979, University of Tehran
 SMITH, DAVID L., 2015; Bachelor's, 1991, Brigham Young University
 VOLLSET, STEIN EMIL * 2015; Medical Doctorate, 1981, University of Bergen
 VOS, ERIC THEO * 2013; Doctorate, 2006, Erasmus University of Rotterdam
 WEAVER, MARCIA R * 1984; Bachelor's, 1977, Hampshire College

Associate Professors

DIELEMAN, JOSEPH L * 2008; Bachelor's, 2002, Calvin College
 FLAXMAN, ABRAHAM DAVID * 2007; Doctorate, 2006, Carnegie Mellon University
 HERNANDEZ PRADO, BERNARDO, 2011; Doctorate, 1998, Harvard University
 REINER, ROBERT C. * 2016; Master's, 2005, California State University-Northridge
 WANG, HAIDONG * 2008; Bachelor's, 2000, Peking University

Assistant Professors

AFSHIN, ASHKAN, 2015; Doctorate, 2014, Harvard University
 BURKART, KATRIN GABRIELE, 2018; Master's, 2007, Humboldt Universität zu Berlin; Geography
 DWYER-LINDGREN, LAURA, 2009; Doctorate, 2017, Erasmus University of Rotterdam; Public Health
 EL BCHERAOU, CHARBEL, 2012; Bachelor's, 2002, Beirut University
 FORCE, LISA, 2019; Medical Doctorate, 2012, Boston University
 HAAKENSTAD, ANNIE M, 2020; Doctorate, 2019, Harvard University
 KYU, HMWE HMWE, 2013; Master's, 2004, Chulalongkorn University
 MICAH, ANGELA E, 2016; Doctorate, 2016, Tulane University of Louisiana; Health Administration
 MOSSER, JONATHAN FINK, 2013; Master's, 2012, Johns Hopkins University
 NSOESIE, ELAINE O, 2015; Bachelor's, 2007, University of Maryland-University College
 PIGOTT, DAVID MICHAEL, 2016; Bachelor's, 2011, University of Oxford
 STANAWAY, JEFFREY, 2008; Master's, 2008, University of Arizona

Immunology

For complete faculty listing, please visit <https://www.immunology.washington.edu/faculty/primary-joint-faculty/>

Professors

GALE, MICHAEL J * 1983; Bachelor's, 1985, University of Washington
 GOVERMAN, JOAN M * 1992; Bachelor's, 1975, Brandeis University
 HAMERMAN, JESSICA A. * 1994; Bachelor's, 1992, Stanford University
 MAIZELS, NANCY * 2000; Doctorate, 1974, Harvard University

Associate Professors

LACY-HULBERT, ADAM * 2014; Bachelor's, 1991, University of Cambridge
 OBERST, ANDREW A * 2012; Bachelor's, 2001, Amherst College
 PEPPER, MARION * 2011; Doctorate, 2006, University of Pennsylvania
 SAVAN, RAM * 2011; Doctorate, 2004, Kagoshima University
 STETSON, DANIEL B * 2008; Bachelor's, 1997, Duke University

Assistant Professors

BETTELLI, ESTELLE * 2009; Bachelor's, 1995, Collège de France
 CAMPBELL, DANIEL * 2004; Doctorate, 1998, University of California-Berkeley
 DUDAKOV, JARROD ANDREW * 2017; Doctorate, 2009, Monash University; Molecular Biology
 GERNER, MICHAEL Y * 2015; Doctorate, 2009, University of Minnesota-Duluth
 HARRISON, OLIVER J. * 2020; Doctorate, 2014, University of Oxford
 HEADLEY, MARK B. * 2020; Doctorate, 2010, University of Washington
 KOCH, MEGHAN A. * 2019
 TAIT WOJNO, ELIA D. * 2019
 VON MOLTKE, JAKOB * 2016; Master's, 2007, Columbia University

Laboratory Medicine and Pathology

For complete faculty listing, please visit <https://dlmp.uw.edu/faculty/>

Professors

ALPERS, CHARLES E. * 1986; Medical Doctorate, 1978, University of Rochester
 ARGENYI, ZSOLT B, 2001; Medical Doctorate, 1978, Semmelweis University
 BAIRD, GEOFFREY S * 2003; Bachelor's, 1995, Stanford University
 BOWEN-POPE, DANIEL, 1979; Doctorate, 1979, University of California-Berkeley
 BYERS, PETER H * 1976; Medical Doctorate, 1969, Case Western Reserve University
 CHATRIAN, GIAN E, 1959; Medical Doctorate, 1951, Università degli Studi di Napoli Federico II
 CHHIENG, CHEUNG F, 2017; Medical Doctorate, 1987, Chinese University of Hong Kong
 CHOU, DAVID, 1998; Bachelor's, 1970, Carnegie Mellon University
 COOKSON, BRAD T * 1991; Doctorate, 1991, Washington State University
 COOMBS, ROBERT W * 1985; Doctorate, 1977, Dalhousie University; Medical Doctorate, 1981, Dalhousie University
 COREY, LAWRENCE * 1977; Medical Doctorate, 1971, University of Michigan-Ann Arbor
 COYLE, MARIE B, 1982; Doctorate, 1965, Kansas State University
 CRISPE, IAN N. * 2009; Bachelor's, 1975, University of London
 CYDERS, MELISSA UPTON, 2002; Medical Doctorate, 1978, Northwestern University
 DE ROSA, STEPHEN C. * 2004; Bachelor's, 1983, Columbia University
 DETTER, JAMES C, 1982; Bachelor's, 1955, University of Kansas
 DEUTSCH, GAIL H, 2008; Medical Doctorate, 1993, University of Chicago
 DISTECHE, CHRISTINE M * 1980; Doctorate, 1976, Université de Liège
 FANG, FERRIC C. * 2001; Medical Doctorate, 1983, Harvard University
 FANG, MIN, 2008; Medical Doctorate, 1990, Shanghai Medical University
 FINE, JAMES * 1977; Bachelor's, 1968, University of Minnesota-Duluth
 FINN, LAURA S, 1998; Bachelor's, 1985, Pennsylvania State University-College of Medicine
 FLIGNER, CORINNE LINA, 1982; Bachelor's, 1973, University of Phoenix-New Mexico Campus
 GARCIA, ROCHELLE, 1983; Medical Doctorate, 1989, University of Washington
 HESS, JOHN R, 2012; Master's, 1979, University of Hawaii
 HOOFNAGLE, ANDREW N * 2004; Doctorate, 2002, University of Colorado at Boulder
 HORWITZ, MARSHALL S * 1983; Bachelor's, 1983, University of California-San Diego
 JEROME, KEITH R * 1993; Doctorate, 1992, Duke University; Medical Doctorate, 1993, Duke University
 KAEBERLEIN, MATT R * 2003; Doctorate, 2002, Massachusetts Institute of Technology
 KAPUR, RAJ P. * 1988; Bachelor's, 1981, University of California-Los Angeles

KEAN, LESLIE S * 2013; Bachelor's, 1987, Case Western Reserve University
KENNY, MARGARET, 1982; Doctorate, 1968, University of Illinois at Urbana-Champaign
KIVIAT, NANCY C, 1979; Bachelor's, 1967, University of Washington
LOEB, LAWRENCE A * 1978; Bachelor's, 1957, New York University
MARTIN, GEORGE * 1982; Bachelor's, 1949, University of Washington
MONNAT, RAYMOND J * 1982; Medical Doctorate, 1976, University of Chicago
MORROW, RHODA ASHLEY * 1982; Doctorate, 1977, University of California-Davis
MURRY, CHARLES E. * 1989; Doctorate, 1989, Duke University
NARAYANAN, A SAMPATH * 1971; Bachelor's, 1961, The Tamil Nadu Dr. M.G.R. Medical University
NARESH, KIKKERI NARASIMHAMURTHY, 2020
NESTER, THERESA * 2001; Bachelor's, 1988, Bowdoin College
NICOSIA, ROBERTO F, 1999; Medical Doctorate, 1976, American University of Rome
NORWOOD, THOMAS H * 1973; Bachelor's, 1960, Brown University
POLYAK, STEPHEN J. * 1993; Doctorate, 1993, McMaster University
PORTER, PEGGY L. * 1987; Bachelor's, 1974, Humboldt State University
PROMISLOW, DANIEL E * 2013; Bachelor's, 1986, University of Chicago
QIN, XUAN, 2005; Medical Doctorate, 1982, Nanjing University
RABINOVITCH, PETER S. * 1980; Bachelor's, 1972, University of Washington
RAINEY, PETRIE M., 2000; Doctorate, 1973, University of California-Berkeley
SCHMIDT, RODNEY, 1982; Bachelor's, 1977, Bethel College
SCHWARTZ, STEPHEN MARK, 1974; Medical Doctorate, 1967, Boston University
SMITH, KELLY D. * 1996; Doctorate, 1996, University of Iowa
STEPHENS, KAREN G. * 1989; Bachelor's, 1972, Indiana State University
SUMI, SHUZO MARK, 1966; Medical Doctorate, 1956, University of Toronto
SWANSON, PAUL E, 2001; Bachelor's, 1979, Dartmouth College
TAIT, JONATHAN F * 1983; Bachelor's, 1977, Harvard University
TRUE, LAWRENCE DASHIELL * 1990; Bachelor's, 1967, Harvard University
WENER, MARK H * 1980; Medical Doctorate, 1974, Washington University in St Louis
WIGHT, THOMAS * 1982; Bachelor's, 1966, University of Maine
WOOD, BRENT L., 1990; Doctorate, 1988, Loma Linda University
XU, HAODONG, 2017; Medical Doctorate, 1987, Soochow University
YEH, MENG-CHE, 2002; Medical Doctorate, 1989, National Taiwan University
ZHANG, JING, 2002; Doctorate, 1995, Duke University

Associate Professors

BANKSON, DANIEL DUKE, 1993; Master's, 1981, Massachusetts Institute of Technology
BIELAS, JASON H * 2003; Bachelor's, 1998, York University
CHEN, ELEANOR Y * 1995; Doctorate, 2006, University of Minnesota-Duluth
CHEN, XUEYAN, 2011; Master's, 1998, Peking Union Medical College
CHERIAN, SINDHU, 2005; Bachelor's, 1996, Brown University
DAVIS, JENNIFER M * 2015; Master's, 2001, San Diego State University
DINTZIS, SUZANNE M, 2008; Bachelor's, 1985, Princeton University
EDLEFSEN, KERSTIN, 1998; Bachelor's, 1997, The Evergreen State College
FROMM, JONATHAN R, 1998; Bachelor's, 1990, Grinnell College
GUI, XIANYONG, 2018; Medical Doctorate, 1994, Peking Union Medical College
HERR, ALAN J * 1992; Bachelor's, 1992, Pacific Lutheran University
HOCH, BENJAMIN, 2008; Medical Doctorate, 1999, Thomas Jefferson University
HOFFMAN, NOAH G * 2005; Bachelor's, 1995, University of North Carolina

HUANG, ERIC, 2018; Medical Doctorate, 2005, Albany Medical College
KEENE, CHRISTOPHER D * 2005; Doctorate, 2003, University of Minnesota-Duluth
LI, KE, 2019
LIBBY, STEPHEN JAMES * 2003; Master's, 1983, Iowa State University
LIU, YAJUAN, 1995; Doctorate, 1995, New York University
LOCKWOOD, CHRISTINA M, 2014; Bachelor's, 2001, University of North Carolina at Chapel Hill
LOEB, KEITH, 1983; Doctorate, 1994, Medical College of Wisconsin
MAHONEY, WILLIAM * 2004; Bachelor's, 1999, Connecticut College
MORISHIMA, CHIHIRO * 1991; Bachelor's, 1984, Washington State University
MURPHY, SEAN C, 2008; Bachelor's, 1999, Iowa State University
MYERSON, DAVID, 1985; Bachelor's, 1970, Brown University
NAJAFIAN, BEHZAD, 2010; Medical Doctorate, 1996, University of Tehran
NEWELL, EVAN * 2020; Doctorate, 2006, University of Toronto; Physiology
PAGANO, MONICA BEATRIZ, 2009; Medical Doctorate, 1999, Universidad de Buenos Aires
PRITCHARD, COLIN C., 1996; Bachelor's, 1997, University of Washington
REA, SHANE LESLIE, 2017; Doctorate, 1999, University of Queensland
RENDI, MARA HESTER * 2009; Doctorate, 2004, Dartmouth College
RISQUES, ROSA ANA * 2003; Bachelor's, 1996, Universitat Autònoma de Barcelona
SABATH, DANIEL E. * 1989; Doctorate, 1989, University of Pennsylvania
SALIPANTE, STEPHEN * 2003; Doctorate, 2009, University of Washington
SCHMECHEL, STEPHEN C., 1998; Bachelor's, 1990, Carroll College
SCHWARZE, ULRIKE, 1993; Medical Doctorate, 1992, Technische Universität Berlin
SHIRTS, BRIAN H * 2012; Doctorate, 2006, University of Pittsburgh-Bradford
SOMA, LORINDA A, 2012; Bachelor's, 1994, Hamline University
TRETIAKOVA, MARIA S, 2012; Medical Doctorate, 1994, Saint Petersburg State Medical Academy
TSUCHIYA, KAREN D. * 1990; Bachelor's, 1985, University of Michigan-Ann Arbor
WU, DAVID * 2008; Medical Doctorate, 2003, Harvard University
YEUNG, CECILIA C S, 2011; Bachelor's, 1999, University of California-Davis
ZAFAR, NADEEM, 2018
ZHU, JIA * 2003; Doctorate, 1994, University of Science and Technology of China
ZHU, TUOFU, 1997; Medical Doctorate, 1984, Jiangxi Traditional Chinese Medicine University

Assistant Professors

AKILESH, SHREERAM * 2012; Bachelor's, 2000, Dartmouth College
BERONJA, SLOBODAN * 2018; Doctorate, 2006, University of Toronto
BOURASSA, LORI A., 2014; Bachelor's, 2001, Boston College
BRYAN, ANDREW BEVAN BRODY, 2013; Doctorate, 2013, University of Michigan-Ann Arbor
BUCHAN, JILLIAN G, 2020; Master's, 2010, University College Dublin National University of Ireland
CAMPBELL, JEAN S * 1990; Bachelor's, 1981, The College of Wooster
CIMINO, PATRICK J., 2001; Bachelor's, 2004, University of Washington
DARVAS, MARTIN C * 2008; Master's, 2003, Rheinische Friedrich Wilhelms Universität Bonn
ECKEL, ASHLEY M, 2016
FINK, SUSAN L * 1999; Bachelor's, 1999, University of Hawaii
GLYNN, EMILY H., 2004; Medical Doctorate, 2011, University of Washington
GONZALEZ-CUYAR, LUIS F., 2009; Bachelor's, 2001, American University of Puerto Rico
GRENINGER, ALEX * 2015
HAFFNER, MICHAEL, 2019
JALIKIS, FLORENCIA G., 2008; Medical Doctorate, 2001, Universidad del Salvador Buenos Aires

KENNEDY, SCOTT * 2008; Bachelor's, 2001, University of North Carolina at Chapel Hill
 KILGORE, MARK R., 2002; Medical Doctorate, 2010, Jefferson College
 KOCH, LISA KRISTINE, 2011; Bachelor's, 2003, Brown University
 KONNICK, ERIC Q, 2010; Bachelor's, 1998, University of Utah
 KRUMM, NIKLAS, 2008
 LATIMER, CAITLIN SHANNON, 2013; Doctorate, 2011, University of Kentucky
 LIAO, HSUAN-CHIEH, 2018; Doctorate, 2016, National Yang Ming University
 LIEBERMAN, JOSHUA A, 2014
 LOUZON, MAX JOSEPH, 2011
 MARSHALL, DESIREE A, 2010; Bachelor's, 2005, Texas Tech University
 MARTIG, DANIEL, 2020; Bachelor's, 2010, University of Minnesota-Twin Cities
 MATHIAS, PATRICK C, 2012; Bachelor's, 2004, Duke University
 MENDENHALL, ALEXANDER R * 2016; Bachelor's, 2000, The University of Texas
 METCALF, RYAN ADAMS, 2015; Medical Doctorate, 2010, University of California-Davis
 NOLAN MUNN, AMBER, 2020; Medical Doctorate, 2012, University of Chicago
 PAULSON, VERA, 2018; Medical Doctorate, 2012, University of Texas Southwestern Medical Center at Dallas
 RICCIOTTI, ROBERT, 2014; Bachelor's, 2004, University of Arizona
 ROGERS, DAVID, 2020
 STALEY, ELIZABETH, 2019
 TSANG, HAMILTON, 2017; Medical Doctorate, 2012, University of Southern California
 YOUNG, JESSICA E * 2003; Master's, 2002, Sonoma State University
 ZHOU, YI, 2013; Doctorate, 1995, Louisiana State University

Lecturer

TSUCHIDA, AKIKO, 2013; Bachelor's, 2001, Science University of Tokyo

MEDEX Northwest

For complete faculty listing, please visit <https://depts.washington.edu/medex/about-medex-nw/faculty-staff/>

Associate Professors

HAHN, PATRICIA L, 2013; Bachelor's, 1990, Lewis-Clark State College
 NAIDU, AMEE S., 2007; Bachelor's, 1996, Houston Baptist University
 SHERMAN, PATRICK A, 2020
 STEWART, BETTY L., 1985; Bachelor's, 1996, Seattle University
 SYMINGTON, SUSAN L, 2015; Bachelor's, 1990, Spring Arbor University
 VADER, KIRA S, 2005; Master's, 2002, Duke University
 WICK, KEREN * 1990; Bachelor's, 1990, San Francisco State University

Assistant Professors

BATTS, AVERY, 2018; Doctorate, 2013, Northeastern University; Education
 BERNARD, KARI S, 2014; Bachelor's, 1998, Eastern New Mexico University-Main Campus
 BESTER, VANESSA S, 2012; Master's, 2003, University of Florida
 CASEY, SHANNON M, 2020; Master's, 2017, University of St Francis; Physician Assistant
 COPPS-WILSON, KATIE M, 2018
 ERICKSON, JENNIFER M, 2016; Bachelor's, 2009, University of Washington
 GREENLEE, QUANTE' LAMONT, 2019; Master's, 2009, Duke University; Physician Assistant

HAWKINS, MARC ANTONIO, 2013; Master's, 2000, University of Nebraska at Omaha
IMLACH, HOLLY A, 2017; Bachelor's, 1995, Massachusetts Institute of Technology
JOY, BONNIE, 2020; Master's, 2014, Samuel Merritt University; Physician Assistant
KEMPE, CHRISTINE, 2013; Bachelor's, 1999, Brigham Young University
LAUFENBERG, MAGGIE R, 2019
ORCHARD, THEO RAY, 2018
RIORDAN, BRENDAN M., 2016
ROBERTSON, DALE, 1994; Bachelor's, 2007, University of Washington
SMITH, MICHAEL B, 2014; Medical Doctorate, 2012, A T Still University of Health Sciences
STURGES, DAYTHEON D, 2019
WACHTEL, DIANNA L, 2007; Master's, 2008, A T Still University of Health Sciences

Lecturers

ALVITRE, JOHN JEFFREY, 2014; Bachelor's, 1997, California State University-Chico
BORDERS, ROSA M., 2001; Master's, 1987, American University of Health Sciences
BUTLER, JESSICA C, 2018; Master's, 2014, University of Washington; Physician Assistant
BYRNE, THOMAS J, 2020; Master's, 1983, Brigham Young University; Athletic Training
CHA, HANA, 2017; Bachelor's, 2002, Kansas State University
COOPER, SCOTT A, 2019
FARTHING, BRYAN CHRISTOPHER, 2018
GARZA, EDUARDO JR, 2004
GRIMM, PATRICK J, 2016; Master's, 1998, University of Nebraska Medical Center
HACKENBRUCH, GREGORY S, 2017; Bachelor's, 2009, University of Alaska Anchorage
HAVERKAMP, KENNETH, 1996; Bachelor's, 1990, Whitman College
HOOK, TARA R, 2018; Master's, Saint Louis University-Main Campus
HUYNH, CONSTANCE D, 1999; Bachelor's, 2003, University of Washington
JAIN, ANJU, 2014; Master's, 1997, Western Washington University
KELLY, KAIDEN G, 2020
MAHER, JONATHAN C., 2000; Bachelor's, 1997, University of Massachusetts
MCCROSKEY, JEFFREY J, 2017; Master's, 2007, University of Nebraska Medical Center; Physician Assistant
OLSON, TIMOTHY C, 2020; Master's, 2015, Rosalind Franklin University of Medicine and Science; Physician Assistant
PATTON, SARAH B. W., 2019
RAGOSTA, RACHEL E, 2017
RODGERS, CARI R, 2020; Diploma, 2010, University of Washington; Physician Assistant
SERPINAS, SARAH L, 2014; Bachelor's, 2010, University of Washington
SIEGEL, MALINDA S, 2007; Bachelor's, 1974, Colby College
SMITH, COLLEEN E, 2016; Bachelor's, 2003, Eastern Washington University
SMITH, DONALD J, 2014
THETFORD, LOIS C., 1994; Bachelor's, 1967, Cornell University
WHIPPLE, KATHERINE J, 2016; Bachelor's, 1992, Eastern Washington University
WIESE, TRACEY L, 2020

Medicine

For complete faculty listing, please visit <https://medicine.uw.edu/people>

Professors

ABKOWITZ, JANIS L * 1980; Bachelor's, 1972, Harvard University
ABRASS, ITAMAR B., 1983; Bachelor's, 1963, University of California-San Francisco
AITKEN, MOIRA L., 1982; Bachelor's, 1975, University of Edinburgh
ALTEMEIER, WILLIAM A. * 1992; Bachelor's, 1986, Vanderbilt University
AMORY, JOHN K., 1997; Bachelor's, 1989, Harvard University
ANAWALT, BRADLEY D, 1989; Bachelor's, 1984, Santa Clara University
APPELBAUM, FREDERICK R, 1978; Bachelor's, 1968, Dartmouth College
AU, DAVID H., 1996; Bachelor's, 1989, University of Chicago
BACK, ANTHONY L., 1984; Medical Doctorate, 1984, Harvard University
BANKS, WILLIAM A., 2010; Medical Doctorate, 1979, University of Missouri
BARNHART, SCOTT * 1979; Medical Doctorate, 1979, George Washington University
BECKER, PAMELA S, 2003; Bachelor's, 1979, Harvard University
BENDITT, JOSHUA O., 1994; Bachelor's, 1978, University of Washington
BLAGG, CHRISTOPHER R, 1982; Medical Doctorate, 1954, University of Leeds
BLAU, CARL A. * 1989; Medical Doctorate, 1986, Ohio State University Agricultural Technical Institute
BOECKH, MICHAEL J. J., 1994; Medical Doctorate, 1985, Freie Universität Berlin
BOMSZTYK, KAROL * 1983; Bachelor's, 1973, Brookline College
BORNFELDT, KARIN E * 1991; Bachelor's, 1985, Linköping University
BOYKO, EDWARD J. * 1982; Medical Doctorate, 1979, University of Pittsburgh-Bradford
BRANCH, KELLEY R., 2001; Medical Doctorate, 1998, Thomas Jefferson University
BREMNER, WILLIAM J, 1982; Bachelor's, 1964, Harvard University
BRETNALL, TERESA A., 1984; Medical Doctorate, 1987, University of Washington
BROWNING, BRIAN LEE, 1992; Bachelor's, 1991, University of Alaska Southeast
BUCKNER, FREDERICK S., 1992; Bachelor's, 1983, Princeton University
BUCKNER, JANE HOYT * 1992; Bachelor's, 1983, Carleton College
CALDWELL, JAMES H, 1983; Bachelor's, 1966, DePauw University
CARVALHO, PAULA G., 1984; Bachelor's, 1980, University of Washington
CHAIT, ALAN, 1977; Medical Doctorate, 1967, University of Cape Town
CHEEVER, MARTIN A, 1982; Medical Doctorate, 1970, University of Michigan-Ann Arbor
CHIOREAN, ELENA G, 2012; Medical Doctorate, 1993, University of Medicine and Pharmacy Iuliu Hatieganu Cluj Napoca
CHOW, LAURA QUAN MAN, 2010; Bachelor's, 1994, University of British Columbia
CLURMAN, BRUCE E. * 1991; Doctorate, 1988, Cornell University
COBB, LEONARD A, 1982; Bachelor's, 1949, University of Minnesota-Duluth
COLLIER, ANN C, 1982; Medical Doctorate, 1978, Dartmouth College
COLVEN, ROY M., 1987; Bachelor's, 1983, University of Washington
CRANE, HEIDI, 1991; Bachelor's, 1992, University of Washington
CRANE, PAUL K * 1997; Medical Doctorate, 1997, University of Washington
CROTHERS, KRISTINA ANNE, 2009; Bachelor's, 1992, Yale University
CUMMINGS, DAVID E., 1987; Bachelor's, 1982, Dartmouth College
CURTIS, JARED R., 1988; Bachelor's, 1984, Hampshire College
DALE, DAVID C, 1974; Bachelor's, 1962, Carson-Newman College
DAVIDSON, NANCY E, 2016; Medical Doctorate, 1979, Harvard University

DE BOER, IAN H. * 2003; Medical Doctorate, 1999, Oregon Health & Science University
DEAN, LARRY S., 1982; Bachelor's, 1975, University of Alabama
DEEG, H. JOACHIM, 1985; Medical Doctorate, 1972, Rheinische Friedrich Wilhelms Universität Bonn
DEL ZOPPO, GREGORY J., 2007; Master's, 1972, California Institute of Technology
DELLIT, TIMOTHY H., 2001; Medical Doctorate, 1997, Cornell University
DHANIREDDY, SHIREESHA, 1999; Bachelor's, 1995, Georgetown University
DICHEK, DAVID A. * 2001; Bachelor's, 1976, Princeton University
DOMINITZ, JASON A, 1998; Master's, 1996, Duke University
DONEY, KRISTINE, 1981; Bachelor's, 1968, University of Michigan-Ann Arbor
DONG, JING-FEI, 2011; Medical Doctorate, 1984, Lanzhou University
DUCHIN, JEFFREY S., 1995; Medical Doctorate, 1985, Rutgers University-Camden
DUGDALE, DAVID C., 1982; Master's, 1978, Cornell University
EATON, KEITH D., 1998; Bachelor's, 1989, University of California-Berkeley
ELKON, KEITH B * 2001; Medical Doctorate, 1974, University of the Witwatersrand
ESTEY, ELIHU, 2008; Medical Doctorate, 1972, Johns Hopkins University
FIHN, STEPHAN, 1982; Bachelor's, 1973, Occidental College
FISHBEIN, DANIEL P, 1981; Bachelor's, 1976, Wesleyan University
FLECKMAN, PHILIP H, 1982; Bachelor's, 1968, The University of Texas
FLOWERS, MARY E., 1994; Medical Doctorate, 1977, Universidade Federal do Rio de Janeiro (UFRJ)
FREDRICKS, DAVID N. * 2001; Medical Doctorate, 1990, Case Western Reserve University
FREEMAN, ROSARIO, 2001; Medical Doctorate, 1995, Loyola University Chicago
FUJIMOTO, WILFRED Y, 1969; Bachelor's, 1962, Johns Hopkins University
FUJISE, KENICHI, 2020; Medical Doctorate, 1987, Kyoto University
FURLONG, CLEMENT E. * 1977; Bachelor's, 1963, San Jose State University
GALLAGHER, THOMAS H * 2002; Bachelor's, 1986, Carleton College
GARCIA, DAVID A., 2012; Bachelor's, 1989, Duke University
GARDNER, GREGORY C., 1989; Medical Doctorate, 1984, Baylor University
GARTLER, STANLEY M, 1957; Doctorate, 1952, University of California-Berkeley
GASTER, BARAK, 1993; Medical Doctorate, 1993, University of California-San Francisco
GEBALLE, ADAM PHILIP * 1988; Medical Doctorate, 1978, Duke University
GERNSHEIMER, TERRY B., 1984; Bachelor's, 1975, New York University
GHARIB, SINA A., 1996; Medical Doctorate, 1996, Harvard University
GILLILAND, DWIGHT GARY, 2019
GLENNY, ROBB * 1987; Bachelor's, 1979, Duke University
GOLDEN, MATTHEW R * 1994; Bachelor's, 1985, Grinnell College
GOODNER, CHARLES J, 1982; Bachelor's, 1951, Reed College
GOPAL, AJAY, 1997; Bachelor's, 1989, Duke University
GOSS, CHRISTOPHER HOOPER, 1997; Medical Doctorate, 1992, University of Colorado Denver
GOSS, J. RICHARD, 1993; Medical Doctorate, 1987, Oregon Health & Science University
GOTTLIEB, GEOFFREY S., 1998; Medical Doctorate, 1994, Chicago State University
GRADY, WILLIAM M., 1990; Bachelor's, 1987, University of Michigan-Ann Arbor
GRALOW, JULIE R., 1992; Bachelor's, 1981, Stanford University
GREENBERG, PHILIP D * 1978; Medical Doctorate, 1971, New York University
HALL, YOSHIO N., 2007; Medical Doctorate, 1999, Baylor University
HALLSTRAND, TEAL, 1990; Bachelor's, 1989, Humboldt State University
HANDSFIELD, HUNTER, 1983; Medical Doctorate, 1968, Columbia University
HARRINGTON, ROBERT D, 1989; Bachelor's, 1978, Tufts University
HAWN, THOMAS R. * 1995; Doctorate, 1995, Johns Hopkins University
HEINECKE, JAY W, 1982; Bachelor's, 1977, Antioch College

HIGANO, CELESTIA S., 1982; Bachelor's, 1975, Clark University
HILL, GEOFFREY * 2018; Doctorate, 2001, University of Auckland; Medicine
HIMMELFARB, JONATHAN * 2008; Bachelor's, 1977, Brandeis University
HINGORANI, SUNIL, 2006; Bachelor's, 1985, Yale University
HIRSCH, IRL B., 1990; Bachelor's, 1980, University of Missouri
HISAMA, FUKI MARIE, 2009; Medical Doctorate, 1988, University of Chicago
HOCKENBERY, DAVID M. * 1994; Bachelor's, 1978, University of Rochester
HOLMBERG, LEONA A., 1987; Bachelor's, 1973, Briarcliffe College
HOUGHTON, ASHLEY M., 2012; Medical Doctorate, 1996, Georgetown University
INADOMI, JOHN M., 2010; Bachelor's, 1984, Massachusetts Institute of Technology
IOANNOU, GEORGE, 2000; Bachelor's, 1993, University of Oxford
JACKSON, J. CAREY, 1990; Medical Doctorate, 1986, Michigan State University
JARVIK, GAIL P. * 1991; Bachelor's, 1980, University of Iowa
JEFFERSON, JONATHAN ASHLEY, 1997; Medical Doctorate, 1989, Queens University
JUNG, BARBARA HEDWIG, 2019
KAHN, STEVEN EMANUEL, 1986; Medical Doctorate, 1978, University of Cape Town
KAPUR, VISHESH, 1993; Bachelor's, 1983, Harvard University
KEARNEY, DAVID J., 1996; Bachelor's, 1988, University of Missouri
KESTENBAUM, BRYAN * 1999; Bachelor's, 1991, University of Massachusetts
KIEM, HANS-PETER * 1992; Medical Doctorate, 1987, Universität Ulm
KIM, FRANCIS, 1992; Bachelor's, 1985, University of California-Berkeley
KING, MARY-CLAIRE * 1995; Bachelor's, 1966, Carleton College
KIRKPATRICK, JAMES N., 2015; Medical Doctorate, 1998, Loma Linda University
KITAHATA, MARI M., 1991; Medical Doctorate, 1987, University of Pennsylvania
KOELLE, DAVID * 1988; Bachelor's, 1980, University of Washington
KONKLE, BARBARA A., 2009; Bachelor's, 1975, Northwestern University
KRAEMER, BRIAN * 2000; Doctorate, 2000, University of Wisconsin-Madison
KRITEK, PATRICIA A., 2010; Master's, 2006, Harvard University
KRUSE-JARRES, REBECCA, 2014; Master's, 1999, Tulane University of Louisiana
KUDENCHUK, PETER J., 1982; Bachelor's, 1975, University of Washington
LEE, STEPHANIE J., 2006; Doctorate, 1996, Harvard University
LEE, SUM PING, 1985; Doctorate, 1978, University of Auckland
LEVY, WAYNE C., 1985; Bachelor's, 1981, Columbia Union College
LIEBER, ANDRE * 1994; Doctorate, 1992, Humboldt Universität zu Berlin
LILES, WAYNE CONRAD * 1982; Doctorate, 1987, University of Washington
LIMAYE, ABHIJIT P., 1983; Bachelor's, 1986, University of Washington
LINDEN, HANNAH M., 1993; Medical Doctorate, 1989, University of Massachusetts
LINENBERGER, MICHAEL L., 1986; Bachelor's, 1978, University of Kansas
LOGERFO SR., JAMES P * 1974; Medical Doctorate, 1968, University of Rochester
LOPEZ, JOSE A., 1982; Bachelor's, 1977, New Mexico Institute of Mining and Technology
LUKEHART, SHEILA A * 1980; Doctorate, 1978, University of California-Los Angeles
LUKS, ANDREW M., 2000; Bachelor's, 1990, Duke University
LYMAN, GARY * 2013; Master's, 1982, Harvard University
MACLELLAN, W. ROBB * 2011; Bachelor's, 1984, University of Guelph
MALONEY, DAVID G., 1995; Medical Doctorate, 1985, Stanford University
MANNIK, MART, 1966; Medical Doctorate, 1959, Case Western Reserve University
MARTIN, PAUL J., 1978; Bachelor's, 1970, Marquette University
MARTINS, RENATO, 2004; Master's, 1998, Harvard University
MATUTE-BELLO, GUSTAVO, 1994; Medical Doctorate, 1988, Universidad Central de Venezuela

MCCLELLAND, RAYMOND SCOTT * 1988; Bachelor's, 1989, University of Washington
MCCORMICK, WAYNE C., 1987; Bachelor's, 1974, University of Missouri
MCELRATH, MARGARET JULIANA * 1990; Bachelor's, 1973, Furman University
MEHROTRA, RAJNISH, 2012; Medical Doctorate, 1989, All India Institute of Medical Sciences
MERRILL, JOSEPH O., 1996; Master's, 1998, University of Washington
MIELCAREK, BESSIE YOUNG, 1983; Bachelor's, 1983, Pacific Lutheran University
MIELCAREK, MARCO B, 1998; Medical Doctorate, 1986, Freie Universität Berlin
MILLER, SAMUEL I * 1995; Medical Doctorate, 1979, Baylor University
MONTGOMERY, ROBERT B., 1990; Medical Doctorate, 1987, Duke University
MORALES, LEO * 2010; Master's, 1997, Pardee Rand Graduate School of Policy Studies
MORTON, GREGORY J. * 2000; Master's, 1997, Deakin University
MOTULSKY, ARNO G., 1982; Bachelor's, 1945, University of Illinois at Urbana-Champaign
MUSTELIN, TOMAS M, 2018
NARITA, MASAHIRO, 2003; Medical Doctorate, 1988, Keio University
NELSON, JUDITH LEE * 1981; Bachelor's, 1971, Stanford University
NELSON, KARIN * 2001; Bachelor's, 1989, Brown University
NELSON, PETER S. * 1993; Bachelor's, 1982, University of Kansas
NGHIEM, PAUL * 2006; Bachelor's, 1986, Harvard University
NICHOL, GRAHAM, 2004; Master's, 1995, Harvard University
O'BRIEN, KEVIN, 1984; Bachelor's, 1980, University of Idaho
O'HARE, ANN M, 2007; Master's, 1987, University of Minnesota-Duluth
OLSON, MAYNARD V., 1992; Bachelor's, 1965, California Institute of Technology
OTT RALPH, SUSAN MARIE, 1980; Bachelor's, 1970, Stanford University
OTTO, CATHERINE M., 1982; Bachelor's, 1975, Reed College
PAAUW, DOUGLAS, 1985; Bachelor's, 1980, Macalester College
PAGE, STEPHANIE T, 1991; Bachelor's, 1989, Stanford University
PATTON, KRISTEN K, 2004; Medical Doctorate, 1995, Oregon Health & Science University
PAULOVICH, AMANDA G., 1989; Bachelor's, 1988, Carnegie Mellon University
PAYNE, THOMAS H., 1991; Bachelor's, 1976, Stanford University
PEARLMAN, ROBERT A * 1981; Medical Doctorate, 1975, Boston University
PETERSDORF, EFFIE WANG, 1982; Bachelor's, 1978, Harvard University
PLYMATE, STEPHEN R, 1983; Master's, 1968, University of Nebraska-Lincoln; Medical Doctorate, 1968, American University
POOLE, JEANNE E, 1981; Medical Doctorate, 1980, University of Washington
POTTINGER, PAUL S., 2002; Bachelor's, 1990, Harvard University
PRESS, OLIVER W., 1982; Bachelor's, 1973, Stanford University
PROBSTFIELD, JEFFREY L, 1993; Bachelor's, 1961, Pacific Lutheran University
PSATY, BRUCE M. * 1984; Master's, 1975, Indiana University-Bloomington
RADICH, JERALD P, 1983; Master's, 1979, Harvard University
RAGHU, GANESH, 1981; Medical Doctorate, 1974, University of Mysore
RAMSEY, PAUL G, 1980; Bachelor's, 1971, Harvard University
RAMSEY, SCOTT D. * 1990; Bachelor's, 1983, University of Iowa
RASKIND, WENDY H * 1982; Bachelor's, 1964, Brown University
RAUGI, GREGORY J, 1980; Bachelor's, 1969, Brown University
REA, THOMAS D., 1992; Medical Doctorate, 1992, University of Michigan-Ann Arbor
REID, BRIAN J * 1983; Bachelor's, 1969, University of Washington
RIDDELL, STANLEY R. * 1985; Medical Doctorate, 1979, University of Manitoba
RODRIGUEZ, RUDOLPH, 2007; Bachelor's, 1985, Stanford University
SANDMAIER, BRENDA M., 1985; Medical Doctorate, 1983, Universität Freiburg

SCHUFFLER, MICHAEL D, 1973; Medical Doctorate, 1966, University of Illinois at Urbana-Champaign
SCHWARTZ, MICHAEL W * 1983; Medical Doctorate, 1983, Rush University
SCOTT, BART L., 1999; Bachelor's, 1991, University of Alabama
SCOTT, JOHN D., 2002; Medical Doctorate, 1998, Georgetown University
SHANKLAND, STUART J., 1994; Medical Doctorate, 1983, University of Cape Town
SHEEHAN, FLORENCE * 1980; Bachelor's, 1971, Massachusetts Institute of Technology
SHEFFIELD-CASSAN, JOHN V.L., 1989; Medical Doctorate, 1989, Harvard University
SHUSTOV, ANDREI R, 2003; Medical Doctorate, 1993, Crimea State Medical University
SIMKIN, PETER A, 1982; Bachelor's, 1957, Swarthmore College
SKERRETT, SHAWN J., 1983; Medical Doctorate, 1978, New York University
SPACH, DAVID H, 1986; Medical Doctorate, 1986, Duke University
STAIGER, THOMAS O., 1985; Bachelor's, 1979, University of Michigan-Ann Arbor
STAMATOYANNOPOULOS, G, 1964; Medical Doctorate, 1958, American University of Athens
STAMATOYANNOPOULOS, THALIA, 1974; Medical Doctorate, 1961, American University of Athens
STARKEBAUM, GORDON A, 1970; Medical Doctorate, 1970, Columbia University
STEINBERG, KENNETH P, 1989; Bachelor's, 1981, Colgate University
STEKLER, JOANNE D., 1997; Medical Doctorate, 1997, Duke University
STEVENS, DENNIS L, 1982; Doctorate, 1967, Montana State University
STORB, RAINER F, 1976; Medical Doctorate, 1960, Universität Freiburg
STOUT, KAREN K., 2000; Bachelor's, 1991, University of Arizona
STRATE, LISA, 2006; Master's, 2001, Harvard University
SWENSON, ERIK R., 1983; Bachelor's, 1974, Princeton University
TENNO, JOAN M, 2015; Medical Doctorate, 1982, American College
THOMPSON, JOHN A., 1979; Bachelor's, 1973, Davidson College
TONELLI, MARK R., 1993; Bachelor's, 1984, University of Colorado
TURCK, MARVIN, 1982; Bachelor's, 1957, University of Illinois at Urbana-Champaign
VAN VOORHIS, WESLEY C * 1986; Medical Doctorate, 1984, Cornell University
WALD, ANNA * 1989; Medical Doctorate, 1985, Mount Sinai School of Medicine
WALLACE, JAMES F., 1982; Bachelor's, 1957, Washington State University
WARREN, EDUS HOUSTON * 1993; Bachelor's, 1981, Harvard University
WATNICK, SUZANNE, 2017; Bachelor's, 1990, Harvard University
WEIGLE, DAVID S, 1982; Medical Doctorate, 1978, Harvard University
WEST, TIMOTHY E, 2003; Medical Doctorate, 1999, Eastern Virginia Medical School
WIJSMAN, ELLEN M * 1987; Bachelor's, 1975, Michigan State University
WIPF, JOYCE E., 1984; Bachelor's, 1980, Minnesota State University-Moorhead
WURFEL, MARK M, 1997; Medical Doctorate, 1997, Cornell University
YU, EVAN Y, 1990; Bachelor's, 1994, University of Washington
ZAGER, RICHARD A., 1985; Bachelor's, 1965, Northwestern University
ZIMRING, JAMES * 2013; Bachelor's, 1992, Emory University

Associate Professors

ADAMSON, ROSEMARY, 2012; Medical Doctorate, 2004, King's College London
AKOUM, NAZEM, 2015; Bachelor's, 1997, American University of Beirut
AYARS, ANDREW G, 2009; Medical Doctorate, 2006, University of Missouri-St Louis
BAERNSTEIN, AMY, 1993; Bachelor's, 1989, Cornell University
BAIK, CHRISTINA, 2009; Master's, 2006, Harvard University
BAMBHA, KIRAN M, 2017; Bachelor's, 1991, College of William and Mary
BANSAL, NISHA, 2013; Bachelor's, 1999, Brown University

BAR, MERAV, 1999; Bachelor's, 1994, Hebrew University of Jerusalem
BEDALOV, ANTONIO * 1996; Medical Doctorate, 1989, University of Zagreb
BERGER, DOUGLAS BRADLEY, 2006; Medical Doctorate, 2006, Columbia University
BEST, JENNIFER ANN, 1993; Medical Doctorate, 2000, Northwestern University
BESTE, LAUREN A, 2007; Medical Doctorate, 2004, Johns Hopkins University
BHATIA, SHAILENDER, 2004; Medical Doctorate, 2000, All India Institute of Medical Sciences
BIGGINS, SCOTT W, 2017; Bachelor's, 1994, University of California-Los Angeles
BILLINGS, MARTHA, 2006; Bachelor's, 1997, Stanford University
BLUE, ELIZABETH, 2008; Bachelor's, 2003, Indiana University-Bloomington
BUBER, YONATAN, 2018
CARLBOM, DAVID J, 1988; Medical Doctorate, 1997, University of Washington
CASSADAY, RYAN D., 2010; Bachelor's, 2000, University of Wisconsin-Madison
CHAPUIS, AUDE GEORGIANA * 2007; Medical Doctorate, 2002, Université de Lausanne
CHAUNCEY, THOMAS R., 1985; Bachelor's, 1976, Bowdoin College
CHEN, MICHAEL A, 1999; Bachelor's, 1989, Haverford College
CHENG, GUANG-SHING, 2011; Bachelor's, 1996, Harvard University
CHENG, HEATHER, 1998; Bachelor's, 1998, Princeton University
CHENG, RICHARD KAR-HANG, 2013; Medical Doctorate, 2005, Columbia University
CHERRY, DEBRA C * 2013; Bachelor's, 1990, Baylor University
CHEW, LISA D., 1993; Bachelor's, 1989, University of California-Berkeley
CHILDS, MARIAN T, 1982; Bachelor's, 1946, University of California-Berkeley
CHOE, JOHN H, 2000; Medical Doctorate, 1997, New York University
CHU, HELEN Y., 2009; Bachelor's, 2001, Cornell University
CIRULLI, VINCENZINO * 2009; Medical Doctorate, 1986, American University of Rome
COHEN, STACEY A., 2000; Bachelor's, 2004, Brandeis University
CONNELLY-SMITH, LAURA S., 2011; Medical Doctorate, 2007, University of Nottingham
COOK, DAVID G. * 1998; Bachelor's, 1984, University of Utah
CORNIA, PAUL B., 1996; Bachelor's, 1991, Case Western Reserve University
CORUH, BASAK, 2006; Medical Doctorate, 2006, Virginia Commonwealth University
COVELER, ANDREW L., 2003; Bachelor's, 1998, Northwestern University
CRANMER, LEE DUNCAN, 2015; Bachelor's, 1988, Harvard University
CRISA, LAURA M * 2009; Medical Doctorate, 1986, American University of Rome
DANDEKAR, AJAI ARVIND * 2005; Bachelor's, 1997, Stanford University
DAVIDSON, ROBERT C, 1982; Medical Doctorate, 1953, University of Washington
DEPAOLO, RANDY * 2016; Bachelor's, 1999, Bates College
DOMBROWSKI, JULIA C. * 2007; Medical Doctorate, 2004, Duke University
DON, CREIGHTON W., 2004; Bachelor's, 1993, University of California-Berkeley
EACKER, ANNE M., 1993; Medical Doctorate, 1997, University of Washington
EDELMAN, JEFFREY, 2005; Medical Doctorate, 1989, Columbia University
EVANS, LAURA ELISE, 2019; Medical Doctorate, 1999, University of Michigan-Ann Arbor
EVANS, TIMOTHY C, 1980; Bachelor's, 1968, University of Michigan-Ann Arbor
FAN, VINCENT S. * 1995; Medical Doctorate, 1995, University of Minnesota-Duluth
FEEMSTER, LAURA CECERE, 2002; Bachelor's, 1997, The University of Texas
FISHER, CYNTHIA E., 1999; Master's, 2006, Johns Hopkins University
FLOYD, JAMES * 2005; Bachelor's, 2000, Duke University
FOSTER-SCHUBERT, KAREN, 1990; Medical Doctorate, 1998, Johns Hopkins University
FREEDMAN, BENJAMIN S * 2015; Doctorate, 2009, University of California-Berkeley
GADI, VIJAYAKRISHNA K., 2000; Bachelor's, 1993, University of Alabama

GARCIA, JOSE, 2016; Medical Doctorate, 1997, Universidad Nacional de Cordoba; Doctorate, 2011, Baylor University

GEORGES, GEORGE E, 1994; Bachelor's, 1986, Massachusetts Institute of Technology

GIACANI, LORENZO, 2002; Bachelor's, 1998, Università di Bologna

GOULART, BERNARDO HADDOCK, 2005; Medical Doctorate, 1997, Universidade Federal do Rio de Janeiro (UFRJ)

GREEN, DAMIAN J., 2004; Bachelor's, 1992, Miami University-Oxford

GREENBERG, DEBORAH L., 1990; Bachelor's, 1985, Brown University

GREENLEE, HEATHER, 1990; Doctorate, 2001, Bastyr University

GRIM, JONATHAN E, 1999; Doctorate, 1997, University of Alabama

GRIVAS, PETROS, 2018

GRUENEWALD, DAVID A, 1983; Bachelor's, 1978, Reed College

HAGMAN, MELISSA M, 1999; Bachelor's, 1995, University of Idaho

HANSEN, RALPH S., 1982; Bachelor's, 1976, University of Washington

HARRIS, WILLIAM P., 2001; Bachelor's, 1995, Brown University

HAWKINS, RAYMOND DAVID * 2010; Bachelor's, 1997, The University of Texas

HIRA, RAVI S, 2015; Medical Doctorate, 2007, Saurashtra University

HORNE, DAVID J., 2005; Bachelor's, 1992, Stanford University

HUGHES, GRANT C., 2001; Medical Doctorate, 2001, Oregon Health & Science University

HYBISKE, KEVIN J * 2013; Bachelor's, 1996, University of California-Berkeley

ISAAC, MARGARET, 2002; Bachelor's, 1998, Stanford University

JACKSON, MOLLY BLACKLEY, 2004; Bachelor's, 1996, University of North Carolina

JACKSON, SARA L, 2000; Medical Doctorate, 1995, University of Louisville

JOHNSEN, JILL M., 2008; Medical Doctorate, 1998, Case Western Reserve University

JOHNSON, KAY M., 1991; Bachelor's, 1986, St. Olaf College

JOHNSTON, CHRISTINE, 1995; Bachelor's, 1995, Brown University

KALUS, ANDREA, 1995; Bachelor's, 1993, George Fox University

KAMINETZKY, CATHERINE P., 2011; Medical Doctorate, 1998, Duke University

KAPLAN, ELIZABETH A, 2010; Bachelor's, 1998, Stanford University

KAPNADAK, SIDDHARTHA G, 2014; Medical Doctorate, 2007, Oregon Health & Science University

KAZ, ANDREW M., 2003; Bachelor's, 1991, Duke University

KEEL, SIOBAN, 2002; Bachelor's, 1994, Carleton College

KIM, CHRISTOPHER S, 2015; Master's, 1999, University of Chicago

KIM, HYANG N, 1999; Bachelor's, 1994, Harvard University

KNIGHT, CHRISTOPHER, 1993; Bachelor's, 1992, Columbia University

KO, CYNTHIA W. * 1994; Bachelor's, 1987, Stanford University

KORDE, LARISSA, 2009; Bachelor's, 1992, College of William and Mary

KRIEGER, ERIC V., 2006; Bachelor's, 1997, Amherst College

KROSS, ERIN K., 2005; Medical Doctorate, 2002, University of Iowa

KWON, YOUNGHOON, 2020; Medical Doctorate, 1999, Kyungpook (Kyungbook) National University

LANDIS, CHARLES S, 2009; Medical Doctorate, 2002, New York University

LAYA, MARY B., 1993; Medical Doctorate, 1982, Creighton University

LEARY, PETER J, 2009; Medical Doctorate, 2005, Johns Hopkins University

LEASE, ERIKA D., 1995; Bachelor's, 1999, University of Washington

LECA, NICOLAE, 2005; Medical Doctorate, 1996, Carol Davila University of Medicine and Pharmacy

LEE, SCOTT D., 1997; Medical Doctorate, 1994, Jefferson College

LEE, SYLVIA M., 2003; Bachelor's, 1996, Haverford College

LEMAITRE, ROZENN N. * 1986; Bachelor's, 1975, Instituts Nationaux des Sciences Appliquees

LIAO, JOSHUA M, 2017; Medical Doctorate, 2012, Baylor University

LIBBY, EDWARD N, 2011; Bachelor's, 1979, The University of Texas at El Paso

LINKER, DAVID THOR * 1982; Bachelor's, 1972, Stanford University
LIU, CATHERINE, 2017; Bachelor's, 1997, Stanford University
LYNCH, JOHN B., 1993; Bachelor's, 1991, University of Rhode Island
MANICONE, ANNE M., 2001; Medical Doctorate, 1998, Cornell University
MARTIN, DANIEL B, 1999; Bachelor's, 1989, Cornell University
MARTIN, GARY V., 1984; Bachelor's, 1975, Brown University
MCCABE, JAMES M, 2013; Bachelor's, 1997, Bowdoin College
MCDONOUGH, KAREN A., 1993; Bachelor's, 1989, University of Wisconsin Colleges
MENON, MANOJ, 2002; Bachelor's, 1992, Emory University
MEREL, SUSAN, 2005; Bachelor's, 1993, Columbia University
MIGEON, MARY, 1988; Bachelor's, 1984, Lewis and Clark Community College
MILANO, FILIPPO, 2013; Medical Doctorate, 2001, Università degli Studi di Roma La Sapienza
MILLER, RICHARD A, 1981; Medical Doctorate, 1977, Harvard University
MOOKHERJEE, SOMNATH, 1996; Bachelor's, 1997, University of Washington
MORRIS, AMY E., 2001; Bachelor's, 1996, Brown University
MOSTAGHEL, ELAHE, 2003; Doctorate, 2000, Duke University; Medical Doctorate, 2000, Duke University
MUCZYNSKI, KIMBERLY ANN, 1982; Bachelor's, 1976, Pacific Lutheran University
NG, BERNARD S, 2013; Master's, 2013, Baylor University
O'CONNOR, KIM, 1996; Bachelor's, 1993, University of Washington
OEHLER, VIVIAN G., 1997; Medical Doctorate, 1997, Case Western Reserve University
O'HEARN, DANIEL J, 2016; Medical Doctorate, 1991, SUNY Health Science Center at Syracuse
ONG, THUAN D., 2008; Bachelor's, 1998, University of California-Los Angeles
OWENS, DAVID S., 2005; Bachelor's, 1990, Carleton College
PAGALILAUAN, GENEVIEVE, 1997; Bachelor's, 1996, University of Washington
PALEN, BRIAN N, 2010; Medical Doctorate, 1999, Creighton University
PARSONS, ELIZABETH C, 2008; Medical Doctorate, 2004, Duke University
PERGAM, STEVEN A., 2005; Medical Doctorate, 1998, American University
PHELAN, ELIZABETH A. * 1996; Medical Doctorate, 1992, Tufts University
PICHLER, RAIMUND, 1993; Medical Doctorate, 1993, International University Vienna
POLLACK, SETH M, 2008; Medical Doctorate, 2005, George Washington University
POWELL, HEIDI SARA, 1993; Medical Doctorate, 1986, Oregon Health & Science University
PRUTKIN, JORDAN M., 2005; Master's, 2002, Duke University
RALPH, DAVID D, 1981; Bachelor's, 1968, Stanford University
REED, MAY J., 1990; Medical Doctorate, 1986, Harvard University
REILLY, DOMINIC F., 1985; Bachelor's, 1980, Rensselaer Polytechnic Institute
RICHARD, ROBERT E., 1996; Medical Doctorate, 1984, Stony Brook University
RODRIGUEZ, CRISTINA P., 2013; Bachelor's, 1998, University of the Philippines
ROTH, GREGORY, 2002; Bachelor's, 1997, Brown University
ROTH, MARA Y, 2002; Bachelor's, 1998, Brown University
ROXBY, ALISON C., 2007; Master's, 2002, London School of Hygiene & Tropical Medicine
RUBINOW, KATYA B., 2008; Bachelor's, 1998, Harvard University
SALAZAR, LUPE G., 1999; Associate, 1980, Bakersfield College
SALIT, RACHEL, 2012; Bachelor's, 1996, Duke University
SANTANA-DAVILA, RAFAEL, 2014; Medical Doctorate, 2001, Universidad Anáhuac
SCHIFFER, JOSHUA T., 2005; Medical Doctorate, 2002, Johns Hopkins University
SCHLEYER, ANNELIESE M., 1991; Master's, 1992, University of Washington
SCHUR, ELLEN A, 1999; Bachelor's, 1991, Stanford University
SCHWEIZER, MICHAEL, 2014; Medical Doctorate, 2008, Temple University
SEGAL, ALAN, 2017; Medical Doctorate, 1985, University of Chicago

SESHADRI, CHETAN * 2009; Bachelor's, 1996, Rutgers University-Camden
SHADMAN, MAZYAR, 2006; Medical Doctorate, 2004, University of Tehran
SHANKARAN, VEENA, 2009; Bachelor's, 1998, Dartmouth College
SHINOHARA, MICHI, 1996; Bachelor's, 1994, Reed College
SMITH, STEPHEN D, 2013; Bachelor's, 1997, Stanford University
SORROR, MOHAMED, 2008; Medical Doctorate, 1993, Assiut University
SOTOODEHNIA, NONA * 1996; Master's, 1996, Harvard University
SPECHT, JENNIFER M, 1997; Bachelor's, 1994, Pacific Lutheran University
STADIUS, MICHAEL L., 1982; Bachelor's, 1974, Portland State University
STEINBACH, GIDEON, 2001; Bachelor's, 1967, New York University
STEMPIEN-OTERO, APRIL S. * 1994; Bachelor's, 1986, Dartmouth College
STEPHAN, MATTHIAS * 2012; Doctorate, 2008, Cornell University
STIREWALT, DEREK, 1996; Bachelor's, 1988, Davidson College
SUBRAMANIAN, SAVITHA, 2004
SUTTON, ELIZA L., 1990; Bachelor's, 1984, California Institute of Technology
SUTTON, PAUL R., 1999; Bachelor's, 1980, Grinnell College
TAKAHASHI, TRACI A., 1995; Bachelor's, 1991, Stanford University
THALER, JOSHUA P, 2003; Bachelor's, 1992, Harvard University
THOMPSON, WILLIAM H., 1983; Medical Doctorate, 1988, Johns Hopkins University
TILL, BRIAN, 2005; Bachelor's, 1998, Catholic University of America
TONG, JENNY, 2019; Medical Doctorate, 1990, Guangzhou University
TSUI, JUDITH I, 2014; Master's, 2004, Emory University
TURTLE, CAMERON J., 2008; Doctorate, 2005, University of Queensland
TYKODI, SCOTT S., 2000; Bachelor's, 1988, Northwestern University
ULDRICK, THOMAS, 2017
UTZSCHNEIDER, KRISTINA M., 1993; Medical Doctorate, 1993, Harvard University
VARY, JAMES CORYDON, 1998; Bachelor's, 1993, University of Illinois at Urbana-Champaign
VIG, ELIZABETH K., 1996; Medical Doctorate, 1993, New York University
WALTER, ROLAND, 2004; Medical Doctorate, 1997, Universität Zürich
WATANABE, JILL M., 1998; Medical Doctorate, 1990, Johns Hopkins University
WEPPNER, WILLIAM, 2001; Bachelor's, 1996, University of Idaho
WHEELER, STEPHANIE G., 1984; Bachelor's, 1989, University of Washington
WHIMBEY, ESTELLA, 2001; Medical Doctorate, 1978, Cornell University
WHITE, ANDREW AUSTIN, 2004; Bachelor's, 1999, Princeton University
WILPER, ANDREW P, 2008; Master's, 2006, Harvard University
WISSE, BRENT, 1999; Bachelor's, 1987, McGill University
WONG, CHRISTOPHER J., 2001; Bachelor's, 1995, Stanford University
WOOD, BRIAN R., 2004; Bachelor's, 2003, Claremont McKenna College
WOOD, FRANCIS C, 1982; Medical Doctorate, 1954, Harvard University
WRIGHT, JENNIFER J., 1998; Bachelor's, 2000, University of Washington
WU, DANIEL Y., 1991; Doctorate, 1990, Loma Linda University

Assistant Professors

ABEDINI, NAUZLEY C, 2005; Medical Doctorate, 2014, University of Michigan-Ann Arbor
ACHARYA, UTKARSH H, 2016; Medical Doctorate, 2009, Ohio University-Main Campus
ADESINA, OYEBIMPE O, 2017; Master's, 2016, Stanford University
ALBERT, TYLER JONATHON, 1998; Bachelor's, 2000, University of Pennsylvania
ALTMAN, MATTHEW C., 1999; Medical Doctorate, 2009, Harvard University

ALVA VENUR, VYSHAK, 2019
ANDREWS, JAMES S, 2015; Medical Doctorate, 2009, Stanford University
ARNOLD, SAMUEL L, 2010; Bachelor's, 2009, University of Colorado at Boulder
ATTIA, ENGI F, 2011; Bachelor's, 2003, Rice University
BANDA, KALYAN, 2014
BARBEE, LINDLEY ANNE, 2008; Bachelor's, 2000, Northwestern University
BAYS, ALISON M, 2010; Master's, 2010, Tulane University of Louisiana
BEATTY, ALEXIS L, 2014; Bachelor's, 2001, Duke University
BENDER IGNACIO, RACHEL, 2005; Bachelor's, 2004, Dartmouth College
BENNETT, KATHERINE ANN, 2006; Medical Doctorate, 2006, Ohio State University Agricultural Technical Institute
BHATRAJU, PAVAN, 2014
BRAVO CARRILLO, CLAUDIO A., 2020; Medical Doctorate, 2008, Universidad Católica de la Santísima Concepción
BRYSON-CAHN, CHLOE, 2016
BURWICK, NICHOLAS R, 2008; Medical Doctorate, 2004, Duke University
CAMPO-PATINO, MONICA, 2009; Master's, 2006, Harvard University
CHANPRASERT, SIRISAK, 2015; Medical Doctorate, 2005, Mahidol University
CHATTERJEE, NEAL A., 2019; Medical Doctorate, 2010, Harvard University
CHEN, ANDERS, 2008; Master's, 2012, Johns Hopkins University
CHEUNG, KEVIN J * 2016; Medical Doctorate, 2006, Cornell University
CHOW, VICTOR A, 2010; Bachelor's, 2008, University of Washington
CHRISTOPHER, ANDREA SYLVIE, 2005; Master's, 2016, Harvard University
CHUNG, CHRISTINE J., 2020; Medical Doctorate, 2012, Drexel University
COWAN, ANDREW JOHN, 2001; Bachelor's, 2003, University of Washington
DEEDS, STEFANIE ANN, 2013; Medical Doctorate, 2013, Case Western Reserve University
DEY, NEELENDU * 2017; Bachelor's, 2000, Harvard University
DHAWALE, TEJASWINI MORE, 2013; Bachelor's, 2004, Stanford University
DOLL, JACOB, 2016; Medical Doctorate, 2009, Columbia University in the City of New York
DONOVAN, LUCAS M, 2015
DOULATOV, SERGEI * 2016; Bachelor's, 2004, University of California-Los Angeles
EGAN, DANIEL N, 2011; Bachelor's, 1997, University of Massachusetts
EHRHARDT, NICOLE M., 2020; Medical Doctorate, 2002, Uniformed Services University of the Health Sciences
FU, HONGXIA * 2017
GAUTHIER, JORDAN, 2019; Medical Doctorate, 2008, Université de Rennes 1
GLICK, SARA NELSON, 2004; Bachelor's, 2002, Northwestern University
GOLOB, ANNA LYNN, 2002; Bachelor's, 2004, University of Washington
GRAF, SOLOMON A, 2008; Medical Doctorate, 2008, Boston University
GULSUNER, SULEYMAN ISMAIL, 2012; Doctorate, 2011, Bilkent University
GWIN, WILLIAM RAYFORD, 2006; Bachelor's, 2002, Auburn University-Montgomery
HALL, EVAN THOMAS, 2019; Medical Doctorate, 2012, University of California-San Diego
HALPERN, ANNA TARKO, 2013; Bachelor's, 2005, Brown University
HANSON, ANGELA JEAN, 2006; Bachelor's, 1997, Montana State University
HILL, JOSHUA, 2012; Bachelor's, 2005, The University of Texas
HSIEH, ANDREW C * 2015; Bachelor's, 1999, University of California-Berkeley
HUNG, CHI, 2005; Bachelor's, 2000, University of California-Berkeley
HUNTER, NATASHA BEATRICE, 2018
ISSAKA, RACHEL BLANKSON * 2017
JAMES, JOCELYN ROSE, 2009; Bachelor's, 1999, Stanford University
JANUSZEWSKI, PANDORA L, 2002; Bachelor's, 1997, Savannah College of Art and Design
JENNERICH, ANN LONG, 2011; Medical Doctorate, 2007, Louisiana State University

KAWASUMI, MASAOKI * 2006; Medical Doctorate, 1999, Keio University
KEARNEY, KATHLEEN, 2009; Bachelor's, 2005, Case Western Reserve University
KIEFER, MEGHAN, 2005; Bachelor's, 2002, Princeton University
KING, GENTRY GEORGE, 2019; Medical Doctorate, 2007, University of Santo Tomas
KLEIN, JARED WILSON, 2009; Bachelor's, 2004, Johns Hopkins University
KOBAYASHI, AKIO, 2013; Doctorate, 2004, Baylor University
KRAKOW, ELIZABETH F, 2015; Bachelor's, 1998, McGill University
LACOURSE, SYLVIA, 2012; Bachelor's, 1995, University of California-Santa Barbara
LEE, JOHN K * 2018
LEE, SARAH S., 2020
LENAEUS, MICHAEL JEFFREY, 2010; Bachelor's, 2003, Gonzaga University
LIN, SHIN, 2016; Bachelor's, 1999, Harvard University
LOOD, JAN CHRISTIAN, 2013; Master's, 2007, Lund University
LYNCH, RYAN CHRISTOPHER, 2017
MAHANKALI SRIDHAR, ARUN RAGHAV, 2017
MCCLINTOCK, ADELAIDE H., 2011; Bachelor's, 2005, Middlebury College
MEO, NICHOLAS OVANDA, 2011; Medical Doctorate, 2011, Mount Sinai School of Medicine
MORRELL, ERIC D, 2014
MOUSSAVI-HARAMI, FARID, 2009; Bachelor's, 1997, University of Iowa
NAIR, VISWAM S., 2019; Medical Doctorate, 2004, Ohio State University-Main Campus
NAKAMURA, KENTA, 2016; Medical Doctorate, 2010, University of California-San Francisco
NARLA, RADHIKA R, 2015; Medical Doctorate, 2008, University of Illinois at Urbana-Champaign
NOSS, ERIKA H, 2015; Doctorate, 2000, Case Western Reserve University
OROZCO, JOHNNIE J, 1995; Bachelor's, 1995, University of California-Los Angeles
OVERLAND, MARYANN KATHERIN, 2008; Bachelor's, 2000, Carleton College
PASKI, SHIRLEY C, 2012; Medical Doctorate, 2004, McMaster University
PATEL, RENA, 2015; Master's, 2008, Harvard University
PERCIVAL, MARY-ELIZABETH M, 2015; Bachelor's, 2000, Harvard University
PHIPPS, WARREN T., 2005; Medical Doctorate, 2002, Harvard University
RAMCHANDANI, MEENA, 2012; Medical Doctorate, 2009, Drexel University
RAMOS, JORGE D., 2012; Bachelor's, 2003, Rutgers University-Camden
RAMOS, KATHLEEN J., 2012; Bachelor's, 2004, University of Pennsylvania
REDDY, ASHOK, 2003; Bachelor's, 2000, Emory University
RIVARA, MATTHEW BERTRAND, 2001
SACK, CORALYNN, 2013
SAHA, SUPRIYA K, 2017; Bachelor's, 2001, Harvard University
SHAH, JAVEED ALI, 2005; Bachelor's, 1999, University of Chicago
SHARMA, RASHMI K, 2004; Master's, 2009, Johns Hopkins University
SILBERSTEIN, LEV, 2017
SINGH, NAMRATA, 2019; Medical Doctorate, 2005, All India Institute of Medical Sciences
STACK, SHOBHA W, 2015; Bachelor's, 2000, Massachusetts Institute of Technology
STANTON, SASHA ELIZABETH, 2011; Bachelor's, 1998, Mount Holyoke College
STEINBERG, ZACHARY L, 2011; Medical Doctorate, 2007, George Washington University
STERGACHIS, ANDREW B. * 2020; Medical Doctorate, 2015, University of Washington
STOLLA, MORITZ, 2016; Medical Doctorate, 2006, Ludwig Maximilians Universität München
THIRUMALAI, ARTHI, 2010; Medical Doctorate, 2005, University of Delhi
TOWN, JAMES, 2013; Medical Doctorate, 2009, Dartmouth College
TRIPLETTE, MATTHEW A, 2014
TSENG, DIANE, 2020

TUAZON, SHERILYN ALVARAN, 2015
TYLEE, TRACY, 1999; Bachelor's, 1998, Dartmouth College
UEDA, MASUMI, 2010; Bachelor's, 2006, Case Western Reserve University
VALDMANIS, PAUL NILS * 2017
VANDE VUSSE, LISA K, 2010; Medical Doctorate, 2006, Dartmouth College
VINAYAK, SHAVETA, 2018
VO, PHUONG, 2017
WAGNER, MICHAEL JACOB, 2017
WATKINS, DAVID ALAN * 2010; Medical Doctorate, 2010, Duke University
WONG, KAYLYN KIT MAN, 2016; Bachelor's, 2005, University of Toronto
WONG, SUSAN PAMELA YI, 2009; Bachelor's, 2002, Brown University
YANG, KAI-CHUN DANIEL, 2012; Bachelor's, 2005, The University of Texas
YOTSUMOTO FERTRIN, KLEBER, 2018
YUNG, RACHEL L, 2017; Medical Doctorate, 2006, Harvard University
ZHANG, CHUNBAI, 2020
ZHEN, DAVID BING, 2017

Microbiology

For complete faculty listing, please visit <http://microbiology.washington.edu/faculty/primaryjoint>

Professors

CHAMPOUX, JAMES J, 1972; Doctorate, 1970, Stanford University
FULLER, DEBORAH * 2010; Bachelor's, 1987, Hope College
GALLOWAY, DENISE A * 1982; Doctorate, 1975, CUNY; Molecular Biology
GREENBERG, E. PETER * 2005; Doctorate, 1977, Harvard University
HARWOOD, CAROLINE * 2005; Master's, 1976, Boston University
KATZE, MICHAEL GERALD, 1987; Master's, 1978, American College
LAGUNOFF, MICHAEL * 2001; Bachelor's, 1987, Oberlin College
MOSELEY, STEPHEN L. * 1985; Master's, 1978, Catholic University of America
MOUGOUS, JOSEPH D * 2007; Doctorate, 2004, University of California-Berkeley
MULLINS, JAMES I * 1994; Doctorate, 1978, University of Minnesota-Duluth
NESTER, EUGENE W, 1982; Doctorate, 1959, Case Western Reserve University
OVERBAUGH, JULIE MAUREEN * 1988; Doctorate, 1983, University of Colorado
PARSEK, MATTHEW R * 2006; Bachelor's, 1989, University of Illinois at Urbana-Champaign
SALAMA, NINA * 2001; Doctorate, 1995, Stanford University
SHERMAN, DAVID R. * 1998; Bachelor's, 1982, University of California-Berkeley
SHERRIS, JOHN C, 1959; Medical Doctorate, 1948, University College London
SINGH, PRADEEP * 2005; Bachelor's, 1985, Columbia University
SOKOURENKO, EVGUENI V. * 1999
TRAXLER, BETH A * 1992; Doctorate, 1987, Carnegie Mellon University

Associate Professors

BEINS, ALMIRA S, 2004; Doctorate, 2003, Medical College of Wisconsin
BUMGARNER, ROGER E. * 1992; Bachelor's, 1982, Eastern Illinois University
CHANDLER, MARK S, 1998; Doctorate, 1998, University of Illinois at Urbana-Champaign
GRAY, KENDALL M, 2000; Bachelor's, 1982, The University of Texas

LARA, JIMMIE CANO * 1982; Bachelor's, 1965, California State University
 MITTLER, JOHN E. * 1999; Bachelor's, 1984, University of California-Berkeley
 SMITH, JASON G * 2010; Doctorate, 2004, Harvard University
 THICKMAN, KAREN RAE, 2015; Bachelor's, 1999, Dartmouth College
 WOODWARD, JOSHUA J * 2011; Doctorate, 2009, University of California-Berkeley

Assistant Professors

AVGOUSTI, DAPHNE C * 2018; Doctorate, 2012, Columbia University
 HOLSTON, MICHELLE L * 2016; Bachelor's, 2004, Georgia Institute of Technology-Main Campus
 HYDE, JENNIFER * 2017; Bachelor's, 2004, University of Queensland

Neurological Surgery

For complete faculty listing, please visit <https://neurosurgery.uw.edu/education/faculty>

Professors

BROWD, SAMUEL * 2007; Bachelor's, 1993, University of Florida
 CHESNUT, RANDALL M * 2004; Bachelor's, 1976, University of Washington
 D'AMBROSIO, RAIMONDO * 1995; Doctorate, 1995, Università degli Studi di Milano
 ELLENBOGEN, RICHARD G., 1997; Bachelor's, 1980, Brown University
 HEVNER, ROBERT F, 2000; Bachelor's, 1983, Medical College of Wisconsin
 HOLLAND, ERIC C, 2013; Medical Doctorate, 1990, Stanford University
 KIM, LOUIS J., 2007; Medical Doctorate, 1999, Columbia University
 MACDONALD, CHRISTINE L, 2013; Bachelor's, 2002, Santa Clara University
 MORRISON, RICHARD S, 1994; Bachelor's, 1976, University of California-Los Angeles
 MURPHY, SEAN P, 2005; Doctorate, 1978, Open University UK
 OJEMANN, GEORGE A, 1982; Bachelor's, 1956, University of Iowa
 OJEMANN, JEFFREY G * 1984; Bachelor's, 1987, Princeton University
 RAMIREZ, JAN M * 2008; Doctorate, 1986, Universität Regensburg
 SEKHAR, LALIGAM N, 2004; Medical Doctorate, 1974, University of Madras
 SILBERGELD, DANIEL L, 1984; Bachelor's, 1979, Duke University
 TEMKIN, NANCY R * 1977; Doctorate, 1976, New York University
 ZHANG, FANGYI, 2003; Medical Doctorate, 1986, Capital University

Associate Professors

CRANE, COURTNEY, 2012; Bachelor's, 1998, James Madison University
 FERREIRA, MANUEL, 2009; Doctorate, 2002, Georgetown University
 GELFENBEYN, MIKHAIL, 2002; Medical Doctorate, 1978, Moscow State Technical University
 HAUPTMAN, JASON SCOTT, 2017; Bachelor's, 2001, Muhlenberg College; Biology
 HOFSTETTER, CHRISTOPH P, 2014; Medical Doctorate, 2005, International University Vienna
 KALUME, FRANCK * 2004; Bachelor's, 1997, Le Moyne-Owen College
 KO, ANDREW L * 2005; Bachelor's, 2000, Dartmouth College
 LEE, AMY, 2011; Bachelor's, 1995, College of William and Mary
 LEVITT, MICHAEL, 2007; Medical Doctorate, 2007, Loyola University Chicago
 OJEMANN, LINDA M, 1982; Bachelor's, 1956, Santa Rosa Junior College

Assistant Professors

BONOW, ROBERT, 2012; Bachelor's, 2007, Cornell University
 CECCHINI, MICHELLE MARIE, 2008; Medical Doctorate, 2008, Rush University
 HERRON, JEFFREY ANDREW * 2019
 KHAING, ZIN, 2014; Bachelor's, 1996, Catholic University of America
 PATEL, ANOOP P, 2016; Medical Doctorate, 2009, Harvard University
 RAVANPAY, ALI C., 2000; Bachelor's, 1999, University of California-Berkeley
 SAIGAL, RAJIV, 2016; Master's, 2002, Aalborg University

Senior Lecturer

PRIDGEON, JAMES S, 1973; Bachelor's, 1970, Stanford University

Neurology

For complete faculty listing, please visit <http://depts.washington.edu/neurolog/faculty/>

Professors

AMLIE-LEFOND, CATHERINE M., 2011; Bachelor's, 1985, University of California-Irvine
 BECKER, KYRA J., 1996; Medical Doctorate, 1989, Duke University
 BIRD, THOMAS D., 1983; Medical Doctorate, 1968, Cornell University
 CHAMBERLAIN, JEFFREY S * 1982; Bachelor's, 1978, Rice University
 DODRILL, CARL B, 1973; Master's, 1967, Purdue University-Main Campus
 FARRELL, DONALD, 1982; Medical Doctorate, 1965, George Washington University
 GOSPE, SIDNEY M, 2000; Doctorate, 1980, Duke University
 HOLMES, MARK D., 1987; Bachelor's, 1974, Ohio State University Agricultural Technical Institute
 LONGSTRETH, WILLIAM T. * 1981; Bachelor's, 1971, Hamilton College
 MARRA, CHRISTINA M., 1984; Master's, 1979, Oregon State University
 MILLER, JOHN W., 1999; Bachelor's, 1983, University of Illinois at Chicago
 NOVOTNY, EDWARD J, 2009; Bachelor's, 1975, University of California-Irvine
 POOLOS, NICHOLAS P * 2001; Bachelor's, 1984, Harvard University
 SAMII, ALI, 1998; Medical Doctorate, 1989, McGill University
 SANETO, RUSSELL P, 2001; Doctorate, 1994, Kaplan University-Des Moines Campus
 SPAIN, WILLIAM * 1981; Medical Doctorate, 1977, Columbia University
 SWANSON, PHILLIP D, 1964; Medical Doctorate, 1958, Johns Hopkins University
 TAPSCOTT, STEPHEN J. * 1986; Bachelor's, 1975, Hampshire College
 TIRSCHWELL, DAVID L., 1991; Medical Doctorate, 1991, Cornell University
 WAINWRIGHT, MARK STEPHEN, 2017; Bachelor's, 1982, King's College London
 WATSON, NATHANIEL F., 1996; Bachelor's, 1989, University of North Carolina
 WEISS, MICHAEL D., 2001; Bachelor's, 1986, Brown University
 WILENSKY, ALAN J, 1982; Bachelor's, 1963, Columbia University
 WILLIAMS, MICHAEL A, 2015; Doctorate, 1985, Indiana University-Bloomington
 ZABETIAN, CYRUS P. * 1988; Bachelor's, 1986, University of California-Los Angeles
 ZUNT, JOSEPH R. * 1991; Bachelor's, 1986, University of Minnesota-Duluth

Associate Professors

BLUME, HEIDI K, 1997; Medical Doctorate, 1997, Harvard University

BOZARTH, XIUHUA L, 2014; Medical Doctorate, 1990, China Medical University
CONSENS, FLAVIA B., 2010; Medical Doctorate, 1992, Universidad de la República
CREUTZFELDT, CLAIRE J., 2004; Medical Doctorate, 2003, Ludwig Maximilians Universität München
DISTAD, B. JANE, 2001; Bachelor's, 1989, Northwestern University
GRABER, JEROME JEFFREY, 2018; Master's, 2004, Johns Hopkins University; Public Health
HAKIMIAN, SHAHIN, 2004; Bachelor's, 1995, University of California-Los Angeles
HU, SHU-CHING, 2001; Doctorate, 2001, Johns Hopkins University
JAYADEV, SUMAN * 2000; Medical Doctorate, 2000, New York Medical College
KHOT, SANDEEP, 2002; Master's, 2002, Tulane University of Louisiana
KIM, HOJOONG, 2003; Bachelor's, 1997, Amherst College
KRAUS, ERIC E., 1991; Medical Doctorate, 1991, University of Minnesota-Duluth
OAKLEY, JOHN C. * 1993; Bachelor's, 1994, Pacific Lutheran University
OWENS, JAMES W, 1990; Doctorate, 1996, University of Washington
PERLMAN, SETH, 2019
RHOADS, KRISTOFFER, 2004; Doctorate, 2003, Colorado State University
STEINMAN, KYLE J, 2011; Bachelor's, 1996, Stanford University
TSAI, JEFFREY J, 2012; Doctorate, 2001, Cornell University
VON GELDERN, GLORIA, 2007; Medical Doctorate, 2004, Universität Leipzig
WANG, LEO HONG-LI, 2005; Bachelor's, 1997, University of California-Berkeley
WEINSTEIN, JONATHAN R. * 1998; Doctorate, 1998, University of California-Irvine
WUNDES, ANNETTE, 2003; Medical Doctorate, 1995, Heinrich Heine Universität Düsseldorf

Assistant Professors

BEATTY, CHRISTOPHER W., 2009; Medical Doctorate, 2009, Case Western Reserve University
BENEDETTI, GIULIA, 2019; Bachelor's, 2007, Ohio State University-Main Campus; Psychology
CHEN, DONG-HUI, 1999; Doctorate, 1999, Kobe University
DAVIS, ARIELLE PATRICIA, 2006; Medical Doctorate, 2006, Columbia University
DAVIS, MARIE Y, 2008; Bachelor's, 1999, Bryn Mawr College
DOMOTO-REILLY, KIMIKO, 2005; Bachelor's, 1999, Harvard University
ESMAEILI, BEHNAZ, 2020; Medical Doctorate, 2009, Tehran University of Medical Sciences
HUFFER, ANDREW A., 2014; Bachelor's, 2005, Carleton College
JOHNSON, SIMON, 2019; Bachelor's, 2009, Oregon State University; Biochemistry
KALANI, RIZWAN, 2014; Bachelor's, 2006, University of Florida
KIM, MICHELLE S, 2014; Master's, 2008, Fuller Theological Seminary in California
LEIGH, FAWN A., 2018
LOCKROW, JASON PARK, 2011; Bachelor's, 2002, University of South Carolina-Columbia
MA, MAXWELL TIANRAN, 2010; Medical Doctorate, 2010, Cornell University
MARASHLY, AHMAD, 2019
MCGRANAHAN, TRESA, 2018
MINGBUNJERDSUK, DARARAT, 2015; Medical Doctorate, 2000, Mahidol University
MONRAD, PRIYA ALEXANDRA, 2019; Medical Doctorate, 2006, University of Colorado Denver
MORGAN, LINDSEY, 2016; Bachelor's, 2004, University of Michigan-Ann Arbor
NATARAJAN, NIRANJANA, 2013; Bachelor's, 2004, Case Western Reserve University
PARSEY, CAROLYN MARIE, 2018; Bachelor's, 2009, Washington State University; Psychology
PATRICK, KRISTINA ELISE, 2018
PHATAK, VAISHALI, 2007; Master's, 1998, Lewis and Clark Community College
RANSOM, CHRISTOPHER B., 2010; Bachelor's, 1994, California Polytechnic State University-San Luis Obispo
SATO, AIMEE AOI, 2018

SHARMA, MALVEEKA, 2018

TORRES, KAREN, 2017; Master's, 2006, New York University; Psychology

TULLY, HANNAH M., 2006; Bachelor's, 1989, Bennington College

WAHLSTER, SARAH, 2015; Medical Doctorate, 2008, Ruprecht Karls Universität Heidelberg

Obstetrics and Gynecology

For complete faculty listing, please visit <https://obgyn.uw.edu/people/faculty>

Professors

ADAMS WALDORF, KRISTINA M * 1992; Medical Doctorate, 1998, Mayo Graduate School

AMIES OELSCHLAGER, ANNE-MA, 1997; Bachelor's, 1991, University of California-Los Angeles

CHENG, EDITH Y., 1987; Master's, 1979, Sarah Lawrence College

CHIANG, SEINE, 2006; Medical Doctorate, 1990, Oregon Health & Science University

CLIFTON, DONALD K, 1981; Bachelor's, 1968, Oregon State University

EASTERLING, THOMAS R, 1985; Bachelor's, 1972, Davidson College

ECKERT, LINDA O., 1992; Bachelor's, 1983, Carleton College

ESCHENBACH, DAVID A, 1976; Bachelor's, 1964, Lawrence University

FIALKOW, MICHAEL F., 1994; Bachelor's, 1989, University of Pennsylvania

GARDELLA, CAROLYN M., 1995; Bachelor's, 1989, Dartmouth College

GOFF, BARBARA A., 1993; Bachelor's, 1982, Brown University

GRAVETT, MICHAEL G., 1982; Bachelor's, 1973, Oregon State University

GRAY, HEIDI J., 1997; Medical Doctorate, 1997, University of California-Los Angeles

GREER, BENJAMIN E, 1980; Bachelor's, 1962, Allegheny College

HITTI, JANE, 1993; Bachelor's, 1984, Brown University

LENTZ, GRETCHEN M., 1983; Bachelor's, 1982, University of Puget Sound

NAPOLITANO, PETER GUY, 1996; Medical Doctorate, 1989, Loyola University Chicago

NEAL-PERRY, GENEVIEVE S., 2015; Bachelor's, 1988, Dartmouth College

PATTON, DOROTHY L, 1981; Bachelor's, 1971, University of Puget Sound

PRAGER, SARAH WARD, 2006; Bachelor's, 1993, Princeton University

REED, SUSAN D., 1991; Master's, 1979, Sarah Lawrence College

SHY, KIRKWOOD K, 1979; Bachelor's, 1969, St. Olaf College

STEINER, ROBERT A * 1977; Doctorate, 1975, University of Oregon

SWISHER, ELIZABETH M., 1992; Medical Doctorate, 1992, University of California-San Diego

VONTVER, LOUIS A, 1977; Bachelor's, 1956, University of Minnesota-Duluth

Associate Professors

CALLEGARI, LISA S * 2011; Bachelor's, 1994, Harvard University

DEBIEC, KATHERINE E, 1999; Medical Doctorate, 2005, University of Washington

DELANEY, SHANI S, 2009; Medical Doctorate, 2005, University of California-San Francisco

IRWIN, TRACY E, 2014; Bachelor's, 1997, Emory University

LIAO, JOHN B, 2010; Medical Doctorate, 1998, George Washington University

MAO, CONSTANCE, 1988; Bachelor's, 1984, Princeton University

MENDIRATTA, VIKSA, 1998; Bachelor's, 1990, Ohio State University Agricultural Technical Institute

MOORE, DONALD E, 1982; Medical Doctorate, 1967, Case Western Reserve University

STEPHENSON-FAMY, ALYSSA B, 1995; Bachelor's, 1999, University of Washington

URBAN, RENATA R, 2011; Bachelor's, 2000, Boston University

Assistant Professors

ALBRIGHT, CATHERINE M, 2016; Master's, 2016, Brown University
 BENSON, LYNDSAY S, 2014; Bachelor's, 2005, Brown University
 BURKE, ALSON K, 2005; Bachelor's, 2000, Mount Holyoke College
 DOLL, KEMI M, 2016; Medical Doctorate, 2008, Columbia University
 FAY, EMILY E, 2012; Medical Doctorate, 2012, Rutgers University-Newark
 FUCHS, ESTHER, 2016; Medical Doctorate, 2001, Universität Bern
 HERNDON, CHRISTOPHER N, 2017
 KIRBY, ANNA C, 2004; Bachelor's, 2002, Stanford University
 KREMER, MALLORY E, 2018
 MA, KIMBERLY K, 2011; Bachelor's, 2003, University of Iowa
 MICKS, ELIZABETH A, 2012; Medical Doctorate, 2006, Jefferson College
 NORQUIST, BARBARA S., 1998; Bachelor's, 1999, University of Washington
 PENNINGTON, KATHRYN P, 2011; Bachelor's, 2002, University of Michigan-Ann Arbor
 SHREE, RAJ, 2014; Medical Doctorate, 2010, University of Missouri-St Louis
 UNGER, JENNIFER A., 2005; Bachelor's, 1995, Mount Holyoke College
 YU, BO, 2016; Master's, 1997, Clemson University

Ophthalmology

Professors

CHEN, PHILIP P., 1996; Bachelor's, 1986, Stanford University
 KALINA, ROBERT E, 1967; Bachelor's, 1956, University of Minnesota-Duluth
 NEITZ, JOHN * 2009; Bachelor's, 1979, San Jose State University
 NEITZ, MAUREEN * 2009; Bachelor's, 1979, San Jose State University
 SAARI, JOHN C, 1982; Bachelor's, 1961, University of Central Oklahoma
 SHEN, TUENG T * 2003; Medical Doctorate, 1997, Harvard University
 TARCZY-HORNOCH, KRISTINA, 1998; Medical Doctorate, 1998, University of California-San Francisco
 VAN GELDER, RUSSELL * 2008; Bachelor's, 1985, Stanford University
 WEISS, AVERY H, 1991; Medical Doctorate, 1974, Miami University-Oxford

Associate Professors

ATTARAN REZAEI, KASRA, 2014; Medical Doctorate, 2001, Islamic Azad University, Tehran Medical Sciences
 BANITT, MICHAEL, 2015; Bachelor's, 1996, University of Missouri-St Louis
 CABRERA, MICHELLE T, 2014; Bachelor's, 2001, Stanford University
 CHAMBERS, CHRISTOPHER B, 2015; Medical Doctorate, 2005, Ohio State University Agricultural Technical Institute
 CHAO, JENNIFER, 2009; Bachelor's, 1996, Stanford University
 FRANCIS, COURTNEY, 2010; Bachelor's, 1999, Brown University
 HERLIHY, ERIN P., 2004; Medical Doctorate, 2003, Loyola University Chicago
 LAM, DEBORAH, 2002; Bachelor's, 1996, Northwestern University
 LEE, CECILIA S, 2014; Bachelor's, 2004, Emory University; Biology
 MUDUMBAL, RAGHU, 2000; Bachelor's, 1990, New York University
 OLMOS DE KOO, LISA, 2016; Medical Doctorate, 2005, Baylor University
 PEPPLER, KATHRYN, 2013; Doctorate, 2006, Baylor College of Medicine; Molecular Genetics
 TARAVATI, PARISA, 2009; Bachelor's, 2001, University of Iowa
 WEN, JOANNE C, 2014; Bachelor's, 2004, Harvard University

Assistant Professors

CHEE, YEWLIN E, 2016; Bachelor's, 2004, Princeton University
 CHEN, ANDREW, 2020; Medical Doctorate, 2015, University of California-Los Angeles
 JUNG, HOON C, 2014; Bachelor's, 1998, Cornell University
 KUMAR, SABESAN RAM * 2015; Bachelor's, 2005, Indian Institute of Technology Delhi
 LEE, AARON, 2015; Bachelor's, 2004, Harvard University
 MANOOKIN, MICHAEL B * 2009; Bachelor's, 2002, Brigham Young University
 MERCADO, CARMEL, 2019; Medical Doctorate, 2014, Johns Hopkins University
 PETERSEN, CHRISTINE A, 2015; Bachelor's, 2008, Eastern Oregon University; Biochemistry
 SARAF, STEVEN, 2017; Medical Doctorate, 2012, University of California-Los Angeles
 STACEY, ANDREW, 2016; Bachelor's, 2005, Brigham Young University
 YANG, DONG, 2019; Medical Doctorate, 2010, University of Florida
 ZHANG, MATTHEW MAO, 2018; Medical Doctorate, 2012, University of Pittsburgh-Pittsburgh Campus

Orthopaedics

For complete faculty listing, please visit <https://orthop.washington.edu/patient-care/find-a-doctor.html>

Professors

BAREI, DAVID P, 1999; Medical Doctorate, 1991, University of Ottawa
 BEINGESSNER, DAPHNE M., 2003; Bachelor's, 1993, University of Waterloo
 BELLABARBA, CARLO, 1999; Bachelor's, 1988, McGill University
 BENIRSCHKE, STEPHEN K., 1985; Medical Doctorate, 1979, Case Western Reserve University
 BIGOS, STANLEY J, 1982; Bachelor's, 1970, University of Missouri
 BRANSFORD, RICHARD, 1996; Medical Doctorate, 1996, Vanderbilt University
 CHANSKY, HOWARD ALAN, 1992; Bachelor's, 1982, Cornell University
 EYRE, DAVID R., 1985; Bachelor's, 1966, University of Leeds
 GROSS, TED S. * 2000; Master's, 1985, Pennsylvania State University-College of Medicine
 HANEL, DOUGLAS PAUL, 1992; Medical Doctorate, 1977, University of Missouri-St Louis
 HENLEY, MICHAEL BRADFORD, 1988; Bachelor's, 1975, University of Washington
 LEOPOLD, SETH S, 2002; Medical Doctorate, 1993, Cornell University
 MANNER, PAUL A, 2006; Medical Doctorate, 1991, McGill University
 MATSEN, FREDERICK A, 1973; Medical Doctorate, 1968, Baylor University
 MOSCA, VINCENT S., 1985; Bachelor's, 1973, University of Rochester
 NORR, SEAN E., 1997; Bachelor's, 1987, University of California-Berkeley
 SAGI, HENRY C, 2015; Bachelor's, 1990, University of British Columbia
 SANGEORZAN, BRUCE J., 1986; Medical Doctorate, 1981, Wayne State University
 SMITH, DOUGLAS G., 1989; Medical Doctorate, 1984, University of Chicago
 TAITSMAN, LISA A., 2001; Bachelor's, 1990, Brown University
 WARME, WINSTON J, 2007; Medical Doctorate, 1989, American University of Health Sciences
 WHITE, KLANE K, 2006; Medical Doctorate, 1997, George Washington University
 YANDOW, SUZANNE MARIE, 2014; Bachelor's, 1979, University of Alabama

Associate Professors

ALLAN, CHRISTOPHER H * 1998; Medical Doctorate, 1992, Northwestern University
 BRAGE, MICHAEL, 1991; Bachelor's, 1982, University of Illinois at Urbana-Champaign
 DUNBAR, ROBERT P, 2005; Bachelor's, 1985, College of the Holy Cross

FIROOZABADI, REZA, 2011; Master's, 2001, Boston University
 GEE, ALBERT O, 2012; Medical Doctorate, 2005, Washington State University
 HSU, JASON E, 2014; Bachelor's, 2003, Northwestern University
 HUANG, JERRY I, 2008; Bachelor's, 1996, University of California-Los Angeles
 KENNEDY, STEPHEN A, 2011; Medical Doctorate, 2006, University of British Columbia
 KLEWENO, CONOR P., 1997; Medical Doctorate, 2007, Harvard University
 KWON, RONALD Y * 2011; Master's, 2005, Stanford University
 LACK, WILLIAM DEAN, 2018; Medical Doctorate, 2007, Harvard University; Medicine
 SCHMALE, GREGORY A, 1982; Master's, 1984, Southern Illinois University

Assistant Professors

BAUER, JENNIFER M., 2017
 BLUMBERG, TODD, 2016
 BOUCHARD, MARYSE LORRAINE, 2013; Medical Doctorate, 2006, McGill University
 DAVIDSON, DARIN J, 2011; Master's, 2006, University of British Columbia
 FERNANDO, NAVIN D, 2014; Medical Doctorate, 2007, University of Western Ontario
 FITZ, DAVID W., 2019
 GITHENS, MICHAEL F, 2015; Master's, 2006, Georgetown University
 HAGEN, MIA SMUCNY, 2017
 HARWOOD, JARED, 2018
 HEBERT-DAVIES, JONAH, 2013; Medical Doctorate, 2008, Canadian University College
 IANNUZZI, NICHOLAS PAUL, 2009; Bachelor's, 2004, Princeton University
 KWEON, CHRISTOPHER, 2001; Bachelor's, 2001, University of Washington
 SAPER, MICHAEL G, 2017; Medical Doctorate, 2010, A T Still University of Health Sciences
 SASSOON, ADAM A, 2014; Master's, 2012, Mayo Graduate School
 SOUSA, TED CARR, 2006; Bachelor's, 2003, University of Southern California
 THOMPSON, MATTHEW J, 2016; Bachelor's, 2007, University of Kansas
 VERMA, KUSHAGRA, 2016; Bachelor's, 2004, Cornell University
 ZHOU, HAITAO, 2015

Otolaryngology – Head and Neck Surgery

For complete faculty listing, please visit <https://otolaryngology.uw.edu/faculty>

Professors

COLTRERA, MARC DANTE, 1986; Medical Doctorate, 1981, Yale University
 DISIS, MARY L., 1990; Bachelor's, 1981, Creighton University
 FUTRAN, NEAL DAVID, 1995; Medical Doctorate, 1987, New York University
 GATES, GEORGE A., 1993; Medical Doctorate, 1959, University of Michigan-Ann Arbor
 MANNING, SCOTT C, 1995; Bachelor's, 1976, Duke University
 MERATI, ALBERT L, 2007; Bachelor's, 1987, University of Washington
 MOE, KRISTEN S, 1984; Bachelor's, 1985, Harvard University
 NORTON, SUSAN J. * 1991; Master's, 1973, Purdue University-Main Campus
 PARIKH, SANJAY R, 2011; Bachelor's, 1991, University of British Columbia
 PERKINS, JONATHAN A., 1994; Doctorate, 1987, Iowa State University
 RUBEL, EDWIN W * 1986; Bachelor's, 1964, Michigan State University
 RUBINSTEIN, JAY T. * 2004; Bachelor's, 1981, Brown University

SIE, KATHLEEN CY, 1984; Bachelor's, 1981, University of Michigan-Ann Arbor
 STONE, JENNIFER * 1993; Doctorate, 1993, Boston University
 TEMPEL, BRUCE L., 1988; Bachelor's, 1978, Pacific Lutheran University
 WEAVER, EDWARD M., 1998; Master's, 2000, University of Washington
 WHIPPLE, MARK E. * 2001; Master's, 2001, Massachusetts Institute of Technology

Associate Professors

ABUZEID, AL WALEED, 2020; Bachelor's, 2005, University College London; Medicine
 HORN, DAVID L., 2010; Master's, 1997, Georgetown University
 HOULTON, JEFFREY J, 2014; Bachelor's, 2004, The University of Texas
 HUME, CLIFFORD * 1996; Doctorate, 1988, Cornell University
 JOHNSON, KAALAN E., 2013; Medical Doctorate, 2004, Loma Linda University
 MENDEZ, EDUARDO, 1999; Bachelor's, 1994, Princeton University
 MEYER, TANYA K, 2009; Bachelor's, 1992, University of California-Los Angeles
 OU, HENRY, 1998; Bachelor's, 1993, Cornell University
 SARDESAI, MAYA G., 2008; Bachelor's, 1997, McMaster University

Assistant Professors

BARBER, BRITTANY, 2018; Medical Doctorate, 2017, University of Oxford
 BLY, RANDALL, 2009; Medical Doctorate, 2009, Loyola University Chicago
 BONILLA VELEZ, JULIANA, 2018; Medical Doctorate, 2011, Universidad del Valle
 DAHL, JOHN P., 2018; Medical Doctorate, 2009, Pennsylvania State University-College of Medicine
 GILIBERTO, JOHN PAUL, 2016; Medical Doctorate, 2010, Dartmouth College
 HUMPHREYS, IAN M, 2015; Medical Doctorate, 2009, Lake Erie College
 JAFARI, ARIA, 2020
 KOHLBERG, GAVRIEL, 2019; Medical Doctorate, 2010, Stanford University
 LU, GUANNING NINA, 2019; Medical Doctorate, 2013, Northwestern University
 RIZVI, ZAIN, 2019; Medical Doctorate, 2013, Wayne State University

Pediatrics

For complete faculty listing, please visit <https://www.peds.uw.edu/directory>

Professors

ADAM, MARGARET P., 2009; Bachelor's, 1992, Stanford University
 ADEREM, ALAN A. * 1996; Bachelor's, 1976, Stellenbosch University
 AITCHISON, JOHN * 2004; Bachelor's, 1986, McMaster University
 BADEN, HARRIS P., 1992; Bachelor's, 1984, The University of Texas
 BAKER, KEVIN, 2009; Master's, 2002, University of Minnesota-Duluth
 BAMSHAD, MICHAEL J * 2005; Master's, 1991, University of Kansas
 BATRA, MANEESH, 2000; Bachelor's, 1994, Brown University
 BEIER, DAVID R, 2012; Bachelor's, 1977, Harvard University
 BERGMAN, ABRAHAM, 1982; Medical Doctorate, 1958, Case Western Reserve University
 BERNSTEIN, IRWIN D, 1980; Bachelor's, 1963, Connecticut College
 BREI, TIMOTHY, 2013; Bachelor's, 1978, Midland College
 BREUNER, CORA C., 1991; Bachelor's, 1978, Franklin and Marshall College
 BROGAN, THOMAS V, 1993; Bachelor's, 1980, Stanford University

CARPENTER, PAUL A., 1995; Bachelor's, 1985, University of Sydney
CHABRA, SHILPI, 2003; Medical Doctorate, 1985, Mumbai University
CHRISTAKIS, DIMITRI A. * 1993; Medical Doctorate, 1993, University of Pennsylvania
CHUNG, ESTHER, 2019; Medical Doctorate, 1991, Columbia University
COOPER, TODD, 2015; Medical Doctorate, 1998, Nova Southeastern University
COX, TIMOTHY C., 2006; Bachelor's, 1989, University of Adelaide
CUNNINGHAM, MICHAEL L. * 1988; Bachelor's, 1983, University of Vermont
DE LA MORENA, MARIA TERESA, 2018
DEL BECCARO, MARK A., 1985; Bachelor's, 1979, Stanford University
DENNO, DONNA M. * 1993; Medical Doctorate, 1991, University of Michigan-Ann Arbor
DIEKEMA, DOUGLAS S., 1990; Bachelor's, 1981, Calvin College
DIPPLE, KATRINA M, 2016; Bachelor's, 1987, Indiana University-Bloomington
DOBYNS, WILLIAM B., 2010; Medical Doctorate, 1978, Mayo Graduate School
DOHERTY, DANIEL A. * 1998; Bachelor's, 1986, Massachusetts Institute of Technology
EBEL, BETH E. * 1999; Medical Doctorate, 1996, Harvard University
ENGLUND, JANET A., 2002; Bachelor's, 1976, University of Michigan-Ann Arbor
FANTEL, ALAN G, 1982; Master's, 1969, University of Oregon
FECHNER, PATRICIA Y., 2006; Bachelor's, 1981, Massachusetts Institute of Technology
FLYNN, JOSEPH T, 2007; Bachelor's, 1983, Hamilton College
FRENKEL, LISA M. * 1994; Bachelor's, 1977, University of Kansas
GEDDIS, AMY, 1997; Bachelor's, 1987, Chatham University
GIBSON, RONALD L, 1982; Bachelor's, 1975, University of Washington
GLASS, IAN, 2000; Medical Doctorate, 1979, University of Otago
GUMBINER, BARRY M * 2015; Doctorate, 1982, University of California-San Francisco
HAHN, SIHOUN, 2006; Medical Doctorate, 1983, Korea University
HAMBLETT, NICOLE MAYER, 1994; Bachelor's, 1994, Santa Clara University
HANEVOLD, CORAL DAWN, 2007; Bachelor's, 1976, Emory University
HANSEN, THOMAS N, 2005; Medical Doctorate, 1973, Baylor University
HAWKINS, DOUGLAS S., 1990; Bachelor's, 1986, College of William and Mary
HAYS, ROSS M. * 1983; Bachelor's, 1973, University of Washington
HING, ANNE V., 1999; Bachelor's, 1981, Capital University
HINGORANI, SANGEETA R., 1990; Bachelor's, 1988, Yale University
HOFFMAN, LUCAS * 1998; Bachelor's, 1990, University of California-Berkeley
HORSLEN, SIMON PETER, 2005; Medical Doctorate, 1984, University of Bristol
JACKSON, J CRAIG, 1979; Bachelor's, 1975, Duke University
JENNY, CAROLE, 1983; Bachelor's, 1970, Dartmouth College
JENSEN, MICHAEL C. * 1984; Bachelor's, 1986, Tufts University
JOHNSTON, BRIAN D., 1990; Bachelor's, 1986, Harvard University
JONES, THOMAS K, 1983; Medical Doctorate, 1978, Jefferson College
JUUL LEDBETTER, SANDRA, 1982; Doctorate, 1997, University of Chicago
KAPPE, STEFAN H. I. * 2004; Master's, 1991, Rheinische Friedrich Wilhelms Universität Bonn
KARR, CATHERINE * 1987; Bachelor's, 1984, University of Michigan-Ann Arbor
KLEIN, EILEEN J., 1988; Medical Doctorate, 1988, Johns Hopkins University
LAW, YUK M., 2006; Bachelor's, 1983, Brown University
LAWLOR, ELIZABETH RACHEL * 2020
LEWIN, MARK, 2001; Master's, 1987, Freed-Hardeman University
LIU, LENNA L., 1992; Bachelor's, 1987, Cornell University
MAGARET, AMALIA SOPHIA * 1997; Bachelor's, 1992, University of Notre Dame
MAJESKY, MARK W. * 1982; Bachelor's, 1977, San Jose State University

MARSHALL AARONSON, SUSAN, 1979; Bachelor's, 1976, University of California-Los Angeles
MATTHEWS, DANA C., 1984; Bachelor's, 1977, University of Washington
MAYOCK, DENNIS EDWARD, 1985; Bachelor's, 1972, Miami University-Oxford
MAZOR, SUZAN, 2004; Bachelor's, 1991, University of Illinois at Urbana-Champaign
MCCARTY, CAROLYN A. * 1999; Master's, 1995, University of California-Los Angeles
MCDONALD, RUTH A., 1987; Bachelor's, 1979, Gustavus Adolphus College
MCPHILLIPS, HEATHER A., 1998; Bachelor's, 1990, Alma College
MEFFORD, HEATHER C, 1994; Doctorate, 2001, University of Washington
MELVIN, ANN JORNS, 1987; Bachelor's, 1980, Kansas State University
MELZER, SANFORD M., 1990; Medical Doctorate, 1982, Mount Sinai School of Medicine
MENDOZA, JASON A. * 2001; Medical Doctorate, 2001, Rush University
MERRITT, JOHN LAWRENCE, 2007; Bachelor's, 1994, American University
MESHINCHI, SOHEIL, 1997; Bachelor's, 1984, University of Michigan-Ann Arbor
MIAO, CAROL H, 1981; Bachelor's, 1978, National Taiwan University
MILLEN, KATHLEEN J., 2010; Bachelor's, 1988, University of Calgary
MILLER, DANIEL G., 1989; Doctorate, 1994, University of Washington
MUSA, NDIDIAMAKA L., 2013; Medical Doctorate, 1987, University of Liberia
MYLER, PETER J. * 1993; Bachelor's, 1977, University of Queensland
NOVACK, ALVIN H, 1982; Bachelor's, 1954, Temple University
OCHS, HANS D, 1969; Medical Doctorate, 1969, Universität Freiburg
OLSON, JAMES M. * 1991; Medical Doctorate, 1991, University of Michigan-Ann Arbor
ORENTAS, RIMAS * 2018; Doctorate, 1991, Johns Hopkins University
PAGON, ROBERTA A, 1979; Medical Doctorate, 1972, Harvard University
PARK, JULIE RUGGIERI, 1988; Bachelor's, 1983, University of Vermont
PIHOKER, CATHERINE, 1997; Medical Doctorate, 1987, Albany Medical College
PORTMAN, MICHAEL A., 1992; Bachelor's, 1974, John Carroll University
RAJAGOPAL, LAKSHMI * 1999; Bachelor's, 1993, Bangalore University
RAMSEY, BONNIE W, 1978; Medical Doctorate, 1976, Harvard University
RAWLINGS, DAVID J * 2001; Bachelor's, 1979, Davidson College
REDDING, GREGORY J, 1980; Medical Doctorate, 1974, Stanford University
RICHARDSON, LAURA P., 1998; Bachelor's, 1991, University of Michigan-Ann Arbor
RIVARA, FREDERICK P. * 1984; Bachelor's, 1970, College of the Holy Cross
ROSE, TIMOTHY M * 1991; Doctorate, 1981, Switzerland University of Business and International Studies Geneva
ROSENFELD, MARGARET, 1988; Medical Doctorate, 1988, Harvard University
ROTH, CHRISTIAN L., 2007; Medical Doctorate, 1990, University of Professional Education Heidelberg
SAELENS, BRIAN E * 2006; Bachelor's, 1992, Cornell University
SALERNO, JACK, 2003; Medical Doctorate, 1996, University of California-San Diego
SCHARENBERG, ANDREW M., 2000; Bachelor's, 1985, Indiana University-Bloomington
SCOTT, C RONALD, 1965; Medical Doctorate, 1959, University of Washington
SESLAR, STEPHEN, 2008; Doctorate, 1993, Georgetown University
SHUGERMAN, RICHARD P, 1984; Bachelor's, 1979, Case Western Reserve University
SIDBURY, ROBERT, 2000; Bachelor's, 1985, Duke University
SMITH, CHARLES VINCENT, 2007; Bachelor's, 1970, Rice University
SMITH, JODI, 1999; Bachelor's, 1991, McGill University
SMITH, JOSEPH * 2003; Bachelor's, 1988, Macalester College
SMITH, MARK S, 1977; Medical Doctorate, 1969, Virginia University of Lynchburg
SMITH, SHERILYN, 1994; Medical Doctorate, 1989, Baylor University
SODORA, DONALD L * 2008; Bachelor's, 1985, Rutgers University-Camden
STAPLETON, F. BRUDER, 1996; Bachelor's, 1968, University of Kansas

STOUT, JAMES W., 1986; Master's, 1981, Duke University
STUART, KENNETH DANIEL * 1985; Bachelor's, 1963, Northeastern University
STUDHOLME, COLIN * 2011; Bachelor's, 1990, University of Bradford
SUSKIND, DAVID, 2003; Medical Doctorate, 1997, Louisiana State University
SYMONS, JORDAN, 1999; Medical Doctorate, 1992, Columbia University
TORBETT, BRUCE E, 2020; Doctorate, 1988, University of California-Los Angeles; Philosophy
URDAHL, KEVIN B. * 1995; Bachelor's, 1987, Concordia College
WALKER, WILLIAM O., 1993; Bachelor's, 1975, Tulane University of Louisiana
WALKER-HARDING, LESLIE, 2016
WATSON, ROBERT SCOTT, 1993; Medical Doctorate, 1993, University of Pennsylvania
WEDGWOOD, RALPH J, 1962; Medical Doctorate, 1947, Harvard University
WELSH, JOHN P. * 2009; Bachelor's, 1983, Bucknell University
WILFOND, BENJAMIN S * 2006; Bachelor's, 1981, Muhlenberg College
WOODWARD, GEORGE A., 2003; Medical Doctorate, 1983, Temple University
YOUNG, LUCIANA T, 2016; Bachelor's, 1985, Wayne State University
ZERR, DANIELLE M., 1993; Bachelor's, 1989, Brandeis University
ZIMMERMAN, JERRY J., 1998; Bachelor's, 1970, University of Wisconsin Colleges
ZINNER, SAMUEL, 2003; Bachelor's, 1987, University of California-Berkeley

Associate Professors

AHRENS, KYM, 2002; Medical Doctorate, 2002, University of Iowa
ALBERS, ERIN, 2012; Bachelor's, 2000, University of Illinois at Urbana-Champaign
AMBARTSUMYAN, LUSINE, 2013; Medical Doctorate, 2007, Drexel University
ARYA, BHAWNA, 2013; Bachelor's, 2002, Johns Hopkins University
BECK, ANITA E., 2005; Bachelor's, 1988, Massachusetts Institute of Technology
BENDER, MICHAEL ANGELO, 1982; Bachelor's, 1982, University of California-San Diego
BHAT, AARTI, 2011; Medical Doctorate, 1997, Guru Gobind Singh Indraprastha University
BJORNSON, KRISTIE F, 1986; Bachelor's, 1979, University of Minnesota-Duluth
BLEAKLEY, MARIE, 2002; Medical Doctorate, 1993, Flinders University
BRANDLING-BENNETT, HEATHER, 2009; Bachelor's, 1999, Dartmouth College
BROWN, JULIE C, 1996; Medical Doctorate, 1991, McGill University
BUDDHE, SUJATHA, 2013; Medical Doctorate, 2003, Osmania University
BURNS, REBEKAH A., 2013; Bachelor's, 2003, Reed College
BURROUGHS, LAURI, 2001; Bachelor's, 1993, University of Wisconsin-Madison
CAGLAR, DERYA, 2008; Medical Doctorate, 2001, New York Medical College
CHAN, TITUS, 2013; Bachelor's, 2002, University of Alberta
CHEN, KARIN, 2020
CHEN, MAIDA L. * 2005; Bachelor's, 1994, Northwestern University
CHOW, ERIC J., 2001; Master's, 2000, University of California-Berkeley
CHRISMAN, SARA P. D., 2003; Bachelor's, 1993, University of Pennsylvania
CHUN, TERRENCE, 2004; Medical Doctorate, 1997, American College
CLARK, JONNA D., 2008; Bachelor's, 1998, Georgetown University
COKER, TUMAINI, 2016; Bachelor's, 1995, Stanford University
CROWELL, CLAUDIA S, 2003; Medical Doctorate, 2006, University of Washington
DEBLEY, JASON S., 2000; Medical Doctorate, 1995, Northwestern University
DEEN, JASON F, 2010; Bachelor's, 1996, George Washington University
DELROSSO, LOURDES, 2018
DI GENNARO, JANE L., 2001; Bachelor's, 1994, Colgate University

DICHEK, A. K. HELEN L, 2001; Bachelor's, 1976, Académie Universitaire Louvain
DIVALL, SARA A, 2014; Bachelor's, 1995, University of Wisconsin-Madison
EVANS, YOLANDA N, 1999; Medical Doctorate, 2005, Oregon Health & Science University
FARRIS, REID W., 2005; Bachelor's, 1999, Pacific Lutheran University
FILES, MATTHEW D, 2010; Bachelor's, 2002, South University
FRIEDLAND-LITTLE, JOSHUA M, 2000; Bachelor's, 2000, Bowdoin College
GALLAGHER, EMILY R, 2007; Bachelor's, 1996, Brown University
GARDNER, REBECCA A, 2006; Bachelor's, 1999, Bates College
GIEFER, MATTHEW J, 2009; Medical Doctorate, 2006, Loyola University Chicago
GRAHAM, ELINOR A., 1983; Master's, 1993, Johns Hopkins University
GROW, H. MOLLIE GREVES, 2003; Bachelor's, 1997, Dartmouth College
GRUNDNER, CHRISTOPH * 2010; Master's, 1999, Humboldt Universität zu Berlin
GUPTA, DEEPTI, 1999; Bachelor's, 2002, University of Washington
HAYWARD, KRISTEN, 2001; Bachelor's, 1996, Duke University
HEIKE, CARRIE, 1997; Bachelor's, 1996, University of Washington
HELTSHE, SONYA L., 2010; Master's, 2004, University of Colorado Denver
HOFSTETTER, ANNIKA M, 2014; Master's, 2011, Columbia University
HOLM, VANJA A, 1982; Medical Doctorate, 1954, Karolinska Institute
HONG, BORAH J, 2007; Bachelor's, 2002, Duke University
HRABOVSKY KOVES, ILDIKO, 2008; Medical Doctorate, 1994, University of Pécs
HSU, EVELYN K., 2003; Bachelor's, 1998, University of Wisconsin Colleges
INWARDS-BRELAND, DAVID JEROME, 2009; Master's, 1996, University of California-Berkeley
JACKSON, SHAUN W., 2008; Medical Doctorate, 2001, University of Cape Town
JAMES, RICHARD G. * 2010; Doctorate, 2005, Harvard University
JASPAN, HEATHER B, 1999; Doctorate, 1999, Tulane University of Louisiana
JOHNSTON, TROY, 1999; Bachelor's, 1986, Virginia University of Lynchburg
JOSHI, SARITA, 2019
KAPLAN, RON L., 2003; Bachelor's, 1987, Brown University
KATZENELLENBOGEN, RACHEL A, 1999; Bachelor's, 1994, Harvard University
KAUSHANSKY, ALEXIS L * 2015; Master's, 2008, Harvard University
KEMNA, MARISKA S, 2008; Medical Doctorate, 1995, Erasmus University of Rotterdam
KETT, JENNIFER C., 2020; Medical Doctorate, 2005, Albert Einstein College of Medicine
KIM, GRACE J, 2013; Bachelor's, 2000, Smith College
KING, MARY ALICE, 2001; Bachelor's, 1996, University of California-Berkeley
KRONMAN, MATTHEW P., 2003; Master's, 2011, University of Pennsylvania
LEARY, SARAH E., 2009; Bachelor's, 1996, Duke University
LEE, DALE Y, 2014; Bachelor's, 2002, Rice University
LEGER, KASEY J, 2014; Bachelor's, 2001, The University of Texas
LEU, MICHAEL * 1984; Bachelor's, 1985, University of Washington
LEWIS, CHARLOTTE * 1998; Master's, 1988, Cornell University
LEWIS-NEWBY, MITHYA, 1996; Bachelor's, 1993, University of Washington
LOREN, DAVIA LIBA, 2004; Bachelor's, 1987, Oberlin College
LUQUETTI, DANIELA V., 2009; Doctorate, 2009, Universidade de São Paulo (USP)
MAGA, ALI MURAT, 2008; Bachelor's, 1999, Ankara University
MCGUIRE, JOHN K, 2004; Bachelor's, 1991, Northwestern University
MCKINNEY, CHRISTY M., 2002; Master's, 2002, Tulane University of Louisiana
MIRZAA, GHAYDA, 2012; Bachelor's, 2001, Arabian Gulf University
MORENO, MEGAN A, 2005; Medical Doctorate, 2000, George Washington University
MORRAY, BRIAN, 2008; Bachelor's, 2003, Duke University

MUNSHI, RAJ P., 2009; Bachelor's, 1999, Rutgers University-Camden
MURPHY, JANET HAWORTH, 1982; Bachelor's, 1964, University of Manchester
NAGLE, KYLE B., 2017
NANDA, KABITA, 2012; Bachelor's, 1999, Indiana University-Bloomington
NICHOLS, DAVID, 2016; Medical Doctorate, 2001, University of Missouri-Columbia
NIELSEN, KATIE R., 2006; Bachelor's, 2001, Truman State University
NIGAM, VISHAL, 2017; Medical Doctorate, 1999, Baylor College of Medicine
OKAMURA, DARYL M, 1988; Medical Doctorate, 1998, University of Hawaii
OLSON, AARON K., 2006; Bachelor's, 1995, Hamline University
ONG, THIDA, 2009; Bachelor's, 1999, McGill University
OPEL, DOUGLAS J., 2002; Bachelor's, 1996, Duke University
OUKKA, MOHAMED, 2009; Master's, 1991, Université Denis Diderot Paris VII
PAK-GORSTEIN, SUZINNE, 2003; Medical Doctorate, 2000, Michigan State University
PARIS, CAROLYN A., 1996; Medical Doctorate, 1991, Cornell University
PETROVIC, ALEKSANDRA, 2016; Medical Doctorate, 1997, Oregon Health & Science University
PILIPONSKY, ADRIAN M. * 2011; Doctorate, 2003, Hebrew University of Jerusalem
PINTO, NAVIN, 2015; Bachelor's, 2001, University of Missouri-St Louis
REID, JENNIFER R, 1989; Bachelor's, 1993, Columbia University
RINGOLD, SARAH, 2001; Medical Doctorate, 2001, Harvard University
ROBERTS, JOAN S., 1992; Bachelor's, 1986, Johns Hopkins University
ROSENBERG, ABBY R., 2006; Bachelor's, 1996, Brandeis University
RUTMAN, LORI ELLEN, 2011; Medical Doctorate, 2008, Stanford University
SALEHI, PARISA, 2013; Bachelor's, 2003, University of California-Riverside
SARKAR, SUROJIT * 2015; Master's, 1995, Jawaharlal Nehru University
SATHER, DAVID NOAH, 2018
SATHYANARAYANA, SHEELA, 2002; Bachelor's, 1997, Duke University
SAWYER, TAYLOR L, 2012; Bachelor's, 1997, Coe College
SCHENKMAN, KENNETH A. * 1990; Medical Doctorate, 1986, Indiana University-Bloomington
SCHULTZ, AMY H., 2005; Bachelor's, 1992, Cornell University
SHAFII, TARANEH, 2000; Medical Doctorate, 1996, University of Louisville
SHAH, SEEMA, 2016; Bachelor's, 2000, Stanford University
SHENOI, SUSAN, 2008; Medical Doctorate, 1998, Mumbai University
SHIC, FREDERICK, 2016; Bachelor's, 1992, California Institute of Technology
SHIH, ANDY, 2018; Doctorate, 2006, University of British Columbia
SIMON, TAMARA D., 2010; Bachelor's, 1994, Colgate University
SKODA-SMITH, SUZANNE, 2008; Bachelor's, 1983, University of California-Berkeley
SMITH, LINCOLN S, 2003; Bachelor's, 1993, University of Wisconsin Colleges
SORIANO, BRIAN D, 2007; Bachelor's, 1991, Cornell University
STONE, KIMBERLY P, 2007; Bachelor's, 1994, Tufts University
SUN GRAHAM, ANGELA, 2012; Medical Doctorate, 2006, University of Missouri-St Louis
TAMURA, GLEN S., 1987; Doctorate, 1987, Stanford University
TANDON, POOJA S., 2008; Bachelor's, 1995, Brown University
TAPLIN, CRAIG, 2009; Bachelor's, 1997, University of New South Wales
THAKAR, MONICA, 2018; Medical Doctorate, 2001, Medical University of South Carolina
TIEDER, JOEL S., 2004; Medical Doctorate, 1999, Medical College of Georgia
TREHAN, INDI, 2020; Medical Doctorate, 2004, Northwestern University
UMOREN, RACHEL A, 2015; Master's, 2010, Indiana University-Bloomington
USPAL, NEIL G., 2011; Bachelor's, 1999, Pennsylvania State University-College of Medicine
VERNON, MARGARET MACMILLAN, 2000; Bachelor's, 1996, Cornell University

VON SAINT ANDRE-VON ARNIM, AMELIE, 2009; Medical Doctorate, 2004, Universität Würzburg
VORA, SURABHI B., 2013; Master's, 2001, Harvard University
WAGNER, THOR A., 2005; Bachelor's, 1996, Princeton University
WEISSMAN, SCOTT, 2000; Medical Doctorate, 1997, University of California-Irvine
WENGER, TARA L, 1998; Master's, 2004, University of Rochester
WIGHTMAN, AARON G., 2008; Medical Doctorate, 2008, Case Western Reserve University
WRIGHT, JEFFREY, 1988; Bachelor's, 1978, University of Missouri-Kansas City
YANAY, OFER, 1998; Bachelor's, 1989, Hebrew University of Jerusalem
YUNG, DELPHINE, 1989; Medical Doctorate, 1997, Stanford University

Assistant Professors

ALBERT, CATHERINE M, 2016; Bachelor's, 2004, Brandeis University
ALLENSPACH, ERIC J., 2010; Bachelor's, 1999, University of Michigan-Ann Arbor
ANNESLEY, COLLEEN E, 2015; Bachelor's, 2002, Pennsylvania State University-College of Medicine
ASPESBERRO, FRANCOIS P., 1999; Medical Doctorate, 1994, Université Catholique de Louvain
BASIAGA, MATTHEW, 2016; Bachelor's, 2004, Lock Haven University
BECK, JIMMY, 2001; Bachelor's, 2000, Duke University
BENNETT, JAMES T., 2008; Doctorate, 2008, New York University
BERKMAN, EMILY, 2011; Bachelor's, 2006, Barnard College
BHATT, NEEL S, 2019; Medical Doctorate, 2009, B.J. Medical College
BILLIMORIA, ZEENIA C, 2015; Medical Doctorate, 2008, Bharti Vidyapeeth University
BLONDET, NIVIANN M, 2016
BOOS, MARKUS D, 2015; Bachelor's, 2000, Kalamazoo College
BROWN, EMILY C, 2015; Medical Doctorate, 2012, University of Virginia-Main Campus
BRYAN, MERSINE ALEXIS, 2009; Bachelor's, 2005, Indiana University-Bloomington
CHANG, IRENE, 2015; Medical Doctorate, 2014, University of Miami
CHANG, PEARL, 2016; Bachelor's, 2004, Stanford University
CHERRY, TIMOTHY J * 2017; Bachelor's, 2000, Cornell University
CHONG, JESSICA X., 2012; Bachelor's, 2007, Princeton University
COGEN, JONATHAN, 2014; Bachelor's, 2006, Cornell University
DAHLBERG, ANN E. R., 1995; Medical Doctorate, 2005, Harvard University
DAWSON-HAHN, ELIZABETH E, 2013; Bachelor's, 2005, Cornell College
DERVAN, LESLIE ANN, 2011; Bachelor's, 2004, Auburn University-Montgomery
DESAI, ARTI, 2012; Bachelor's, 2002, University of Michigan-Ann Arbor
EDWARDS, LINDSAY A, 2019; Medical Doctorate, 2011, Georgetown University
ELDREDGE, LAURIE CHRISTINE, 2009; Doctorate, 2008, Northwestern University
ELLISON, JONATHAN S, 2014; Bachelor's, 2004, Denison University
EVANS, KELLY, 2004; Bachelor's, 1998, Duke University
FURLAN, SCOTT, 2015; Bachelor's, 1998, Macalester College
GARRISON, NANIBAA, 2015; Doctorate, 2010, Stanford University
GERMAN, KENDELL R, 2015; Medical Doctorate, 2011, University of California-Berkeley
GOLUB, SARAH A, 2018; Medical Doctorate, 2012, Tel Aviv University
GRAY, MEGAN, 2006; Bachelor's, 2005, University of Washington
GREEN, NICOLE F, 2016; Medical Doctorate, 2013, Columbia University
HADLAND, BRANDON K., 2006; Bachelor's, 1998, Harvey Mudd College
HALBACH, SUSAN M., 2004; Medical Doctorate, 2004, University of Chicago
HARRINGTON, WHITNEY, 2004; Bachelor's, 2004, Harvard University
HARTFORD, EMILY A, 2008; Medical Doctorate, 2008, Oregon Health & Science University

HARTMANN, SILVIA M., 2011; Bachelor's, 2004, Brown University
HEDSTROM, ANNA BRUETT, 2005; Bachelor's, 2004, Pomona College
HERNANDEZ, RAFAEL, 1999; Bachelor's, 1998, Dartmouth College
HODAX, JUANITA KAY, 2018; Medical Doctorate, 2012, New York Medical College
JENNINGS, REBECCA, 2014; Bachelor's, 2003, Dartmouth College
KALIA, VANDANA, 2015; Master's, 1995, Jawaharlal Nehru University
KEILMAN, ASHLEY ELIZABETH, 2018
KETTERL, TYLER G, 2015
KONOLD, VICTORIA J, 2020; Medical Doctorate, 2014, Northwestern University
KRAFT, STEPHANIE A, 2016; Bachelor's, 2009, Stanford University
LAM, CHRISTINA, 2016; Bachelor's, 2003, California Institute of Technology
LAMBLE, ADAM, 2017; Bachelor's, 2006, Kansas State University; Biology
LAW, JANESEA, 2018; Medical Doctorate, 2010, University of California-Irvine
LILJENQUIST, KENDRA S, 2015; Doctorate, 2016, Boston University
LINDELL, DENNIS M., 2009; Bachelor's, 1997, University of Michigan-Ann Arbor
LION, KATHERINE C., 2007; Bachelor's, 2002, Princeton University
MA, SHUYI, 2016
MALIK, FAISAL SALEEM, 2009; Medical Doctorate, 2009, Albany Medical College
MALLENHALLI CHIKKABYRA, S, 2016; Medical Doctorate, 2000, Bangalore University
MALLHI, KANWALDEEP, 2016; Bachelor's, 2005, McMaster University
MAVES, LISA A * 1992; Doctorate, 1997, University of Washington
MCDANIEL, CORRIE E, 2014; Bachelor's, 2005, Seattle Pacific University
MENON, SHINA, 2017; Medical Doctorate, 2002, Maulana Azad National Institute of Technology
MERJANEH, LINA, 2014; Medical Doctorate, 2004, University of Aleppo
METZ, JAMES B, 2006; Master's, 2002, George Washington University
ODA, SHANNON K, 2020
OGIMI, CHIKARA, 2015
PAQUETTE, ALISON G, 2020; Doctorate, 2011, Dartmouth College; Molecular Biology
PARIKH, PRATIK, 2015; Medical Doctorate, 2012, Drexel University
PEREZ, KRISTLE, 2016; Bachelor's, 2006, University of Miami
PHAM, DO-QUYEN, 2016; Medical Doctorate, 2012, Louisiana State University
POLLACK, ARI H., 2002; Medical Doctorate, 2002, Tulane University of Louisiana
POLLOCK, ALLISON J, 2020
PUIA-DUMITRESCU, MIHAI, 2018; Medical Doctorate, 2007, University of Medicine and Pharmacy Iuliu Hatieganu Cluj Napoca
RADMAN, MONIQUE R., 2014; Medical Doctorate, 2006, Albany Medical College
REEVES, STEPHEN R., 2011; Bachelor's, 2001, Morehead State University
ROBERTS, ALISSA J. C., 2011; Medical Doctorate, 2011, Dartmouth College
ROOHOLAMINI, SAHAR, 2013; Bachelor's, 2001, Pomona College
ROSENWASSER, NATALIE, 2019; Medical Doctorate, 2013, St. George's University School of Medicine
RUEDINGER, EMILY, 2015; Bachelor's, 2004, University of Wisconsin Colleges
SAGIV, EYAL, 2019; Medical Doctorate, 2011, Tel Aviv University
SCARLETT, JARRAD, 2000; Doctorate, 2009, Oregon Health & Science University
SINGH, NAMITA, 2018; Medical Doctorate, 2007, University of California-Los Angeles
SMITH, STEPHEN * 2015; Doctorate, 2008, California Institute of Technology
SUMMERS, CORINNE N, 2012; Bachelor's, 2001, Florida State University
TARLOCK, KATHERINE, 2011; Medical Doctorate, 2008, Franklin College
THOMAS, ANITA ANNE, 2013; Bachelor's, 2006, George Washington University
TROWBRIDGE, AMY C, 2010; Bachelor's, 2005, University of Illinois at Urbana-Champaign

VALENTINE, GREGORY C, 2019; Medical Doctorate, 2012, The University of Texas Medical Branch
VITANZA, NICHOLAS, 2016; Medical Doctorate, 2008, American University of the Caribbean
WAGHMARE, ALPANA, 1999; Bachelor's, 2003, Massachusetts Institute of Technology
WAITE, WHITNEY MILLIGAN, 2008; Master's, 2008, Emory University
WEISS, ELLIOTT M, 2016; Master's, 2016, University of Pennsylvania
WENDEL, DANIELLE R, 2015; Bachelor's, 2004, University of Rochester
WENGER, JESSE L, 2014; Bachelor's, 2003, Roberts Wesleyan College
WILKES, JENNIFER J, 2016; Bachelor's, 2002, Harvard University
WONG, STEPHEN C, 2020
WRIGHT, DAVENE R., 2012; Bachelor's, 2004, Georgia Institute of Technology-Main Campus
ZHAO, YONGDONG, 2013; Medical Doctorate, 1997, Beijing University of Chinese Medicine

Pharmacology

For complete faculty listing, please visit https://pharmacology.uw.edu/people/?people_category=faculty

Professors

BAJJALIEH, SANDRA M. * 1995; Bachelor's, 1975, University of Illinois at Urbana-Champaign
BEAVO, JOSEPH A * 1977; Bachelor's, 1965, Stetson University
CATTERALL, WILLIAM A * 1977; Bachelor's, 1968, Brown University
CHAVKIN, CHARLES * 1984; Bachelor's, 1974, Cornell University
GARDNER, RICHARD G. * 2006; Bachelor's, 1992, Cornell University
HORITA, AKIRA, 1982; Bachelor's, 1950, University of Washington
JUCHAU, MONT RAWLINGS, 1969; Doctorate, 1966, University of Iowa
MCKNIGHT, G. STANLEY * 1979; Bachelor's, 1970, Bates College
MOON, RANDALL T * 1985; Bachelor's, 1977, New College of Florida
NATHANSON, NEIL * 1979; Doctorate, 1975, Brandeis University
SCHEUER, TODD, 1985; Bachelor's, 1977, Grinnell College
SCOTT, JOHN D * 2008; Bachelor's, 1980, Heriot-Watt University
SLATTERY, JOHN T * 1982; Doctorate, 1978, New York University
STELLA, NEPHI * 1999; Doctorate, 1995, École Polytechnique Fédérale de Lausanne
STORM, DANIEL R * 1978; Doctorate, 1971, University of California-Berkeley
VINCENZI, FRANK F, 1982; Bachelor's, 1960, University of Washington
ZHENG, NING * 2002; Bachelor's, 1991, Fudan University

Associate Professors

HAGUE, CHRIS * 2005; Doctorate, 2002, Creighton University
ONG, SHAO-EN * 2010; Bachelor's, 1995, University of Minnesota-Duluth
WANG, EDITH H. * 1996; Master's, 1987, Columbia University

Assistant Professors

GUJRAL, TARANJIT S * 2018; Bachelor's, 2003, Queen's University
LAND, BENJAMIN * 2003; Bachelor's, 2002, Cornell University
SANCAK, YASEMIN S. * 2017; Bachelor's, 1997, Bogazici University; Molecular Biology
SHECHNER, DAVID MICHAEL * 2017; Doctorate, 2010, Massachusetts Institute of Technology; Biology
YADAV, SMITA * 2017; Doctorate, 2011, Carnegie Mellon University; Biology

Physiology and Biophysics

For complete faculty listing, please visit <http://depts.washington.edu/pbiopage/directories/faculty/>

Professors

ASBURY, CHARLES L * 1993; Bachelor's, 1991, Cornell University
BARRIA-ROMAN, ANDRES * 2005; Doctorate, 1998, Universidad de Chile
BERGER, ALBERT J * 1982; Bachelor's, 1964, Cornell University
BINDER, MARC D * 1978; Bachelor's, 1971, Columbia University
BOTHWELL, MARK ALLEN * 1985; Doctorate, 1975, University of California-Berkeley
BRENGELMANN, GEORGE L, 1966; Bachelor's, 1956, University of Rochester
BUCK, LINDA B * 2003; Doctorate, 1980, The University of Texas
BUFFALO, ELIZABETH A * 2013; Master's, 1995, University of California-San Diego
CARLSON, STEVEN S. * 1985; Doctorate, 1975, University of California-Berkeley
COOK, DANIEL L * 1978; Bachelor's, 1967, University of Michigan-Ann Arbor
DETWILER, PETER B * 1977; Doctorate, 1970, Georgetown University
FAIRHALL, ADRIENNE L * 2003; Bachelor's, 1992, Australian National University
FEIGL, ERIC O * 1982; Bachelor's, 1954, University of Minnesota-Duluth
FETZ, EBERHARD * 1975; Doctorate, 1966, Massachusetts Institute of Technology
FROEHLER, STANLEY C * 2000; Doctorate, 1973, California Institute of Technology
FUCHS, ALBERT F * 1982; Bachelor's, 1960, Drexel University
GORDON, SHARONA E. * 1993; Bachelor's, 1990, Brown University
HILDEBRANDT, JACOB * 1966; Bachelor's, 1957, University of British Columbia
HILLE, BERTIL * 1968; Doctorate, 1967, Rockefeller University
HORWITZ, GREGORY * 2007; Bachelor's, 1993, Harvard University
KOERKER, DONNA J, 1982; Doctorate, 1970, University of Michigan-Ann Arbor
PERLMUTTER, STEVE I * 1991; Doctorate, 1991, Northwestern University
RIEKE, FREDERICK MARTIN * 1997; Bachelor's, 1988, University of California-Berkeley
ROWELL, LORING B, 1963; Bachelor's, 1953, Springfield College
SANTANA, LUIS F * 2001; Bachelor's, 1991, American University of Puerto Rico
SCHWINDT, PETER C, 1974; Master's, 1965, Massachusetts Institute of Technology
SMITH, ORVILLE A, 1958; Master's, 1950, Michigan State University
STIRLING, CHARLES E, 1982; Bachelor's, 1961, George Washington University
WORDEMAN, LINDA * 1994; Bachelor's, 1982, University of California-Berkeley
ZAGOTTA, WILLIAM N. * 1993; Doctorate, 1989, Stanford University

Associate Professors

ADAMS, MARVIN * 2000; Doctorate, 1991, Colorado State University
LIU, QINGHANG * 2011
MELBY, ANNA, 1996; Bachelor's, 1984, McGill University
SULLIVAN, JANE M * 2002; Bachelor's, 1984, Amherst College

Assistant Professors

MORENO MORENO, CLAUDIA M * 2019; Doctorate, 2012, Universidad Nacional Autónoma de México (UNAM)
OLSEN, SHAWN R * 2014; Doctorate, 2009, Harvard University
TUTHILL, JOHN C * 2016; Bachelor's, 2006, Swarthmore College

VIVAS RODRIGUEZ, OSCAR L * 2019; Doctorate, 2012, Universidad Nacional Autónoma de México (UNAM);
Biomedical Science
WATERS, DAVID J * 2013; Doctorate, 1997, University of London

Senior Lecturer

LINDER, THOMAS M, 1982; Bachelor's, 1966, Baldwin-Wallace College

Psychiatry and Behavioral Sciences

For complete faculty listing, please visit <https://psychiatry.uw.edu/who-we-are/profiles/faculty/>

Professors

AREAN, PATRICIA A, 2015; Master's, 1986, Adelphi University
AVERY, DAVID H, 1982; Bachelor's, 1968, Wabash College
BEN-ZEEV, DROR Y, 2017; Master's, 2005, Illinois Institute of Technology
BORSON, SOO, 1983; Bachelor's, 1969, Stanford University
BRUNS, ERIC, 2005; Doctorate, 1997, University of Vermont
CAMPBELL, WILLIAM H., 2009; Master's, 1990, Jacksonville University
CARR, JOHN E, 1963; Bachelor's, 1956, Earlham College
CHWASTIAK, LYDIA, 1999; Master's, 1991, Georgetown University
COLLINS, PAMELA Y * 2018
COMTOIS, KATHERINE ANN, 1985; Doctorate, 1992, University of Maryland-College Park; Clinical Psychology
COWLEY, DEBORAH S, 1982; Bachelor's, 1976, Stanford University
DOERR, HANS O, 1982; Bachelor's, 1961, Florida State University
DUNN, CHRISTOPHER W., 1993; Bachelor's, 1973, Colgate University
FANN, JESSE R, 1990; Medical Doctorate, 1989, Northwestern University
FELKER, BRADFORD, 1997; Bachelor's, 1982, Virginia University of Lynchburg
FORTNEY, JOHN C * 2014; Doctorate, 1992, University of Iowa
GRANT, THERESE M., 1984; Master's, 1982, University of Oregon
HILT, ROBERT J, 2006; Bachelor's, 1991, University of Michigan-Ann Arbor
ILIFF, JEFFREY, 2019
KAYSEN, DEBRA, 2002; Bachelor's, 1991, Tufts University
KIMMEL, RYAN, 1994; Bachelor's, 1997, University of Washington
LARIMER, MARY E * 1987; Bachelor's, 1987, University of Washington
LATTEMANN, DIANNE * 1982; Bachelor's, 1974, American University
LINDGREN, KRISTEN, 2000; Bachelor's, 1998, Brown University
MC CANN, BARBARA S., 1986; Master's, 1982, Rutgers University-Camden
MC CAULEY, ELIZABETH * 1979; Doctorate, 1973, New York University
MC CLELLAN, JON M., 1984; Medical Doctorate, 1984, University of Michigan-Ann Arbor
NEUMAIER, JOHN F. * 1983; Bachelor's, 1983, Reed College
PASIC, JAGODA, 1997; Doctorate, 1990, King's College London
PESKIND, ELAINE R., 1986; Medical Doctorate, 1986, University of Washington
PHILLIPS, PAUL EDWARD MACKENZIE * 2004; Bachelor's, 1993, University of Liverpool
RASKIND, MURRAY, 1970; Medical Doctorate, 1968, Columbia University
RATZLIFF, ANNA DE HAAS, 2005; Bachelor's, 1994, Stanford University
RAUE, PATRICK, 2017; Bachelor's, 1989, Catholic University of America
REGER, MARK A., 2001; Master's, 1998, Rosemead Beauty School

RIES, RICHARD K., 1975; Medical Doctorate, 1975, Northwestern University
ROCKHILL, CAROL, 2000; Bachelor's, 1987, University of Illinois at Urbana-Champaign
ROESLER, THOMAS A, 1983; Medical Doctorate, 1972, University of Washington
ROMANO, JOAN, 1982; Bachelor's, 1973, Georgetown University
SAXON, ANDREW J, 1982; Medical Doctorate, 1977, Tufts University
SCHRIFT, MICHAEL, 2020
SIMPSON, TRACY L., 1997; Master's, 1993, University of Phoenix-New Mexico Campus; Doctorate, 1999, University of Phoenix-New Mexico Campus
SNOWDEN, MARK B., 1986; Bachelor's, 1984, Princeton University
STEIN, MARK A, 2013; Master's, 1972, Bowling Green State University-Firelands
SULLIVAN, MARK D. * 1985; Bachelor's, 1976, University of Michigan-Ann Arbor
SYRJALA, KAREN L., 1985; Doctorate, 1983, Boston University
THIELKE, STEPHEN, 1990; Bachelor's, 1992, Reed College
TOWNES, BRENDA D, 1961; Bachelor's, 1957, Antioch College
TRUPIN, ERIC W, 1973; Bachelor's, 1969, New York University
TSUANG, DEBBY W. * 1992; Medical Doctorate, 1988, University of Iowa
TURNER, ERIC E * 2009; Bachelor's, 1979, Stanford University
TURNER, JUDITH A, 1980; Master's, 1975, University of California-Los Angeles
VANDER STOEP, ANN * 1994; Bachelor's, 1973, Stanford University
VARLEY, CHRISTOPHER K., 1974; Medical Doctorate, 1973, University of Washington
VEITH, RICHARD, 1977; Medical Doctorate, 1973, University of Washington
VITALIANO, PETER P * 1978; Bachelor's, 1969, Queens College
VITIELLO, MICHAEL V, 1982; Bachelor's, 1973, Columbia University
WEBB, SARA JANE * 2001; Doctorate, 2001, University of Minnesota-Duluth
WILCOX, JAMES ALLEN, 2018
WISSOW, LAWRENCE SAGIN, 2019
ZATZICK, DOUGLAS F., 2000; Bachelor's, 1984, University of California-Berkeley
ZWEIFEL, LARRY * 2005; Doctorate, 2005, Johns Hopkins University

Associate Professors

ADRIAN, MOLLY C., 2003; Master's, 2007, University of Maine
BAUER, AMY, 2011; Bachelor's, 1994, University of California-Berkeley
BEARSS, KAREN E, 2016; Bachelor's, 1996, University of Florida
BEDARD-GILLIGAN, MICHELE A, 2003; Bachelor's, 2001, Pennsylvania State University-College of Medicine
BORGHESANI, PAUL R., 2001; Doctorate, 1999, Harvard University
BORISOVSKAYA, ANNA, 2002; Bachelor's, 1995, University of Miami
BOYNTON, LORIN D, 1995; Medical Doctorate, 1991, University of Cape Town
BRKANAC, ZORAN, 1998; Medical Doctorate, 1993, University of Zagreb
CARLIN, ALBERT S, 1964; Master's, 1961, Syracuse University
CARLISLE, LYNDA LEE, 1987; Medical Doctorate, 1985, Medical College of Georgia
CLARK, JEREMY J., 2001; Bachelor's, 2001, California State University
CLIFASEFI, SEEMA L., 1992; Doctorate, 2003, University of Manchester
COLLETT, BRENT, 2001; Bachelor's, 1996, University of Idaho
COMBS, HEIDI L., 1992; Bachelor's, 1985, University of Washington
CROICU, CARMEN A., 2005; Medical Doctorate, 1993, University of Bucharest
DAGADAKIS, CHRISTOS S, 1976; Bachelor's, 1970, University of Washington
FERGUSON, SUSAN * 2004; Bachelor's, 2000, University of Michigan-Ann Arbor
FRENCH, WILLIAM, 2008; Bachelor's, 1988, University of Kentucky

GERDTS, JENNIFER ANN, 2005; Bachelor's, 2003, Colby College
GONZALEZ, ERIN SCHOENFELDE, 2014; Master's, 2008, Arizona State University
GUTTMANNOVA, KATARINA, 2009; Bachelor's, 1997, Slippery Rock University of Pennsylvania
HAMBLIN, MARK W., 1990; Doctorate, 1982, University of California-San Diego
HARNED, MELANIE S, 2004; Doctorate, 2002, University of Illinois at Urbana-Champaign
HARRISON, DAVID A, 2007; Bachelor's, 1985, Stanford University
HAWKINS, ERIC J., 2005; Doctorate, 2004, Brigham Young University
HSIAO, RAY CHIH-JUI, 2000; Bachelor's, 1996, Northwestern University
KERNS, SUZANNE, 2004; Bachelor's, 1997, Pennsylvania State University-College of Medicine
KILMER, JASON, 1991; Bachelor's, 1991, University of Washington
KIM, SOO-JEONG, 2011; Medical Doctorate, 1993, Seoul National University
KIVLAHAN, DANIEL R, 1983; Master's, 1979, University of Missouri
KODISH, IAN M., 2004; Bachelor's, 1995, Brown University
KOHEN, RUTH, 1988; Medical Doctorate, 1986, Fachhochschule Aachen
LEHAVOT, KEREN * 2005; Master's, 2007, University of Washington
LEVY, MITCHELL, 1996; Medical Doctorate, 1996, George Washington University
LI, GAIL, 1996; Bachelor's, 1983, Shanxi University
LOCKE, JILL J, 2015; Bachelor's, 2005, University of California-Los Angeles
LOSTUTTER, TY W., 1994; Bachelor's, 1996, University of Washington
LYON, AARON R., 2008; Master's, 2005, DePaul University
MONROE-DEVITA, MARIA, 2000; Bachelor's, 1993, Boston University
MURRAY, SUZANNE B, 1991; Medical Doctorate, 1997, Temple University
PAGULAYAN, KATHLEEN F., 2003; Bachelor's, 1997, College of the Holy Cross
PARKER, MYRA, 2003; Bachelor's, 1996, Stanford University
PASCUALY, O MARCELLA, 1984
PETRIE, ERIC C., 1983; Medical Doctorate, 1985, University of Washington
PIEL, JENNIFER L., 1996; Medical Doctorate, 2007, University of Southern California
POESCHLA, BRIAN D., 2002; Bachelor's, 1981, Duke University
RADANT, ALLEN D, 1985; Medical Doctorate, 1985, University of California-Davis
REGER, GREG M, 2015; Master's, 2000, Fuller Theological Seminary in California
REOUX, JOSEPH P, 1995; Medical Doctorate, 1985, The University of Texas Health Science Center at Houston
RHEW, ISAAC CHUNG HYUN * 2003; Bachelor's, 1995, Stanford University
RUSSO, JOAN E., 1982; Bachelor's, 1977, California State University
SIBLEY, MARGARET HARPER, 2019
STAPPENBECK, CYNTHIA A, 2011; Master's, 2002, New York University
STORCK, MICHAEL G., 1989; Bachelor's, 1975, Denison University
STRACHAN, ERIC, 2003; Master's, 2003, American University
SZOT, PATRICIA, 1987; Master's, 1982, Idaho State University
TRITTSCHUH, EMILY H, 2008; Doctorate, 2006, Northwestern University
VERHULST, JOHAN, 1982; Bachelor's, 1960, Université Catholique de Louvain
VILLACRES, ENRIQUE C., 1981; Bachelor's, 1977, California State University-Northridge
WILSON, LAWRENCE G, 1982; Bachelor's, 1962, University of Kansas
WINGERSON, DANE K, 1987; Bachelor's, 1983, Lewis and Clark Community College
WOMACK, WILLIAM M, 1982; Bachelor's, 1957, Lincoln University
YUODELIS-FLORES, CHRISTINE, 1982; Bachelor's, 1981, University of Washington

Assistant Professors

BHAT, AMRITHA SUBRAY, 2012; Medical Doctorate, 2000, Bangalore University

BLACK, TAYLOR M., 2004; Bachelor's, 2003, University of Washington
BLEDSOE, JESSE C., 2011; Master's, 2008, Michigan State University
BUCHHOLZ, JONATHAN J., 2004; Bachelor's, 2004, University of Washington
CARLSON, ERIK S., 2010; Bachelor's, 1999, Lawrence University
CERIMELE, JOSEPH, 2012; Bachelor's, 2004, Case Western Reserve University
CHEN, JESSICA ANN, 2008
DARNELL, DOYANNE A, 2012; Master's, 2007, Georgia State University
DE LACY, NINA, 2011; Master's, 1993, Northwestern University
DEAN, PAMELA M., 2016; Master's, 2007, Gallaudet University
DUNCAN, MARK H, 2009; Bachelor's, 2000, North Park University
ERICKSON, JENNIFER MARIE, 2016; Bachelor's, 2006, Washington State University
GOLD, SARI D., 2011; Bachelor's, 1997, Swarthmore College
HALLGREN, KEVIN A * 2014; Bachelor's, 2007, University of Missouri-Columbia
HOERSTER, KATHERINE D, 2010; Bachelor's, 2001, Connecticut College
JENNESS, JESSICA, 2014
KOPACZ, DAVID R, 2014; Medical Doctorate, 1993, University of Illinois at Chicago
KOPELOVICH, SARAH L, 2015; Bachelor's, 2003, George Washington University
LAPLANTE, LAURA M, 2014; Bachelor's, 2006, University of Wisconsin-Madison
LIU, FREDA, 2010; Master's, 2007, Arizona State University
MARKMAN, JESSE D, 2009; Master's, 2009, University of Michigan-Ann Arbor
MCCANN, RUSSELL A, 2001; Master's, 2007, Seattle Pacific University
MCGINN, MEGHAN M, 2013; Bachelor's, 2004, Boston College
MINJAREZ, MENDY, 2013; Bachelor's, 1998, Claremont McKenna College
MONTENEGRO, ROBERTO EMILIO, 2016
NAIR, SUNILA, 2009; Bachelor's, 1999, Indira Gandhi Institute of Medical Sciences
NEUHAUS, EMILY, 2005; Bachelor's, 2007, University of Central Oklahoma
READ, KENDRA L., 2016; Bachelor's, 2007, Bucknell University
RUSKIN, DAVID, 2017; Bachelor's, 1992, University of California-San Diego
RUSSELL, DOUGLAS A., 2016; Medical Doctorate, 2011, Thomas Jefferson University
SCHINDLER, ABIGAIL G * 2007; Doctorate, 2012, University of Washington
SCHREIBER, MATTHEW A, 1999; Bachelor's, 1988, Oberlin College
SEDLAR, GEORGANNA * 2012; Bachelor's, 1993, University of California-San Diego
SHARMA, ADITI, 2014; Bachelor's, 2007, University of Michigan-Ann Arbor
SIMMONS, SHANNON W, 2013; Bachelor's, 2002, Tulane University of Louisiana
SOEPRONO, THOMAS M., 2010; Medical Doctorate, 2010, Loma Linda University
SYLVERS, PATRICK D, 2002; Doctorate, 2010, Emory University
THOMPSON, ALYSHA, 2019
TOOR, RAMANPREET, 2014; Medical Doctorate, 2003, Russian State Medical University
VILLATTE, JENNIFER, 2012; Bachelor's, 1999, Lesley University
WALLACE, CATHERINE M, 2015; Bachelor's, 2005, Syracuse University
WANG, LUCY Y., 2002; Bachelor's, 1998, Massachusetts Institute of Technology

Radiation Oncology

For complete faculty listing, please visit <https://www.radonc.washington.edu/faculty/>

Professors

BLOCH, CHARLES D, 2013; Master's, 1983, Michigan State University

FORD, ERIC, 2004; Master's, 1994, Columbia University
GROUDINE, MARK * 1982; Medical Doctorate, 1975, University of Pennsylvania
KANE, GABRIELLE M, 2007; Bachelor's, 1973, University of Dublin Trinity College
KOH, WUI-JIN, 1984; Bachelor's, 1984, Loma Linda University
LARAMORE, GEORGE E, 1976; Bachelor's, 1965, Purdue University-Main Campus
LO, SIMON S, 2016; Medical Doctorate, 1991, Chinese University of Hong Kong Tung Wah Group of Hospitals
Community College
MAYR, NINA A, 2013; Bachelor's, 1978, Ludwig Maximilians Universität München
PHILLIPS, MARK H * 1991; Bachelor's, 1977, Oberlin College
RENGAN, RAMESH, 2013; Bachelor's, 1992, University of Michigan-Ann Arbor
ROCKHILL, JASON K., 2000; Bachelor's, 1989, Claremont McKenna College
RUSSELL, KENNETH J., 1985; Bachelor's, 1975, Harvard University
SANDISON, GEORGE A, 2008; Master's, 1979, University of London
WILBUR, DANIEL SCOTT, 1986; Bachelor's, 1973, Portland State University

Associate Professors

APISARNTHANARAX, SMITH, 2013; Bachelor's, 1998, Brown University
BOWEN, STEPHEN R, 2011; Bachelor's, 2006, University of California-Los Angeles
CHVETSOV, ALEXEI V, 2011; Master's, 1985, Moscow State Engineering Physics Institute
ERMOIAN, RALPH PHILIP, 2007; Bachelor's, 1992, Stanford University
FANG, LI MING C, 2006; Bachelor's, 1999, University of California-Berkeley
HALASZ, LIA M., 2005; Bachelor's, 2000, Harvard University
HENDRICKSON, KRISTI, 1991; Bachelor's, 1991, Lawrence University
KIM, EDWARD Y, 2010; Bachelor's, 1998, Case Western Reserve University
KIM, JANICE N, 2006; Master's, 1997, Chicago State University
KIM, MINSUN, 2007; Master's, 2000, Columbia University
LIAO, JAY J, 2007; Bachelor's, 1998, Duke University
MEYER, JUERGEN, 2001; Bachelor's, 1996, Coventry University
NYFLOT, MATTHEW J, 2011; Bachelor's, 2005, St. Olaf College
PARVATHANENI, UPENDRA, 2006; Medical Doctorate, 1993, Annamalai University
QUANG, TONY, 2007; Medical Doctorate, 2002, Drexel University
SMITH, WADE P, 2004; Bachelor's, 1997, Lawrence University
STEWART, ROBERT D, 2010; Bachelor's, 1988, Kansas State University
TADDEI, PHILLIP J, 2017; Doctorate, 2005, Colorado State University
TSENG, YOLANDA D., 2014; Bachelor's, 2003, Cornell University
WALLNER, KENT E, 1997; Bachelor's, 1978, Miami University-Oxford
YOUNG, LORI A., 1993; Bachelor's, 1981, University of Hawaii
ZENG, JING, 2012; Medical Doctorate, 2007, Duke University

Assistant Professors

CAO, NING, 2012; Bachelor's, 2004, Fudan University
CHEN, JONATHAN JIUNN-HSIANG, 2019; Medical Doctorate, 2014, Weill Cornell Medical College
DYER, BRANDON, 2019; Medical Doctorate, 2014, Oregon Health & Science University
GENESER, SARAH, 2017; Bachelor's, 2001, Rice University
KALET, ALAN, 2004; Master's, 2009, University of California-Riverside
LANDERS, ANGELIA C, 2020; Doctorate, 2018, University of California-Los Angeles
LI, YAWEN, 2015; Bachelor's, 2008, Beihang University
SCHAUB, STEPHANIE K, 2016; Medical Doctorate, 2015, Florida Atlantic University

WEG, EMILY STEINBERGER, 2020; Medical Doctorate, 2015, Mount Sinai School of Medicine

Radiology

For complete faculty listing, please visit <https://rad.washington.edu/radiology-personnel/>

Professors

ALESSIO, ADAM M., 2003; Bachelor's, 1998, University of Notre Dame
BHARGAVA, PUNEET, 2006; Medical Doctorate, 1997, All India Institute of Medical Sciences
CHAM, MATTHEW D., 2018; Bachelor's, 1995, University of Rochester; Psychology
CHAPMAN, TERESA, 1994; Bachelor's, 1994, University of Colorado
CHEN, DELPHINE, 2019; Medical Doctorate, 1999, Washington University in St Louis
CHEW, FELIX S., 2004; Master's, 2004, Duke University
COHEN, WENDY, 1987; Medical Doctorate, 1975, Harvard University
CONLEY, KEVIN E., 1988; Bachelor's, 1976, Lake Forest College
DAGER, STEPHEN R * 1979; Bachelor's, 1976, American University
DIGHE, MANJIRI K., 2003; Medical Doctorate, 1998, Mumbai University
DUBINSKY, THEODORE J., 1984; Bachelor's, 1979, Johns Hopkins University
GHODKE, BASAVARAJ, 2002; Medical Doctorate, 1989, Mumbai University
GODWIN, J. DAVID, 1986; Bachelor's, 1966, San Diego State University
GRABOWSKI, THOMAS J * 2009; Bachelor's, 1982, Vanderbilt University
GROSS, JOEL A., 2000; Medical Doctorate, 1990, University of California-Davis
GUNN, MARTIN, 2002; Bachelor's, 1991, University of Auckland
HA, ALICE S., 2009; Bachelor's, 1995, University of California-Los Angeles
HALLAM, DANIAL K., 2000; Bachelor's, 1982, Brown University
HARRIS, ROBERT D., 2018; Bachelor's, 1977, Middlebury College; Chemistry
HAYES, CECIL E., 1991; Bachelor's, 1964, Cornell University
HAYNOR, DAVID R * 1979; Bachelor's, 1968, Harvard University
IYER, RAMESH S., 2002; Bachelor's, 2001, Brown University
JARVIK, JEFFREY * 1993; Bachelor's, 1981, University of California-San Diego
KANAL, KALPANA M., 2000; Bachelor's, 1988, Mumbai University
KINAHAN, PAUL E. * 2001; Bachelor's, 1985, University of British Columbia
KUSHMERICK, MARTIN J., 1988; Medical Doctorate, 1963, University of Pennsylvania
LEE, CHRISTOPH ILSUK, 2012; Bachelor's, 1998, Princeton University
LEE, JANIE M, 2013; Bachelor's, 1993, Harvard University
LEWIS, DAVID H., 1985; Medical Doctorate, 1985, Virginia Commonwealth University
MARCINEK, DAVID J. * 2000; Bachelor's, 1993, Kalamazoo College
MIYAOKA, ROBERT SADAQ * 1984; Bachelor's, 1983, Harvey Mudd College
MONSKY, WAYNE L., 2012; Master's, 1988, Georgetown University
MOSHIRI, MARIAM, 2005; Bachelor's, 1991, New York University
NELP, WIL B, 1982; Bachelor's, 1951, Franklin and Marshall College
ORDOVAS, KAREN, 2020; Medical Doctorate, 1998, Universidade Federal do Rio Grande do Sul (UFRGS)
PALADIN, ANGELISA M., 1998; Medical Doctorate, 1999, Chicago State University
PARISI, MARGUERITE T., 2001; Bachelor's, 1974, Brookline College
PARTRIDGE, SAVANNAH C, 2005; Doctorate, 2001, University of California-Berkeley
PIPAVATH, SUDHAKAR N., 2002; Medical Doctorate, 1997, All India Institute of Medical Sciences
RAJENDRAN, JOSEPH, 1994; Medical Doctorate, 1973, Madurai Kamaraj University
REDDY, GAUTHAM P., 2008; Master's, 1991, George Washington University

RICHARDSON, MICHAEL L., 1984; Medical Doctorate, 1975, Baylor University
SAHANI, DUSHYANT, 2019
SHAW, DENNIS, 1983; Bachelor's, 1979, University of Washington
SHIBATA, DEAN K., 1990; Bachelor's, 1983, California Institute of Technology
STERN, ERIC J., 1992; Bachelor's, 1981, Moravian College and Moravian Theological Seminary
TALNER, LEE B., 1993; Bachelor's, 1959, Amherst College
VALJI, KARIM, 2007; Bachelor's, 1978, Harvard University
VESSELLE, HUBERT J. * 1997; Master's, 1986, Case Western Reserve University
WESTPHALEN, ANTONIO, 2020; Medical Doctorate, 1995, Universidade Federal do Rio Grande do Sul (UFRGS)
YANG, XIAOMING, 2006; Master's, 1986, Peking Union Medical College
YUAN, CHUN * 1991; Bachelor's, 1982, Beijing Normal University
YUH, WILLIAM, 2013; Master's, 1974, Auburn University-Montgomery

Associate Professors

ANDRE, JALAL B., 2011; Medical Doctorate, 2004, Drexel University
BASTAWROUS, SARAH, 2009; Bachelor's, 1996, Old Dominion University
BHUTTA, SADAF, 2013; Medical Doctorate, 1996, King Edward Medical University
BOLUS, DAVID N., 2018; Bachelor's, 1981, University of Alabama at Birmingham
CUEVAS, CARLOS, 2001; Medical Doctorate, 1992, Pontificia Universidad Católica de Chile *
DALLEY, ROBERTA W., 1987; Medical Doctorate, 1982, University of Utah
FERGUSON, MARK R., 2004; Bachelor's, 1996, University of Michigan-Ann Arbor
FINK, JAMES R, 2005; Bachelor's, 1987, Reed College
HOFF, MICHAEL N, 2013; Bachelor's, 1997, University of British Columbia
INGRAHAM, CHRISTOPHER R., 2006; Bachelor's, 2001, New York University
ISHAK, GISELE ELIAS, 2005; Medical Doctorate, 2000, Beirut University
JOHNSON, GUY, 1999; Medical Doctorate, 2007, New York Medical College
KAMPS, SHAWN ELIZABETH, 2002; Medical Doctorate, 2001, Eastern Virginia Medical School
KIM, SOOAH, 2013; Master's, 2003, Chungbuk National University
KLEINHANS, NATALIA M., 2005; Doctorate, 2005, San Diego State University
KOGUT, MATTHEW J., 2004; Bachelor's, 2000, Grand Valley State University
KOLOKYTHAS, ORPHEUS, 2002; Medical Doctorate, 1994, Ruprecht Karls Universität Heidelberg
KWAN, SHARON W, 2011; Medical Doctorate, 2005, Stanford University
LEE, HYOJEONG, 2007; Medical Doctorate, 1992, Chungnam National University
LEE, JEAN H., 2004; Medical Doctorate, 1996, Korea University
LI, TAO, 2012; Doctorate, 1992, Southern Medical University (First Military Medical University)
LINNAU, KEN F., 2000; Medical Doctorate, 1996, International University Vienna
MAXIMIN, SURESH T, 2013; Medical Doctorate, 1988, Northeastern Ohio Universities Colleges of Medicine and Pharmacy
MEDVERD, JONATHAN R., 1995; Medical Doctorate, 1995, New York University
MONROE, ERIC JAMES, 2010; Bachelor's, 2005, University of Wisconsin-Madison
O'MALLEY, RYAN B., 2013; Bachelor's, 2003, University of Notre Dame
OTTO, RANDOLPH K, 2007; Bachelor's, 1981, University of Michigan-Ann Arbor
PEREZ, FRANCISCO A., 1998; Bachelor's, 1998, Harvard University
PHILLIPS, GRACE SIAN, 2002; Medical Doctorate, 1997, Johns Hopkins University
RAHBAR, HABIBOLLAH, 2005; Medical Doctorate, 2005, University of Michigan-Ann Arbor
RELYEA-CHEW, ANNEMARIE, 2004; Bachelor's, 1977, Sojourner-Douglass College
ROBINSON, JEFFREY D., 1998; Medical Doctorate, 1985, University of Minnesota-Duluth
SANDSTROM, CLAIRE K., 2007; Medical Doctorate, 2006, Duke University

SCHEEL, JOHN, 2012; Bachelor's, 1997, University of California-Riverside
SHIVARAM, GIRIDHAR M., 2008; Bachelor's, 2000, Harvard University
SHRIKI, JABI E, 2014; Medical Doctorate, 2000, The University of Texas at San Antonio
STANESCU, ARTA LUANA, 2006; Medical Doctorate, 1994, Carol Davila University of Medicine and Pharmacy
SWANSON, JONATHAN, 2004; Bachelor's, 1995, Duke University
THAPA, MAHESH, 2001; Bachelor's, 1996, University of Nevada-Las Vegas
VAIDYA, SANDEEP, 2004; Medical Doctorate, 1995, Mumbai University
WANG, CAROLYN L, 2009; Bachelor's, 1999, Rice University
WEAVER, KURT E., 2006; Master's, 2001, Boston University

Assistant Professors

AMIN, KATHAN, 2019; Bachelor's, 2009, Illinois Institute of Technology
BEHNIA, FATEMEH, 2006; Medical Doctorate, 1987, University of Tehran
BENJERT, JAYSON L, 1999; Medical Doctorate, 2005, A T Still University of Health Sciences
BRUNNQUELL, CHRISTINA L., 2018; Bachelor's, 2010, Gustavus Adolphus College; Physics
CHALIAN, MAJID, 2019; Medical Doctorate, 2006, Iran University of Medical Sciences
CHICK, JEFFREY, 2019; Bachelor's, 2005, Colgate University; Biochemistry
COLIP, CHARLES GEORGE, 2017
CROSS, NATHAN, 2011; Bachelor's, 2006, Case Western Reserve University
JAHANIAN, HESAMODDIN, 2017; Bachelor's, 2000, Amirkabir University of Technology; Biomedical Engineering
JOYCE, RYAN, 2019; Medical Doctorate, 2013, St. George's University School of Medicine
KHALATBARI, HEDIEH, 2012; Medical Doctorate, 1995, University of Tehran
KIM, HELEN HYE RYONG, 2019; Medical Doctorate, 2011, Stony Brook University
KOO, KEVIN S, 2017; Bachelor's, 2004, Emory University
LAM, DIANA LAP YING, 2010; Bachelor's, 2004, Massachusetts Institute of Technology
LERNER, DAVID, 2019; Bachelor's, 2005, Rutgers University-New Brunswick
LIM, JIHOON, 2020; Bachelor's, 2007, University of California-Berkeley
LOWRY, KATHRYN P., 2017; Bachelor's, 2005, Duke University; Psychology
MALONEY, EZEKIEL J., 2006; Bachelor's, 2005, Columbia University in the City of New York
MANSOORI, BAHAR, 2019; Medical Doctorate, 2008, Iran University of Medical Sciences
MATESAN, MANUELA CRISTINA, 2007; Medical Doctorate, 1996, University of Medicine and Pharmacy Victor Babes Timisoara
MCNEELEY, MICHAEL FIELDEN, 2009; Bachelor's, 2001, The University of Tennessee
MENASHE, SARAH J, 2012; Medical Doctorate, 2007, Jefferson College
MILETO, ACHILLE, 2016; Medical Doctorate, 2008, Università degli Studi di Messina
MOGENSEN, MONIQUE A., 2018; Bachelor's, 1991, University of Pennsylvania; Biology
NGO, ANH-VU HUYNH, 2000; Medical Doctorate, 2008, Medical College of Wisconsin; Medicine
OTJEN, JEFFREY P., 2005; Medical Doctorate, 2005, Baylor University
RANE, SWATI D, 2015; Doctorate, 2009, Georgia Institute of Technology-Main Campus
REHWALD, CHRISTINE, 2000; Medical Doctorate, 2013, George Washington University; Medicine
REIS, JOSEPH, 2018; Medical Doctorate, 2008, SUNY
RIPLEY, BETH ANN, 2015; Bachelor's, 1998, Stanford University
ROMBERG, ERIN K., 2018; Bachelor's, 2008, Oberlin College; Biology
SHIN, DAVID SUNWOONG, 2011; Bachelor's, 2006, Stanford University
SOLOFF, ERIK, 2017; Bachelor's, 1993, University of Michigan-Ann Arbor
TANG, ELIZABETH, 2014; Medical Doctorate, 2009, Albert Einstein College of Medicine
WANGARYATTAWANICH, PATTANA, 2020; Medical Doctorate, 2003, Chulalongkorn University; Medicine
WRIGHT, JASON NEAL NIXON, 2007; Medical Doctorate, 2006, Chicago State University

WU, LEI, 2014; Bachelor's, 2006, California State University; Biology
ZHANG, MAN, 2017; Medical Doctorate, 2001, Nanjing Medical University

Rehabilitation Medicine

For complete faculty listing, please visit <http://rehab.washington.edu/education/faculty/>

Professors

AMTMANN, DAGMAR * 1991; Bachelor's, 1980, University of Economics and Management
ANDERSON, MARJORIE E., 1982; Bachelor's, 1963, Michigan State University
APKON, SUSAN D, 2009; Bachelor's, 1986, Northwestern University
BOMBARDIER, CHARLES H. * 1989; Bachelor's, 1979, University of Washington
CHILDERS, MARTIN K, 2012; Bachelor's, 1980, Seattle Pacific University
CIOL, MARCIA A. * 1985; Bachelor's, 1979, Universidade Estadual de Campinas (Unicamp)
CZERNIECKI, JOSEPH M * 1982; Bachelor's, 1975, University of British Columbia
DEITZ, JEAN L, 1982; Master's, 1970, University of Florida
EHDE, DAWN M * 1991; Master's, 1989, University of North Dakota
ESSELMAN, PETER C. * 1986; Bachelor's, 1975, University of Washington
FRASER, ROBERT T * 1976; Bachelor's, 1968, Le Moyne College
FRIEDLY, JANNA L., 2001; Medical Doctorate, 2001, Oregon Health & Science University
GOLDSTEIN, BARRY * 1987; Bachelor's, 1974, Occidental College
HAFNER, BRIAN * 1996; Bachelor's, 1996, Southeastern Oklahoma State University
HASELKORN, JODIE K. * 1985; Medical Doctorate, 1985, Louisiana State University
HOFFMAN, JEANNE MARIE, 1999; Master's, 1995, Arizona State University
JENSEN, MARK PHILIP * 1987; Master's, 1984, Arizona State University
JIRIKOWIC, TRACY L. * 1993; Master's, 1995, University of Washington
JOHNSON, KURT LEWIS * 1990; Bachelor's, 1978, University of Washington
KARTIN, DEBORAH * 1984; Bachelor's, 1973, Boston University
KRAFT, GEORGE HOWARD * 1982; Bachelor's, 1958, Harvard University
LITTLE, JAMES WENDELL * 1984; Bachelor's, 1972, Brigham Young University
MASSAGLI, TERESA L. * 1985; Bachelor's, 1978, Brown University
MCCOY, SARAH WESTCOTT * 1984; Bachelor's, 1976, The University of Montana
MOLTON, IVAN, 2005; Master's, 2001, University of Colorado at Colorado Springs
PATTERSON, DAVID R. * 1984; Bachelor's, 1977, Emory University
PEPPING, MARY, 1994; Master's, 1975, California State University-Los Angeles
SHUMWAY-COOK, ANNE, 1995; Bachelor's, 1969, Indiana University-Bloomington
SLIMP, JEFFERSON C, 1979; Bachelor's, 1970, University of Washington
TURNER, AARON P., 1995; Master's, 1997, University of Washington
WILLIAMS, RHONDA M., 1998; Master's, 1995, Arizona State University
YORKSTON, KATHRYN * 1975; Bachelor's, 1970, Stanford University

Associate Professors

ALSCHULER, KEVIN N, 2010; Master's, 2006, Eastern Michigan University
BARR, KAREN P., 2001; Bachelor's, 1989, Kent State University
BAYLOR, CAROLYN RAE * 1987; Bachelor's, 1991, University of Washington
BROWN, MARY BETH, 2018; Doctorate, 2009, Georgia Institute of Technology-Main Campus
BURNS, STEPHEN P. * 1992; Bachelor's, 1988, Brown University

CRANE, DEBORAH ANN, 2005; Bachelor's, 1999, Santa Clara University
FOGELBERG, DONALD J, 2010; Bachelor's, 1989, Occidental College
GUTHRIE, MARK R., 1983; Master's, 1980, University of Washington
HAKIMI, KEVIN N., 2000; Bachelor's, 1996, University of Michigan-Ann Arbor
HARNISS, MARK * 1998; Doctorate, 1996, University of Oregon
HECKMAN, JEFFREY T, 2012; Bachelor's, 2002, Pennsylvania State University-College of Medicine
HOLDEFER, ROBERT N, 2009; Bachelor's, 1979, Drake University
HOWARD, ILEANA M, 2005; Medical Doctorate, 2004, Harvard University
KANNY, ELIZABETH M, 1982; Master's, 1977, Seattle University
KELLY, VALERIE E * 2003; Bachelor's, 1996, University of Pennsylvania
KINNEY, GREGORY A. * 1997; Doctorate, 1996, Northwestern University
MACK, DAVID L * 2012; Master's, 1993, Indiana University-Bloomington
MAITLAND, MURRAY E * 2006; Bachelor's, 1984, University of British Columbia
MARTINEZ, VICENTE, 2008; Bachelor's, 2000, Michigan State University
MC MILLAN, JO ANN, 1982; Bachelor's, 1953, University of North Texas
MCGOUGH, ELLEN L. * 1990; Master's, 2003, University of Washington
MCQUADE, KEVIN J * 1982; Bachelor's, 1980, California State University-Long Beach
MORGENROTH, DAVID C * 2004; Medical Doctorate, 2003, SUNY
MROZ, TRACY * 2014; Master's, 2005, Boston University
ODDERSON, IB R. * 1985; Doctorate, 1979, Indiana University-Bloomington
OSORIO, MARISA, 2012; Medical Doctorate, 2006, Ohio Christian University
POWELL, JANET M. * 1998; Bachelor's, 1973, University of Washington
PRADHAN, SUJATA * 2008; Bachelor's, 1998, Mumbai University
ROBINSON, CYNTHIA ANN, 1992; Bachelor's, 1986, Ithaca College
SPAULDING, SUSAN E, 1995; Master's, 2007, University of Oregon
SURI, PRADEEP, 2003; Master's, 2011, Harvard University
SVIRCEV, JELENA N, 2005; Bachelor's, 1997, University of Minnesota-Duluth
WIECHMAN, SHELLY A * 1994; Master's, 1994, University of Arizona
YAMANE, ANN, 1979; Bachelor's, 1976, University of Washington
YORK, BERNADETTE WILLIAMS, 2019; Bachelor's, 1983, Tulane University of Louisiana
ZUMSTEG, JENNIFER M, 2005; Bachelor's, 2001, Sonoma State University

Assistant Professors

AGRESTA, CRISTINE E, 2019
BUNNELL, AARON ELIJAH, 2008; Bachelor's, 1998, Stanford University
CUMMER, KATHLEEN, 2019
DASHER, NICKOLAS A, 2017
DEL PIERO, LARISSA, 2016
FELDNER, HEATHER * 2016; Bachelor's, 1998, Marquette University
FUENTES, MOLLY M, 2008; Bachelor's, 2003, Stanford University
GILBERTSON, TOREY J, 2010; Doctorate, 2003, Pacific University
HUMBERT, ANDREW, 2013
JUNN, CHERRY C, 2014; Bachelor's, 2007, Boston University
KAPP, SUSAN L, 2017; Bachelor's, 1979, Texas A & M University
LAM, NY-YING, 2015; Medical Doctorate, 2011, Emory University
LEE, DANBI, 2018
LEUNG, AUDREY SAN, 2019
MATSUDA, PATRICIA A, 1993; Bachelor's, 1982, University of Washington

MCCULLOUGH, JANIS A, 2014
 MORGAN, SARA J., 2001; Bachelor's, 2004, University of Washington
 PHAM, KELLY LORAIN DAUER, 2014; Bachelor's, 2006, Canisius College
 RAD, NASSIM, 2017
 RUNDELL, SEAN, 2009; Doctorate, 2005, Duke University
 SMITH, REBECCA, 2017
 SONG, SHAWN H, 2011; Master's, 2009, University of California-San Francisco
 STAROSTA, AMY, 2017
 TSAO, ELAINE Y, 2009; Medical Doctorate, 2008, Medical College of Wisconsin

Senior Lecturer

OKUMURA, RAMONA M., 1990; Bachelor's, 1981, University of Washington

Lecturer

BENNETT, KIMBERLY D., 1996

Surgery

For complete faculty listing, please visit <https://uwsurgery.org/about/faculty/>

Professors

ALDEA, GABRIEL S., 1998; Bachelor's, 1977, Columbia University
 ANDERSON, BENJAMIN O., 1994; Bachelor's, 1981, Pomona College
 ARBABI, SAMAN, 1992; Bachelor's, 1988, University of California-Berkeley
 BAKTHAVATSALAM, RAMASAMY, 1999; Medical Doctorate, 1984, University of Madras
 BEACH, KIRK WATSON, 1982; Master's, 1968, University of California-Berkeley
 BULGER, EILEEN, 1992; Medical Doctorate, 1992, Cornell University
 BYRD, DAVID R., 1982; Bachelor's, 1976, Tulane University of Louisiana
 CHEN, JONATHAN MICHAEL, 2013; Medical Doctorate, 1994, Columbia University
 CUSCHIERI, JOSEPH, 2000; Bachelor's, 1990, University of Michigan-Ann Arbor
 DELLINGER, E PATCHEN, 1977; Medical Doctorate, 1970, Harvard University
 ENGRAV, LOREN H, 1982; Bachelor's, 1965, University of California-Davis
 FICHERA, ALESSANDRO, 2012; Medical Doctorate, 1989, Catholic University of America
 FLUM, DAVID R * 2000; Bachelor's, 1991, University of Miami
 FRIEDRICH, JEFFREY BARTON, 2000; Medical Doctorate, 2000, The University of Texas Health Science Center at Houston
 GIBRAN, NICOLE, 1990; Medical Doctorate, 1985, Boston University
 GOLDIN, ADAM BRADLEY, 1997; Bachelor's, 1992, Duke University
 GOW, KENNETH W, 2007; Master's, 1997, University of British Columbia
 HATSUKAMI, THOMAS, 1982; Bachelor's, 1978, Stanford University
 HEALEY, PATRICK J., 1993; Medical Doctorate, 1987, Boston University
 HOPPER, RICHARD A., 2001; Medical Doctorate, 1993, Memorial University of Newfoundland
 HORVATH, KAREN D., 1998; Bachelor's, 1984, Bucknell University
 KIM, SARA * 1995; Master's, 1990, George Washington University
 LANGDALE, LORRIE A., 1985; Bachelor's, 1975, University of Washington
 LEDBETTER, DANIEL J., 1982; Bachelor's, 1978, University of Florida
 MAIER, RONALD V, 1981; Medical Doctorate, 1973, Duke University

MCMULLAN, D. MICHAEL, 2002; Bachelor's, 1989, Tulane University of Louisiana
 MEISSNER, MARK H., 1985; Medical Doctorate, 1985, University of Colorado
 MOCK, CHARLES N. * 1992; Bachelor's, 1977, Brown University
 MOKADAM, NAHUSH A., 2005; Bachelor's, 1994, University of Pennsylvania
 MULLIGAN, MICHAEL S, 1999; Bachelor's, 1984, Tufts University
 OELSCHLAGER, BRANT K, 1995; Bachelor's, 1991, Davidson College
 O'KEEFE, GRANT E., 1994; Bachelor's, 1984, University of Alberta
 PARK, JAMES OH, 2007; Bachelor's, 1993, Brown University
 PERKINS, JAMES D., 1989; Bachelor's, 1974, University of Arkansas
 PHAM, TAM NGOC, 2005; Bachelor's, 1994, University of California-San Diego
 PILLARISSETTY, VENU G, 2009; Medical Doctorate, 1999, Columbia University
 RAYHILL, STEPHEN C, 2010; Medical Doctorate, 1987, Columbia University
 REYES, JORGE DIONISIO, 2004; Bachelor's, 1975, Universidade Federal de Minas Gerais (UFMG)
 SINANAN, MIKA N. * 1980; Bachelor's, 1977, Johns Hopkins University
 SINGH, NITEN, 2009; Medical Doctorate, 1997, American University of Health Sciences
 STARNES, BENJAMIN WARE, 2006; Bachelor's, 1988, Albright College
 TATUM, ROGER P., 2002; Bachelor's, 1991, College of William and Mary
 VEDDER, NICHOLAS, 1982; Medical Doctorate, 1981, Case Western Reserve University
 WALDHAUSEN, JOHN HENRY TRESCHER, 1992; Bachelor's, 1980, Haverford College
 WINN, ROBERT K., 1984; Bachelor's, 1967, New Mexico State University-Grants
 WINTERSCHIED, LOREN C, 1982; Doctorate, 1953, University of Pennsylvania
 WOOD, DOUGLAS E., 1992; Bachelor's, 1979, Harvard University
 WRIGHT, ANDREW S., 2005; Medical Doctorate, 1998, University of Louisville
 YEUNG, RAYMOND S. * 1997; Medical Doctorate, 1982, University of Toronto
 ZHANG, WAYNE WEI, 2017
 ZIERLER, ROBERT, 1984; Bachelor's, 1973, Johns Hopkins University
 ZIMPFER, DANIEL, 2020; Medical Doctorate, 2002, Medizinische Universität Wien; Medicine

Associate Professors

ATKINS, BROADUS ZANE, 2017
 AVANSINO, JEFFREY RONALD, 1999; Master's, 2016, Seattle University; Business Administration/Management
 BIRGFELD, CRAIG B, 2006; Bachelor's, 1994, College of William and Mary
 CALHOUN, KRISTINE E., 2005; Bachelor's, 1992, University of Washington
 CHENG, AARON MING, 2007; Bachelor's, 1994, Harvard University
 COLOHAN, SHANNON MARGARET, 2011; Bachelor's, 2000, Dalhousie University
 COWAN, MICHELLE L, 2020; Medical Doctorate, 2007, Virginia Commonwealth University; Medicine
 DAVIDSON, GIANA HYSTAD, 2003; Bachelor's, 2002, Montana State University
 DICK, ANDRE AINSWORTH S., 2006; Bachelor's, 1995, New York University
 DRUGAS, GEORGE THEODORE, 2008; Bachelor's, 1980, Northwestern University
 EVANS, HEATHER L, 2007; Medical Doctorate, 1999, University of Rochester
 FARJAH, FARHOOD, 2002; Medical Doctorate, 2002, Oregon Health & Science University
 FIGUEREDO, EDGAR JOSE, 2001; Medical Doctorate, 1988, Universidad El Bosque
 JAVID, PATRICK J, 2008; Bachelor's, 1996, University of Michigan-Ann Arbor
 JAVID, SARA H, 2008; Bachelor's, 1995, Cornell University
 KEYS, KARI ANNE, 2006; Medical Doctorate, 2006, University of California-San Francisco
 KHANDELWAL, SAURABH, 2008; Bachelor's, 1998, George Washington University
 KRANE, MUKTA KATDARE, 2014; Medical Doctorate, 2002, Mount Sinai School of Medicine
 LAVALLEE, DANIELLE M. * 2012; Medical Doctorate, 2003, University of Kansas

LOUIE, OTWAY, 2008; Bachelor's, 1993, Massachusetts Institute of Technology
 LYNGE, DANA C., 1993; Medical Doctorate, 1985, McGill University
 MANDELL, SAMUEL P, 2005; Bachelor's, 2000, Brown University
 MAUCHLEY, DAVID COURTNEY, 2020; Medical Doctorate, 2004, University of Washington; Medicine
 MCINTYRE, LISA KUWAMURA, 1987; Bachelor's, 1989, University of Washington
 MEEHAN, JOHN JAMES, 2008; Medical Doctorate, 1993, University of Iowa
 MONTENOVO, MARTIN IGNACIO, 2004
 PERMUT, LESTER C., 2002; Bachelor's, 1983, Boston University
 PETERSEN, REBECCA P, 2009; Master's, 2000, Harvard University
 QUIROGA, ELINA, 2002; Medical Doctorate, 1998, Universidad de Buenos Aires
 RASMUSSEN, SARA K., 2020; Medical Doctorate, 2004, West Virginia University; Medicine
 RIEHLE, KIMBERLY, 2001; Medical Doctorate, 2001, Emory University
 ROBINSON, BRYCE RH, 2015; Bachelor's, 1997, Miami University-Oxford
 SAID, HAKIM K, 2006; Bachelor's, 1994, Johns Hopkins University
 SHALHUB, SHERENE, 2003; Bachelor's, 1998, University of South Florida
 SIBULESKY, LENA, 2013; Bachelor's, 1997, Brandeis University
 SMITH, JASON W, 2012; Bachelor's, 1993, Baylor University
 STURDEVANT, MARK LEO, 2020; Medical Doctorate, 1999, University of Iowa; Medicine
 SWEET, MATTHEW P, 2011; Bachelor's, 1998, Dartmouth College
 TANG, GALE LYNN, 2008; Bachelor's, 1991, University of Michigan-Ann Arbor
 TRAN, NAM THANH, 1992; Bachelor's, 1992, University of Washington
 TSE, RAYMOND, 2009; Bachelor's, 1996, Queen's University
 VAN EATON, ERIK, 1996; Bachelor's, 1992, Oregon State University
 WU, PETER CHANG CHUNG, 2004; Medical Doctorate, 1993, Jefferson College

Assistant Professors

ATKINSON, SARAH J, 2019; Bachelor's, 2007, Tulane University of Louisiana; Neuroscience
 BERFIELD, KATHLEEN S., 2005; Medical Doctorate, 2010, University of Washington
 BERNIER, GRETA VALENTINE, 2008; Bachelor's, 2004, University of San Diego
 BURKE, CHRISTOPHER R., 2011; Medical Doctorate, 2011, University of Michigan-Ann Arbor
 CHEN-MEEKIN, JUDY Y, 2017; Medical Doctorate, 2007, Loyola University Chicago
 CHOW, WARREN, 2017
 DESTEFANO, LAUREN M., 2020; Bachelor's, 2008, Fordham University; Biology
 ETTINGER, RUSSELL EDWARD, 2018; Bachelor's, 2007, University of Washington; Neurobiology
 FLANAGAN, MEGHAN R., 2010; Medical Doctorate, 2010, Albert Einstein College of Medicine; Medicine
 GOLDSBERRY-LONG, SARAH R., 2013
 GOUGOUTAS, ALEXANDER J, 2012; Bachelor's, 2000, University of Pennsylvania
 GREENBERG, SARAH, 2017; Master's, 2014, Harvard University; Public Health
 HANANEL, DAVID M, 2016
 HERMSEN, JOSHUA L., 2011; Bachelor's, 2000, Citadel Military College of South Carolina
 INCHAUSTE, SUZANNE M, 2019; Medical Doctorate, 2006, Indiana University-Purdue University-Indianapolis;
 Medicine
 KAO, DENNIS SHUN JEN, 1997; Medical Doctorate, 2003, The University of Texas Medical Branch
 KEENAN, JEFFREY EDWARD, 2020; Medical Doctorate, 2011, University of Maryland-Baltimore; Medicine
 KHORSANDI, MAZIAR, 2020; Medical Doctorate, 2010, University of Dundee; Medicine
 KIM, TERESA, 2017; Medical Doctorate, 2008, Harvard University; Medicine
 KLING, CATHERINE ELIZABETH, 2016; Bachelor's, 2004, Dartmouth College
 MAINE, REBECCA GWYNNE, 2016; Master's, 2013, Harvard University; Public Health

MARQUARDT, DEBORAH LANE, 2002; Medical Doctorate, 2002, Loma Linda University
 MILLER, ERIN A, 2012; Medical Doctorate, 2012, Case Western Reserve University; Medicine
 NEHRA, DEEPIKA, 2019; Medical Doctorate, 2007, Stanford University; Medicine
 O'CONNELL, KATHLEEN M., 2015
 OYETUNJI, SHAKIRAT OMOLARA, 2016; Medical Doctorate, 2009, University of Chicago; Medicine
 RICE-TOWNSEND, SAMUEL, 2016; Bachelor's, 2001, Amherst College; Biology
 SHAM, JONATHAN GHING CHI, 2010; Bachelor's, 2006, Brandeis University; Biochemistry
 SHIN, SUSANNA, 2014; Bachelor's, 1998, College of William and Mary
 SMITH, CAITLIN A., 2000; Medical Doctorate, 2009, Albany Medical College; Medicine
 SOUSA, JANELLE DUBBINS, 2004; Bachelor's, 2005, University of Washington
 STARK, REBECCA ANNE, 2018
 STEWART, BARCLAY T., 2011; Medical Doctorate, 2011, Medical University of South Carolina; Medicine
 SUSARLA, SRINIVAS M, 2016; Master's, 2007, Harvard University
 WANG, DUANE, 2020; Medical Doctorate, 2013, Ohio State University-Main Campus; Medicine
 WILLIAMS, ESTELL JAMIELA, 2009; Bachelor's, 2007, University of San Francisco; Biology
 ZERN, NICOLE KANSIER, 2010; Medical Doctorate, 2010, Emory University
 ZETTERVALL, SARA L., 2020; Medical Doctorate, 2011, George Washington University; Medicine

Urology

For complete faculty listing, please visit <https://www.washington.edu/urology/people/>

Professors

ANSELL, JULIAN S, 1959; Bachelor's, 1947, Bowdoin College
 CAIN, MARK, 2019; Medical Doctorate, 1987, Oregon Health & Science University
 CHAPMAN, WARREN H, 1962; Bachelor's, 1946, Massachusetts Institute of Technology
 DALKIN, BRUCE L, 2008; Medical Doctorate, 1985, Northwestern University
 ELLIS, WILLIAM J., 1991; Medical Doctorate, 1985, Johns Hopkins University
 GORE, JOHN L, 2009; Medical Doctorate, 2001, Baylor University
 JOYNER, BYRON DAVID, 1999; Medical Doctorate, 1988, Harvard University
 LANGE, PAUL HENRY, 1988; Medical Doctorate, 1967, Washington State University
 LENDVAY, THOMAS S * 2004; Bachelor's, 1995, Rice University
 LIN, DANIEL W., 1994; Bachelor's, 1989, Stanford University
 MERGUERIAN, PAUL ARTHUR, 2011; Master's, 2009, Dartmouth College
 PORTER, MICHAEL, 1997; Bachelor's, 1992, University of Iowa
 SHNORHAVORIAN, MARGARETT, 2005; Master's, 1999, University of California-Berkeley
 SWEET, ROBERT, 1997; Medical Doctorate, 1997, University of Minnesota-Duluth
 WALSH, THOMAS JAMES, 2000; Medical Doctorate, 2000, Northwestern University
 WESSELLS, HUNTER, 2000; Bachelor's, 1984, Georgetown University
 WRIGHT, JONATHAN, 1998; Medical Doctorate, 2001, University of Washington
 XIN, LI, 2018
 YANG, CLAIRE C, 1993; Medical Doctorate, 1988, Vanderbilt University

Associate Professors

DASH, ATREYA, 2013; Medical Doctorate, 1998, University of Vermont
 HARPER, JONATHAN D, 2009; Bachelor's, 1996, University of California-Santa Cruz
 KIERAN, KATHLEEN, 2015; Medical Doctorate, 2002, Boston University

MILLER, JANE L., 1985; Medical Doctorate, 1985, University of Central Oklahoma
MULLER, CHARLES HOLBROOK, 1980; Doctorate, 1976, University of California-Berkeley
SORENSEN, MATHEW D., 2004; Medical Doctorate, 2004, University of Colorado Denver
SUTHERLAND, SUZETTE E, 2013; Medical Doctorate, 1997, Case Western Reserve University
VOELZKE, BRYAN B, 2008; Bachelor's, 1996, Baylor University

Assistant Professors

AHN, JENNIFER, 2015; Bachelor's, 2004, Harvard University
FERNANDEZ BONILLA, JOSE NICOLAS, 2020
HAGEDORN, JUDITH C, 2014; Master's, 2004, Johns Hopkins University
HAIDER, MAAHUM A., 2010; Medical Doctorate, 2010, University of California-Los Angeles
HEHEMANN, MARAH, 2018; Doctorate, 2012, Rush University
NYAME, YAW, 2018; Master's, 2007, George Washington University; Health Administration
OSTROWSKI, KEVIN, 2015; Medical Doctorate, 2009, University of Missouri-St Louis
PSUTKA, SARAH, 2018; Bachelor's, 2003, Harvard University; Biology
SCHADE, GEORGE R, 2013; Bachelor's, 2003, University of Chicago
SKOKAN, ALEXANDER JOSEUF, 2019; Medical Doctorate, University of Pennsylvania

School of Nursing

For complete faculty listing, please visit <https://nursing.uw.edu/staff/>

Professors

BATEY, MARJORIE V, 1982; Master's, 1956, University of Colorado at Boulder
BEKEMEIER, ELIZABETH R. * 1984; Master's, 1994, Johns Hopkins University
BELZA, BASIA * 1991; Bachelor's, 1978, Georgetown University
BERKOWITZ, BOBBIE * 1988; Doctorate, 1990, Case Western Reserve University
BERRY, DONNA * 2008
BLACKBURN, SUSAN * 1982; Bachelor's, 1966, University of Connecticut
BOND, ELEANOR, 1984; Bachelor's, 1969, University of Maryland-University College
BOOTH-LAFORCE, CATHRYN L * 1980; Bachelor's, 1970, Baldwin-Wallace College
BRIDGES, ELIZABETH * 2004; Bachelor's, 1983, Oregon Health & Science University
BURR, ROBERT L * 1982; Bachelor's, 1975, University of Washington
COCHRANE, BARBARA B. * 1985; Bachelor's, 1982, University of Alaska Southeast
DE CASTRO, ARNOLD BRIAN * 2006; Master's, 1998, Johns Hopkins University
DOUGHERTY, CYNTHIA M. * 1985; Bachelor's, 1979, American University
EGGERT, LEONA, 1983; Bachelor's, 1969, University of Washington
EMAMI, AZITA * 2013; Master's, 1994, Karolinska Institute
ENSIGN, B. JOSEPHINE * 1994; Bachelor's, 1984, Edward Via Virginia College of Osteopathic Medicine
HEITKEMPER, MARGARET M * 1981; Bachelor's, 1973, Seattle University
HORN, BARBARA J, 1977; Bachelor's, 1951, Ball State University
HOUCK, GAIL M, 2014; Master's, 1977, Oregon Health & Science University
KASPRZYK, DANUTA M. * 1984; Master's, 1981, University of Illinois at Urbana-Champaign
KIECKHEFER, GAIL M. * 1982; Master's, 1977, University of Missouri-St Louis
KILLIEN, MARCIA G * 1973; Bachelor's, 1971, St. Olaf College
LANDIS, CAROL * 1991; Master's, 1973, University of California-San Francisco
LEWIS, FRANCES M * 1978; Master's, 1973, Stanford University
LOBER, WILLIAM B. * 1997; Bachelor's, 1980, Tufts University
MAGYARY, DIANE LOUISE * 1981; Bachelor's, 1971, Ohio State University Agricultural Technical Institute
MCCURRY, SUSAN MELANCON * 1991; Bachelor's, 1974, Pomona College
MITCHELL, PAMELA H * 1971; Master's, 1965, University of California-San Francisco
MURPHY, SHIRLEY ANN, 1985; Bachelor's, 1956, Gonzaga University
OSBORNE, OLIVER H, 1982; Bachelor's, 1958, CUNY Hunter College
OXFORD, MONICA L. * 1996; Bachelor's, 1990, Arizona State University
PATRICK, MAXINE L, 1982; Doctorate, 1970, University of California-Los Angeles
PRICE, CYNTHIA * 1999; Bachelor's, 1982, Antioch College
SALAZAR, MARY K, 1985; Doctorate, 1991, Seattle University
SALMON, MARLA E * 2008; Doctorate, 1977, Johns Hopkins University
SCHEPP, KAREN G. * 1988; Doctorate, 1985, University of Arizona
SPIEKER, SUSAN J * 1983; Doctorate, 1982, Cornell University
TERI, LINDA * 1984; Bachelor's, 1974, New York University
THOMAS, KAREN A * 1981; Bachelor's, 1972, University of Iowa
THOMPSON, HILAIRE * 2004; Bachelor's, 1992, Catholic University of America
WARD, TERESA M. * 2006; Bachelor's, 1994, American College
ZIERLER, BRENDA * 1988; Bachelor's, 1991, University of Washington

Associate Professors

ALTMAN, GAYLENE M * 1983; Bachelor's, 1967, University of Kansas
BARRINGTON, WENDY * 2007; Bachelor's, 1997, Stanford University
BOUTAIN, DORIS M * 1995; Bachelor's, 1994, Southern University at New Orleans
BUCHANAN, DIANA MARIE * 2005; Bachelor's, 1997, Virginia Commonwealth University
CANTARINI, RENEE * 1990; Bachelor's, 1985, D'Youville College
CARNEVALI, DORIS, 1982; Bachelor's, 1947, University of Washington
CARR, CATHERINE A * 1993; Bachelor's, 1976, The University of Texas
CHILDRESS, KRISTEN M * 2010; Bachelor's, 2001, University of Washington
CORLETT, KAREN M., 2016
COX, PAULA P., 1995; Master's, 2005, University of Washington
DILLON, COLLEEN, 2001; Bachelor's, 1992, Boston College
ELMORE, SHAWN K * 1983; Bachelor's, 1976, University of Colorado
FATHI, JOELLE T * 1996; Bachelor's, 1995, Seattle University
GIMBEL-SHERR, SARAH ODELL * 2005; Bachelor's, 1993, Kenyon College
HIRSCH, ANNE * 2017; Doctorate, 1983, Indiana University-Bloomington; Nursing
HORN, BEVERLY M, 1976; Bachelor's, 1957, University of Missouri-St Louis
HOWELLS, AMY J. * 2015; Bachelor's, 2000, Armstrong Atlantic State University
JOHNSON, GAIL C. * 1983; Bachelor's, 1979, Seattle Pacific University
JOHNSON, LEONARD CLARK, 1994; Bachelor's, 1969, University of Washington
KEMBLE, KATHERINE * 2003; Bachelor's, 1998, Oregon Health & Science University
KIM, EUNJUNG * 2001; Bachelor's, 1986, Catholic University of Korea
KOHLER, PAMELA K. * 2004; Bachelor's, 2000, Johns Hopkins University
KOZUKI, YORIKO * 2000; Bachelor's, 1995, Columbia University
LAZARUS, JUDY * 1984; Master's, 1988, University of California-San Francisco
LOVELL, DAVID GILBERT, 1984; Bachelor's, 1968, Carleton College
MARKS, JESSIE NOEL, 2018; Doctorate, 2014, University of Washington; Nursing
O'CONNOR, MARY R * 2009; Bachelor's, 2003, New York University
RASMUSSEN, SHERYL RUHLMAN, 1987
REDING, KERRY WALCK * 2003; Bachelor's, 1998, Arizona State University
SADAK, TATIANA I * 2008
SCHROEDER, CAROLE A. * 1993; Doctorate, 1993, University of Colorado Denver
SUMMEROUR, MELANIE, 1995; Master's, 1991, Emory University
TAKAMIYA, KRISTINE * 2013; Master's, 2001, Columbia University
TANG, HSIN-YI * 1998; Bachelor's, 1994, Duquesne University
 TSAI, JENNY HSIN-CHUN * 1992; Bachelor's, 1990, National Yang Ming University
WALKER, AMY LYNNE * 2010
WALSH, ELAINE M. * 1994; Bachelor's, 1986, Mount St Mary's College
WILLGERODT, MAYUMI * 2001; Bachelor's, 1987, Georgetown University
WOLPIN, SETH * 2004; Bachelor's, 1994, New York University
ZASLAVSKY, OLEG * 2008; Master's, 2007, Tel Aviv University

Assistant Professors

ALTMAN, MOLLY R * 2017; Bachelor's, 2002, University of Vermont; Nursing
AULD, JONATHAN, 2018; Doctorate, 2018, Oregon Health & Science University
BLAKENEY, ERIN LINDSEY * 2009; Bachelor's, 2005, Johns Hopkins University
BYUN, EESEUNG * 2016; Bachelor's, 2000, Ewha Womens University

HASH, JONIKA B, 2018; Bachelor's, 2010, University of Washington; Nursing
IRIBARREN, SARAH * 2016; Doctorate, 2013, University of Utah
KANTROWITZ-GORDON, IRA * 1993; Bachelor's, 1990, Brown University
MATTHEWS, SARAH W. * 1992; Bachelor's, 1988, University of Washington
MYERS, JULIE, 2006; Bachelor's, 2007, University of Washington
PINTYE, JILLIAN C. * 2012
SONNEY, JENNIFER TEDDER * 2005; Doctorate, 2015, University of Arizona
STREUR, MEGAN * 2016; Bachelor's, 2005, Oral Roberts University
VANDRAANEN EARWAKER, JENNA * 2020; Doctorate, 2017, University of California-Los Angeles; Public Health

Senior Lecturers

BOSQUE, ELENA MARIE, 2000; Master's, 1984, University of California-San Francisco
KROENING, KATHLEEN M, 1990

Lecturers

BANASIK, JACQUELYN, 2018; Master's, 1983, University of Washington
CARROLL, MAURA, 2018
CUNITZ, TAMARA CYHAN, 2005; Bachelor's, 1994, Catholic University of America
FRANTZ, LAURA, 2013; Bachelor's, 2008, Edgewood College
GERICH, ANNE E., 2017; Doctorate, 2013, University of Washington; Nursing
HUYNH, DOQUYEN LE, 2018
JOHNSON, KATHLEEN H, 2016; Doctorate, 2013, University of Washington; Nursing
KALKBRENNER, ANNE CLAIRE, 1997; Bachelor's, 1988, Baylor University
MORIARTY, ERIN C, 2013; Bachelor's, 2002, Duquesne University
SHERLEY, CLARE M., 2019
SIMPSON, JESSICA, 2007
STEVENS, MEGAN, 2017; Bachelor's, University of Northern Colorado

School of Pharmacy

Medicinal Chemistry

For complete faculty listing, please visit <https://sop.washington.edu/department-of-medicinal-chemistry/faculty-staff/>

Professors

ATKINS, WILLIAM M. * 1991; Bachelor's, 1980, College of William and Mary
ELMER, GARY W, 1982; Doctorate, 1970, Rutgers University-Camden
KRUPSKI, EDWARD, 1983; Bachelor's, 1939, University of Washington
NELSON, WENDEL * 1965; Bachelor's, 1962, Idaho State University
RETTIE, ALLAN E. * 1984; Bachelor's, 1979, Heriot-Watt University

Associate Professors

KUNZE, KENT * 1989; Doctorate, 1981, University of California-San Francisco
LEE, KELLY K. * 2009; Bachelor's, 1996, Harvard University
NATH, ABHINAV * 2003; Doctorate, 2008, University of Washington
TOTAH, RHEEM A. * 2002
XU, LIBIN * 2014; Bachelor's, 2002, Nankai University

Assistant Professors

BHARDWAJ, GAURAV * 2014
GUTTMAN, MIKLOS * 2010; Bachelor's, 2003, University of California-Irvine

Pharmaceutics

For complete faculty listing, please visit <https://sop.washington.edu/department-of-pharmaceutics/faculty/>

Professors

HO, RODNEY J.Y. * 1990; Master's, 1985, The University of Tennessee
HU, SHIU-LOK * 1988; Bachelor's, 1971, University of California-Berkeley
RAGUENEAU-MAJLESSI, ISABELLE * 1999; Medical Doctorate, 1993, American University of Paris
THUMMEL, KENNETH E. * 1982; Bachelor's, 1978, Boise State University
UNADKAT, JASHVANT D * 1985; Bachelor's, 1977, University of London
WANG, JOANNE * 2000; Bachelor's, 1992, Peking University

Associate Professors

KELLY, EDWARD J * 1991; Bachelor's, 1985, University of California-Riverside
LIN, YVONNE S. * 1997; Bachelor's, 1994, University of California-Berkeley
MAO, QINGCHENG * 2002; Bachelor's, 1985, East China Normal University

Assistant Professor

PRASAD, BHAGWAT, 2011; Bachelor's, 2004, Hemwati Nandan Bahuguna Garhwal University

Pharmacy

For complete faculty listing, please visit <https://sop.washington.edu/department-of-pharmacy/faculty-staff/>

Professors

ANDERSON, GAIL * 1981; Bachelor's, 1978, University of Washington
BASU, ANIRBAN * 2010; Bachelor's, 1995, Jadavpur University
BAUER, LARRY, 1980; Medical Doctorate, 1980, University of Kentucky
BLACK, DOUGLAS J, 1981; Bachelor's, 1981, University of Washington
BOUDREAU, DENISE M. * 1998; Bachelor's, 1992, University of Rhode Island
BURKHART, VINCENT D, 1982; Bachelor's, 1959, University of Maryland-College
CHAN, LINGTAK-NEANDER * 1994; Bachelor's, 1994, Northeastern University
DEVINE, EMILY E. * 1999; Master's, 1999, University of California-San Francisco
GARDNER, JACQUELINE S., 1990; Bachelor's, 1962, University of California-Berkeley
GARRISON, LOUIS P, 2004; Bachelor's, 1972, Indiana University-Bloomington
GRAY, SHELLY L. * 1995; Medical Doctorate, 1989, University of Michigan-Ann Arbor
HANSTEN, PHILIP D, 1989; Medical Doctorate, 1968, University of California-San Francisco
HEBERT, MARY F * 1996; Medical Doctorate, 1987, University of California-San Francisco
ISOHERRANEN, NINA * 2003; Doctorate, 2003, Hebrew University of Jerusalem
LEVY, RENE H * 1982; Doctorate, 1970, University of California-San Francisco
ODEGARD, PEGGY SOULE, 1986; Bachelor's, 1985, University of Washington
ORR, JACK E, 1956; Bachelor's, 1940, Purdue University-Main Campus
PLEIN, JOY B, 1971; Bachelor's, 1947, Idaho State University
STERGACHIS, ANDREAS S * 1982; Master's, 1976, University of Minnesota-Duluth
SULLIVAN, SEAN * 1992; Master's, 1984, The University of Texas
VEENSTRA, DAVID * 1997; Doctorate, 1996, University of California-San Francisco
WHITE, HAROLD STEVE * 2016; Bachelor's, 1977, Idaho State University

Associate Professors

BANSAL, AASTHAA * 2006; Master's, 2008, University of Washington
BOUGE, ALISHA, 2020; Master's, 2011, University of Washington
CARLSON, JOSHUA J. * 2003; Bachelor's, 1997, University of Colorado at Boulder
DANIELSON, JENNIFER M, 2007; Bachelor's, 1993, Drake University
HAMMOND, DAVID T, 2005; Bachelor's, 1996, University of Idaho
HANSEN, RYAN * 2004; Bachelor's, 1999, Carroll College; Chemistry
HAZLET, THOMAS K. * 1996; Doctorate, 1991, University of California-Berkeley
KARP, FLOYD B, 2002; Bachelor's, 1978, Carnegie Mellon University
WERTH, BRIAN * 2013; Medical Doctorate, 2010, University of Phoenix-New Mexico Campus

Assistant Professors

BACCI, JENNIFER LYNN, 2015; Doctorate, 2011, University of Pittsburgh-Pittsburgh Campus; Pharmacy
CIRRINCIONE, LAUREN, 2019; Master's, 2018, University of Nebraska at Omaha; Epidemiology
HALISKI, MELISSA * 2016; Bachelor's, 2006, University of Oregon
JOHNSON, ERIC S * 1992; Bachelor's, 1991, Emory University
MARCUM, ZACHARY, 2015; Doctorate, 2008, Butler University; Pharmacy
O'SULLIVAN, TERESA, 1985; Medical Doctorate, 1990, University of Minnesota-Duluth
ROTH, JOSHUA A * 2004

YEUNG, CATHERINE * 1995; Medical Doctorate, 1995, University of Michigan-Ann Arbor

Daniel J. Evans School of Public Policy and Governance

For complete faculty listing, please visit https://evans.uw.edu/directory/?_sft_category=current-faculty

Professors

ALLARD, SCOTT W * 2014; Doctorate, 1999, University of Michigan-Ann Arbor
ANDERSON, C. LEIGH * 1984; Bachelor's, 1984, University of Calgary
BOSTROM, ANN * 2007; Doctorate, 1990, Carnegie Mellon University
CULLEN, ALISON * 1995; Master's, 1989, Harvard University
GORDON, ANDREW * 1988; Doctorate, 1970, Columbia University
GORDON, MARGARET T, 1988; Bachelor's, 1961, Northwestern University
GUGERTY, MARY KAY * 2001; Bachelor's, 1985, Georgetown University
HILL, HEATHER D * 2014; Doctorate, 2007, Northwestern University
KLAWITTER, MARIEKA * 1990; Bachelor's, 1983, University of Michigan-Ann Arbor
LAYTON, DAVID F * 1990; Bachelor's, 1989, University of Virginia-Main Campus
LOCKE, HUBERT G, 1976; Bachelor's, 1959, University of Chicago
LONG, MARK C * 2004; Bachelor's, 1989, DePauw University
MARLOWE, JUSTIN, 2009; Bachelor's, 1999, Northern Michigan University
MCCORKLE, SANDRA ARCHIBALD * 2003; Bachelor's, 1967, University of California-Berkeley
PLOTNICK, ROBERT D. * 1984; Bachelor's, 1971, Princeton University
THOMAS, CRAIG W. * 2006; Master's, 1988, University of California-Berkeley
VIGDOR, JACOB L * 2014; Bachelor's, 1994, Cornell University
ZERBE, RICHARD O. * 1975; Doctorate, 1969, Duke University
ZUMETA, WILLIAM M * 1985; Bachelor's, 1969, Haverford College; Political Science

Associate Professors

BARNHART, ERICA * 1999; Bachelor's, 1995, University of Washington; Political Science
BLUME, GRANT H, 2007; Bachelor's, 2001, University of Oregon
BROCK, JONATHAN, 1982; Bachelor's, 1971, Franklin and Marshall College
COOK, JOSEPH H, 2007; Bachelor's, 1996, Cornell University
CUEVAS, CARLOS E, 2012; Doctorate, 1984, Ohio State University Agricultural Technical Institute
EVANS, LAURA E * 2004; Bachelor's, 1994, University of California-Berkeley
FRITZEN, SCOTT A * 2015; Bachelor's, 1991, Michigan State University
FYALL, RACHEL * 2014; Master's, 2006, George Washington University
HALL, CRYSTAL C * 2008; Bachelor's, 2003, Carnegie Mellon University
HERRANZ JR, JOAQUIN * 2004; Doctorate, 2004, Massachusetts Institute of Technology
KIOKO, SHARON N * 2015; Master's, 2004, Indiana University-Bloomington
KOSACK, STEPHEN * 2013; Bachelor's, 2001, University of Miami
PAGE, STEPHEN B * 1999; Master's, 1989, Massachusetts Institute of Technology
QUINN, ADRIENNE E, 2014; Bachelor's, 1984, College of the Holy Cross
STEUERWALT, MATTHEW, 1995; Bachelor's, 1990, University of California-San Diego
SUAREZ, DAVID * 2013; Master's, 2002, Stanford University
VIGDOR, ELIZABETH R, 2014; Master's, 1995, Harvard University

Assistant Professors

BRUNJES, BENJAMIN M * 2016; Master's, 2012, University of Georgia

DILLON, BRIAN M, 2013; Master's, 2009, Cornell University

JURCEVIC, INES * 2017; Doctorate, 2016, University of California-Los Angeles; Social Psychology

KIM, CAROLINE WEBER, 2018; Doctorate, 2012, University of Michigan-Ann Arbor; Economics

MARTIN, KARIN D. * 2017; Bachelor's, 1995, Stanford University

XU, DAFENG, 2019; Doctorate, 2016, Cornell University

Senior Lecturers

BULLITT, DOROTHY C, 2009; Doctorate, 1980, Boston University

GONZALEZ, MICHELLE, 2011; Master's, 1994, Harvard University

School of Public Health

Biostatistics

For complete faculty listing, please visit <https://www.biostat.washington.edu/people/faculty>

Professors

BARLOW, WILLIAM E. * 1984; Master's, 1976, University of Toronto
BROWN, ELIZABETH * 2002; Doctorate, 2002, Harvard University
BROWNING, SHARON * 1995; Bachelor's, 1995, University of Auckland
CHAN, KWUN CHUEN GARY * 2008; Doctorate, 2008, Johns Hopkins University
CHEN, YING QING * 2005; Doctorate, 1999, Johns Hopkins University
DIEHR, PAULA K., 1982; Bachelor's, 1963, Harvey Mudd College
FISHER, LLOYD D, 1982; Master's, 1965, Dartmouth College
FLEMING, THOMAS RICHARD * 1984; Master's, 1974, University of Maryland-University College
GILBERT, PETER B * 1991; Bachelor's, 1992, University of Washington
HALLORAN, M. ELIZABETH * 2006; Medical Doctorate, 1983, Freie Universität Berlin
HALLSTROM, ALFRED, 1982; Master's, 1961, Brown University
HEAGERTY, PATRICK J. * 1995; Bachelor's, 1985, Cornell University
HSU, LI * 1989; Bachelor's, 1989, Nanjing University
HUGHES, JAMES P * 1982; Bachelor's, 1977, University of Maine
INOUE, LURDES * 2002; Master's, 1998, Duke University
KERR, KATHLEEN F. * 2001; Bachelor's, 1993, Bryn Mawr College
KOOPERBERG, CHARLES L * 1991; Master's, 1985, Delft University of Technology
KRONMAL, RICHARD A * 1964; Bachelor's, 1961, University of California-Los Angeles
LE BLANC, MICHAEL * 1987; Bachelor's, 1983, Simon Fraser University
MAY, SUSANNE * 2008; Master's, 1994, Universität Karlsruhe (Karlsruhe Institute of Technology)
MCCLELLAND, ROBYN L. * 1994; Bachelor's, 1991, McGill University
MCKNIGHT, BARBARA * 1981; Bachelor's, 1976, Pomona College
PRENTICE, ROSS L * 1974; Master's, 1968, University of Toronto
RICE, KENNETH M. * 2004; Bachelor's, 1995, University of Cambridge
RICHARDSON, BARBRA * 1993; Bachelor's, 1987, Pomona College
SHOJAIE, ALI * 2010; Master's, 2001, Amirkabir University of Technology
THOMPSON, MARY LOU * 1982; Doctorate, 1979, Universität Göttingen
THORNTON, TIMOTHY * 2009; Bachelor's, 1998, Hampton University
WAHL, PATRICIA W, 1982; Bachelor's, 1960, San Jose State University
WEIR, BRUCE SPENCER * 2005; Doctorate, 1968, North Carolina A & T State University

Associate Professors

BRUMBACK, LYNDIA C. * 2001; Master's, 1996, University of Wisconsin-Madison
CARONE, MARCO * 2013; Doctorate, 2010, Johns Hopkins University
COOK, ANDREA * 2000; Master's, 2003, Harvard University
EMOND, MARY JANE * 1987; Bachelor's, 1984, University of Minnesota-Duluth
JANES, HOLLY E. * 2000; Bachelor's, 1998, Skidmore College
LUMLEY, THOMAS S. * 1995; Bachelor's, 1991, Monash University
POLISSAR, NAYAK LINCOLN * 1980; Master's, 1968, Princeton University

SHORTREED, SUSAN * 2001; Bachelor's, 2001, University of Michigan-Ann Arbor
 SIMON, NOAH * 2013; Bachelor's, 2008, Pomona College
 SZPIRO, ADAM A. * 2006; Doctorate, 1999, Brown University
 WU, MICHAEL * 2015; Master's, 2006, Harvard University
 ZHAO, YINGQI * 2017; Master's, 2007, Fudan University; Operations Management

Assistant Professors

DAI, JAMES YU * 2002; Medical Doctorate, 1998, Peking University
 LILA, EARDI, 2019; Master's, 2014, Politecnico di Milano
 SADINLE GARCIA-RUIZ, MAURICIO * 2017; Master's, 2011, Carnegie Mellon University; Statistics
 WANG, CHING-YUN * 1993; Bachelor's, 1983, National Taiwan Normal University
 WILLIS, AMY DONALDSON * 2017; Bachelor's, 2011, Australian National University; Actuarial Science

Lecturer

GOGARTEN, JENNIFER, 2003; Bachelor's, 2006, University of Chicago; Biology

Environmental and Occupational Health Sciences

For complete faculty listing, please visit <https://deohs.washington.edu/faculty>

Professors

BURBACHER, THOMAS M * 1974; Bachelor's, 1973, University of Cincinnati-Clermont College
 CANGELOSI, GERARD A. * 1985; Bachelor's, 1977, Michigan State University
 COHEN, MARTIN * 1997; Master's, 1985, Harvard University
 COSTA, LUCIO GUIDO * 1983; Medical Doctorate, 1977, Università degli Studi di Milano
 DANNENBERG, ANDREW * 2009; Master's, 1983, Johns Hopkins University
 FAUSTMAN, ELAINE M. * 1981; Doctorate, 1981, Michigan State University
 FENSKE, RICHARD A. * 1990; Master's, 1972, Columbia University
 FRANKLIN, GARY M. * 1988; Bachelor's, 1965, Franklin and Marshall College
 FRUMKIN, HOWARD * 2010; Bachelor's, 1977, Brown University
 GALLAGHER, EVAN P * 1991; Master's, 1986, Duke University
 GODWIN, HILARY ARNOLD, 2018
 KALMAN, DAVID A * 1978; Bachelor's, 1972, Harvey Mudd College
 KAUFMAN, JOEL D. * 1988; Bachelor's, 1982, University of Michigan-Ann Arbor
 KAVANAGH, TERRANCE J * 1985; Master's, 1980, Michigan State University
 KISSEL, JOHN C., 1990; Master's, 1974, Harvard University
 KOENIG, JANE * 1982; Bachelor's, 1959, University of Washington
 MESCHKE, JOHN SCOTT * 2002; Master's, 1996, Indiana University-Bloomington
 MORGAN, MICHAEL * 1982; Bachelor's, 1969, Cornell University
 RABINOWITZ, PETER * 1987; Bachelor's, 1978, Amherst College
 ROBERTS, MARILYN C * 1981; Bachelor's, 1973, University of Washington
 ROBKIN, MAURICE A, 1982; Bachelor's, 1953, California Institute of Technology
 ROSENFELD, MICHAEL E. * 1982; Bachelor's, 1975, Grinnell College
 SEIXAS, NOAH S. * 1992; Bachelor's, 1978, Hampshire College
 SHEPPARD, ELIZABETH A. * 1989; Bachelor's, 1979, Johns Hopkins University
 SIMPSON, CHRISTOPHER DAVID * 2000; Doctorate, 1997, University of British Columbia
 WOODS, JAMES * 1982; Bachelor's, 1962, Princeton University

XIA, ZHENGUI * 1987; Doctorate, 1991, University of Washington
YOST, MICHAEL G. * 1993; Bachelor's, 1977, University of California-Berkeley

Associate Professors

AVERILL, MICHELLE M. * 2000; Bachelor's, 2002, University of Washington
BUSCH ISAKSEN, TANIA M * 2003; Bachelor's, 1993, Colorado State University
CUI, YUE * 2014; Doctorate, 2010, University of Kansas
DANIELL, WILLIAM E * 1984; Medical Doctorate, 1979, Tufts University; Medicine
GLEASON, RICHARD, 1997; Bachelor's, 1978, Montana Tech of the University of Montana
LEVY, KAREN, 2020; Bachelor's, 1995, Stanford University; Biology
OTTEN, JENNIFER * 2012; Bachelor's, 1995, The University of Texas
SETO, EDMUND * 2013; Bachelor's, 1993, University of California-Berkeley
SPECTOR, JUNE * 2009; Bachelor's, 2001, Harvard University

Assistant Professors

AUSTIN, ELENA * 2013; Doctorate, 2013, Harvard University; Environmental/Environmental Health Engineering
BAKER, MARISSA * 2004; Bachelor's, 2007, Northwestern University; Biology
COLLIER, SARAH M. * 2019; Doctorate, 2011, Cornell University; Botany/Plant Biology
ERRETT, NICOLE A * 2016; Bachelor's, 2008, Johns Hopkins University
SIMCOX, NANCY, 1991; Bachelor's, 1987, Cornell University; Natural Resources Conservation
SIPOS RANDOR, YONA * 2018; Doctorate, 2014, University of British Columbia

Lecturer

TRESER, CHARLES D * 1982; Bachelor's, 1967, Thiel College

Epidemiology

For complete faculty listing, please visit <https://epi.washington.edu/faculty>

Professors

AUSTIN, MELISSA A., 1988; Bachelor's, 1973, Stanford University
BASEMAN, JANET G. * 1999; Bachelor's, 1996, The University of Texas Health Science Center at Houston
BERESFORD, SHIRLEY A. * 1987; Doctorate, 1981, King's College London
BUIST, DIANA SM * 1995; Bachelor's, 1992, University of California-Santa Barbara
DREWNOWSKI, ADAM * 1998; Doctorate, 1977, Rockefeller University
DUERR, ANN C * 2004; Medical Doctorate, 1985, Harvard University
EMANUEL, IRVIN, 1966; Bachelor's, 1951, Rutgers University-Camden
GALE, JAMES L, 1982; Medical Doctorate, 1961, Columbia University
GOLDBERG, JACK, 2001; Bachelor's, 1973, New York University
GRAYSTON, J THOMAS, 1960; Bachelor's, 1947, University of Chicago
HAWES, STEPHEN E. * 1991; Bachelor's, 1985, University of Rochester
HECKBERT, SUSAN R. * 1982; Medical Doctorate, 1981, Case Western Reserve University
HEMINGWAY, SUSAN JEAN * 1980; Master's, 1979, Oregon State University
KOESELL, THOMAS D, 1982; Medical Doctorate, 1972, Harvard University
KOUTSKY, LAURA A, 1981; Bachelor's, 1975, University of Oregon
KUKULL, WALTER A * 1981; Bachelor's, 1971, University of Washington

LAMPE, JOHANNA W * 1998; Bachelor's, 1982, University of Minnesota-Duluth
LEE, JOHN A H, 1966; Doctorate, 1952, London School of Hygiene & Tropical Medicine
LI, CHRISTOPHER I-FU * 1998; Bachelor's, 1995, Stanford University
LITTMAN, ALYSON J. * 1998; Master's, 1998, University of Washington
MALONE, KATHLEEN E * 1984; Bachelor's, 1978, Temple University
MANHART, LISA E. * 1997; Bachelor's, 1982, Indiana University-Bloomington
MCTIERNAN, ANNE * 1982; Bachelor's, 1974, Boston University
MUELLER, BETH A. * 1984; Doctorate, 1984, Tulane University of Louisiana
NEWCOMB, POLLY A. * 1983; Bachelor's, 1978, The Evergreen State College
PETERS, ULRIKE * 2004; Master's, 1994, Fachhochschule Kiel
REINER, ALEXANDER P. * 1989; Bachelor's, 1980, Johns Hopkins University
SCHWARTZ, STEPHEN MARC * 1984; Doctorate, 1990, University of Washington
SMITH, NICHOLAS L * 1993; Master's, 1993, University of California-Berkeley
VAUGHAN, THOMAS L * 1982; Bachelor's, 1974, Cornell University
WEISS, NOEL S * 1975; Master's, 1969, Harvard University
WINER, RACHEL L. * 2000; Bachelor's, 1998, Brown University

Associate Professors

BEDFORD, TREVOR * 2016; Doctorate, 2008, Harvard University
BHATTI, PARVEEN * 2002; Bachelor's, 1998, University of British Columbia
DELANEY, JOSEPH AUSTIN * 2007; Bachelor's, 1993, Lakehead University
DUNCAN, GLEN E * 2003; Master's, 1994, Ball State University
ENQUOBAHRIE, DANIEL ASMAMA * 2003; Medical Doctorate, 1996, Addis Ababa University
FRETTS, AMANDA MAE * 2005; Bachelor's, 2003, Amherst College
GOLDBAUM, GARY M. * 1989; Medical Doctorate, 1978, University of Colorado Denver
HARRIS, CRISTEN LYNN * 2019
HOOVER, J JOANNE, 1972; Bachelor's, 1958, University of Illinois at Urbana-Champaign
KERNIC, MARY A. * 1994; Bachelor's, 1988, University of Connecticut
KIRK, ELIZABETH * 1990; Bachelor's, 1980, New York University
KRATZ, MARIO * 2003; Bachelor's, 1994, Rheinische Friedrich Wilhelms Universität Bonn
LUND, ANNE E, 2003; Master's, 2005, University of Washington
MADELEINE, MARGARET M. * 1991; Bachelor's, 1981, Frostburg State University
PHIPPS, AMANDA I * 2006; Bachelor's, 2001, Northwestern University
ROWHANI-RAHBAR, ALI * 2005; Medical Doctorate, 2002, Iran University of Medical Sciences

Assistant Professors

BALKUS, JENNIFER E. * 2002; Master's, 2005, University of Washington
FOHNER, ALISON * 2017
GLOSTER, ANNE-MARIE, 2015; Bachelor's, 1989, North Carolina A & T State University
HAJAT, ANJUM * 2011; Bachelor's, 1995, George Washington University
KHOSROPOUR, CHRISTINE M * 2011; Master's, 2010, Emory University
LINDSTROEM, SARA * 2015; Master's, 2004, Umea University
MOONEY, STEPHEN * 2016
SPIKER, MARIE L, 2020; Doctorate, 2019, Johns Hopkins University

Lecturer

VOGLIANO, CHRISTOPHER, 2017

Health Services

For complete faculty listing, please visit <http://depts.washington.edu/hserv/faculty/>

Professors

BRADLEY, KATHARINE A * 1990; Bachelor's, 1982, Stanford University
CHEADLE, ALLEN D. * 1987; Bachelor's, 1978, Pomona College
CONNELL, FREDERICK A * 1978; Bachelor's, 1968, Harvard University
DOWLING, WILLIAM L * 1982; Bachelor's, 1959, Duke University
FISHMAN, PAUL A * 1985; Bachelor's, 1980, American University
GREMBOWSKI, DAVID * 1981; Doctorate, 1982, University of Washington
GROSSMAN, DAVID C. * 1988; Bachelor's, 1978, University of California-Berkeley
HAGOPIAN, AMY * 1983; Bachelor's, 1976, University of Washington
HANNON, MARGARET A. * 2001; Master's, 1999, University of North Carolina at Chapel Hill
HARRIS, JEFFREY R * 1983; Master's, 1993, Johns Hopkins University
HEBERT, PAUL L * 2008; Bachelor's, 1985, Georgetown University
JOHNSON, DONNA * 1990; Bachelor's, 1973, Iowa State University
KESSLER, LARRY * 2001; Bachelor's, 1973, Boston University
LIU, CHUAN-FEN * 1998; Bachelor's, 1980, National Taiwan University
MACKENZIE, SARA LOUISE, 1992; Medical Doctorate, 1992, University of California-Davis
MANGIONE-SMITH, RITA M * 2005; Master's, 1997, University of California-Los Angeles
MAYNARD, CHARLES C * 1975; Master's, 1977, University of Washington
MEISCHKE, HENDRIKA W. * 1991; Doctorate, 1992, Michigan State University
OBERLE, MARK W. * 1988; Bachelor's, 1970, Harvard University
PATRICK, DONALD LEE * 1987; Master's, 1968, Columbia University
PERRIN, EDWARD, 1975; Master's, 1956, Columbia University
RALSTON, JAMES D. * 1989; Bachelor's, 1988, Stanford University
REIBER, GAYLE * 1983; Master's, 1975, Johns Hopkins University
SPIGNER, CLARENCE * 1994; Bachelor's, 1979, University of California-Berkeley
TAYLOR, VICTORIA M. * 1989; Bachelor's, 1976, University of Nottingham
THOMASGARD, COLLEEN ELLEN * 1982; Bachelor's, 1980, University of Washington
THOMPSON, ENGELBERTA * 1989; Bachelor's, 1974, Grand Valley State University
TURNER, ANNE M. * 1989; Medical Doctorate, 1985, Dartmouth College
WAGNER, EDWARD H * 1984; Medical Doctorate, 1965, New York University
WALKER, EDWARD A. * 1983; Master's, 1979, Catholic University of America
WILLIAMS, EMILY CATERINA * 2003; Master's, 2003, Boston University
ZELIADT, STEVEN BACCHUS * 2001; Master's, 2000, University of Washington

Associate Professors

BAQUERO, BARBARA, 2019; Master's, 2005, San Diego State University; Public Health
BELL, JANICE F. * 1991; Bachelor's, 1984, University of Toronto
BEZRUCHKA, STEPHEN A., 1988; Master's, 1967, Harvard University
CAVE, SARAH, 1997; Bachelor's, 1991, Mills College
CEBALLOS, RACHEL M. * 2005; Bachelor's, 1998, California State University-Long Beach
CONDON, JAMES V, 2014; Master's, 2002, Central Michigan University
EDWARDS, TODD * 1995; Master's, 1990, Claremont Graduate University
GANTI, ANJULIE, 2004; Master's, 2007, Columbia University

GARRISON, MICHELLE M., 1997; Bachelor's, 1997, The University of Texas
HARTGRAVES, JOHN M, 2018; Master's, 2015, University of Washington
HELFRICH, CHRISTIAN * 1999; Bachelor's, 1998, Gonzaga University
JONES-SMITH, JESSICA * 2016; Bachelor's, 1999, Loyola University Chicago
KAELIN, CARRIE L., 2016; Bachelor's, 2009, University of Cincinnati-Clermont College
KO, LINDA * 2011; Master's, 2000, Boston University
KOPJAR, BRANKO * 1997; Doctorate, 1996, University of Oslo
KRISHNASWAMY, ALARMEL G, 2011; Master's, 2005, DePaul University
LEROUGE, CYNTHIA * 2015; Bachelor's, 1983, Loyola University New Orleans
O'BRIEN, KURT C., 2000; Bachelor's, 1988, United States Coast Guard Academy
ORNELAS, INDIA J * 1994; Bachelor's, 1996, Brown University
PENFOLD, ROBERT B * 2011; Doctorate, 2004, University of Toronto
PETRESCU-PRAHOVA, MIRUNA * 2008; Bachelor's, 2000, University of Bucharest
ROSENBERG, DORI E * 2010; Master's, 2003, San Diego State University
SCONYERS, JEFFREY M, 1994; Bachelor's, 1976, College of William and Mary
SEARS, JEANNE M. * 2001; Master's, 2001, University of California-San Francisco
SPICE, CAROLINE, 1989; Bachelor's, 1996, University of Washington; Anthropology
STILLMAN, DENNIS, 1987; Bachelor's, 1971, University of Puget Sound
WONG, EDWIN S * 2005; Master's, 2008, University of Washington

Assistant Professors

COWGILL, KAREN D * 2008; Bachelor's, 1994, Columbia University
DUGAN, JEROME ALEXANDER, 2019; Bachelor's, 2007, Clemson University; Economics
ICKES, SCOTT B. * 2015; Bachelor's, 2004, College of William and Mary
KNERR, SARAH M, 2009; Master's, 2011, University of Washington
RAMIREZ, MAGALY, 2018; Master's, 2010, University of Michigan-Ann Arbor; Industrial Engineering
WOOD, SUZANNE * 2015; Bachelor's, 2000, Old Dominion University

Senior Lecturers

HINCHEY, DEBORAH, 2004; Bachelor's, 2000, University of Calgary
PETERSON, KATHLEEN, 1998; Master's, 1994, Central Michigan University

Lecturer

KATZ, AARON, 1987; Master's, 1975, University of Toronto; Public Health

Reserve Officer Training Corps Programs

Aerospace Science

For complete faculty listing, please visit <https://afrotc.uw.edu/about-us/>

Professors

BIGGER, BRENT, 2014; Master's, 2008, Air University

MICKLE, JON-PAUL, 2018

Assistant Professors

DALY, SEAN, 2015; Bachelor's, 2011, United States Air Force Academy

GEIGER-JOHNSON, MINDE, 2016

GEIST, ANDREW CAMERON, 2020; Bachelor's, 2011, United States Air Force Academy

LUCERO, PAUL VIRGIL GIMENEZ, 2018; Master's, 2018, Embry Riddle Aeronautical University

MATERN, MICHELLE H., 2017

MCCAMMON, NICOLE, 2016; Bachelor's, 2010, Oregon State University

MENGISTU, ISSEYAS H, 2013; Master's, 2011, Air Force Institute of Technology-Graduate School of Engineering & Management

PAPE, JACE, 2020

STEWART, CLARYN E, 2018; Bachelor's, 2014, Arizona State University

VIGO, CHRISTIAN B., 2017; Bachelor's, 2010, San Diego State University

WOODARD, KYLE, 2014; Bachelor's, 2010, University of Portland

Military Science

For complete faculty listing, please visit https://armyrotc.uw.edu/people_directory/

Professors

FLOOD, TEVINA, 2014; Bachelor's, 1997, United States Military Academy

MILLER, SCOTT, 2018; Bachelor's, 1999, Missouri University of Science and Technology

Assistant Professors

HARDESTY, RACHEL, 2017; Bachelor's, 2006, Eastern Illinois University

TRISTAN, CARLOS, 2015; Bachelor's, 2004, University of Saint Mary

Naval Science

For complete faculty listing, please visit <http://nrotc.washington.edu/contact-us/#contact-us-meet-the-staff>

Professors

JOHNSON, MARK, 2015; Bachelor's, 1987, Miami University-Oxford

LOCKWOOD, MICHAEL R, 2017; Master's, 2011, National Defense University

Associate Professors

FLYNN, KELLY CHRISTOPHER, 2019; Bachelor's, 1998, California Polytechnic State University-San Luis Obispo
SLEDGE, CHRISTOPHER, 2016; Master's, 2006, United States Military Academy

Assistant Professors

ARTHUR, ERIN, 2015; Bachelor's, 2009, United States Naval Academy
BEATTIE, TROY, 2014; Master's, 2010, Naval Postgraduate School
BISHOP, AARON, 2020; Bachelor's, 2014, Oregon State University; Nuclear Engineering
IRGENS, KATHERINE E., 2016; Bachelor's, 2011, Purdue University-Main Campus
KIRBY, DEAN R., 2017; Bachelor's, 2012, Old Dominion University
LUM, MEGAN, 2019; Bachelor's, 2013, University of California-Riverside; Agricultural/Biological Engineering and Bioengineering
MURRAY, CHRISTOPHER, 2018; Bachelor's, 2012, California Polytechnic State University-San Luis Obispo
OH, MYUNG KEUN, 2020; Bachelor's, 2014, Arizona State University
SANTIAGO, AARON JOSEPH, 2018
SCHMERSAHL, AARON R, 2019; Bachelor's, 2011, Southern Polytechnic State University
STONE, STEPHEN, 2016; Bachelor's, 2012, Old Dominion University
WILLETT, DANIEL, 2019; Bachelor's, 2010, University of Florida; Criminology

School of Social Work

For complete faculty listing, please visit <https://socialwork.uw.edu/faculty>

Professors

BERLEMAN, WILLIAM C, 1965; Bachelor's, 1953, Reed College
CATALANO, RICHARD F * 1979; Master's, 1976, University of Washington
CONTE, JON, 1990; Master's, 1974, University of Washington
DURAN, BONNIE M * 2007; Bachelor's, 1978, San Francisco State University
FREDRIKSEN GOLDSSEN, KAREN * 1985; Doctorate, 1993, University of California-Berkeley
GILCHRIST, LEWAYNE D, 1982; Bachelor's, 1963, Stanford University
GILLMORE, MARY LOUISE * 1982; Bachelor's, 1968, DePaul University
HAGGERTY, KEVIN P. * 1985; Bachelor's, 1980, Seattle University
HAWKINS, JOHN D * 1976; Master's, 1969, Northwestern University
KANUHA, VALLI K * 1994; Master's, 1975, University of Minnesota-Twin Cities
KEMP, SUSAN * 1994; Doctorate, 1994, Columbia University
LEVY, RONA L * 1975; Bachelor's, 1969, Antioch College
LINDHORST, TARYN * 2001; Doctorate, 2001, Louisiana State University
LONGRES, JOHN F, 1993; Bachelor's, 1963, New York University
MARCENKO, MAUREEN * 1997; Doctorate, 1988, McGill University
MORRISON, DIANE M * 1983; Bachelor's, 1974, Reed College
NURIUS, PAULA S. * 1984; Bachelor's, 1976, The University of Texas
PEARSON, CYNTHIA * 2001; Bachelor's, 1992, The University of Texas at Arlington
PECORA, PETER * 1990; Doctorate, 1982, University of Washington
ROFFMAN, ROGER ALAN, 1982; Bachelor's, 1963, Boston University
ROMICH, JENNIFER * 2002; Master's, 2000, Northwestern University
SPENCER, MICHAEL * 2018; Master's, 1992, The University of Texas at Austin; Social Work
TAKEUCHI, DAVID * 2002; Bachelor's, 1971, University of Hawaii; Sociology
TEATHER, EDWARD CHARLES, 1966; Bachelor's, 1960, University of British Columbia
UEHARA, EDWINA * 1990; Bachelor's, 1973, Eastern Washington University
VAN SOEST, DOROTHY * 2001; Doctorate, 1994, Catholic University of America
WALKER, DENISE D * 1992; Master's, 1998, University of Phoenix-New Mexico Campus
WALTERS, KARINA * 2000; Bachelor's, 1987, University of California-Los Angeles
WEATHERLEY, RICHARD A, 1983; Doctorate, 1975, Massachusetts Institute of Technology

Associate Professors

AISENBERG, EUGENE * 2002; Bachelor's, 1980, St. John's Seminary
BAGSHAW, MICHELLE, 1998; Master's, 2004, University of Washington
BROWER, JENNIFER, 2002; Bachelor's, 2000, Calvin College
DAY, ANGELIQUE * 2017; Master's, 2005, Michigan State University; Social Work
EVANS-CAMPBELL, TERESA A * 1988; Master's, 1994, University of California-Los Angeles
FARWELL, NANCY, 1998; Bachelor's, 1976, Connecticut College
GAVIN, AMELIA * 2004; Master's, 2000, University of Michigan-Ann Arbor
HARACHI, TRACY * 1987; Bachelor's, 1986, University of Washington
HETHERINGTON, ZYNOVIA, 2000; Bachelor's, 1991, Eastern Michigan University
KELLEY, JERRY LEE, 1961; Bachelor's, 1944, Reed College
MARTINSON, MELISSA * 2012; Doctorate, 2010, Columbia University

MOORE, MEGAN * 2012; Master's, 2006, University of California-Berkeley
 RIVARA, J'MAY B, 1985; Master's, 1975, Bryn Mawr College
 STUBER, JENNIFER * 2006; Bachelor's, 1994, Cornell University
 TAJIMA, EMIKO A. * 1999; Bachelor's, 1984, Brandeis University
 VESNESKI, WILLIAM * 1997; Bachelor's, 1987, Saint Martin's College UK

Assistant Professors

ALLEN, ALLETHIA LEE, 1966; Bachelor's, 1947, Bennett College for Women
 BERRIDGE, CLARA * 2004; Bachelor's, 2003, Kalamazoo College
 CORNWALL, SAUL T., 2004; Master's, 2007, University of Washington
 DE FRIES, STACEY, 2010; Master's, 2000, CUNY Hunter College
 DE MELLO, STAN, 1996; Bachelor's, 1976, Dalhousie University
 DOTOLO, DANAE * 2017; Master's, 1999, Arizona State University; Social Work
 LANZA, CAROLINE, 2001; Bachelor's, 1995, Ohio University-Main Campus
 LEA, CHARLES * 2017; Bachelor's, 2004, University of California-Berkeley; Sociology
 LEE, JANE * 2017; Master's, 2011, Columbia University; Social Work
 LERNER, JUSTIN * 2017; Doctorate, 2019, New York University; Social Work
 MWAMBA, KHALFANI, 2015; Bachelor's, 2005, The Evergreen State College
 PETROS, RYAN * 2017; Doctorate, 2017, University of Pennsylvania; Social Work
 ROMANELLI, MEGHAN BRADY, 2020; Bachelor's, 2005, College of the Holy Cross; Psychology
 WELLS, AIDA V., 1991; Bachelor's, 1997, University of Washington
 WRENN, RACHEL, 1983; Master's, 1981, San Diego State University; Social Work

Senior Lecturers

PEARCE, DIANA, 1998; Master's, 1969, University of Michigan-Ann Arbor; Social Work
 SPEARMON, MARGARET L * 1992; Bachelor's, 1973, The College of Wooster

Lecturers

BARRETT, RACHEL, 2004; Bachelor's, 2001, Oberlin College
 BRINER, LESLIE, 2009
 CANTU, ARIANA, 2005
 CASWELL, PAULETTE, 2017
 CRISTOFALO, MARGARET, 2017
 FELL, EMILY, 2018
 GAON, ROBERT ASEOCHE, 2017
 GELLERSEN, DANNY, 2013
 GILMAN, AMANDA, 2009
 GRAN O'DONNELL, STELLA, 1993
 HAITHCOX, PAMELA, 2017
 HARRIS, DARYLLYN, 2003; Bachelor's, 2005, University of Washington
 HIRES, JOHN, 2010
 JACKSON, THOMAS R., 1984; Master's, 1976, University of Washington
 KRISTMAN-VALENTE, ALLISON, 2001
 LAFAZIA, DAVID M., 1993
 LUSTBADER, WENDY, 1989; Master's, 1982, University of Washington
 MACY, JANE, 2000
 OKOLOKO, LARA, 2008

PULKKINEN, ANN L., 1997; Bachelor's, 1973, University of New Hampshire
RANCHIGODA, TANYA D, 1999
REINBOLD, LISA, 2016
ROBERSON, KENDRA, 2003; Master's, 1993, Boston College
RYAN, ALICE, 2012; Bachelor's, 1994, University of Michigan-Ann Arbor
SHOEMAKER, LORI, 2017
SKY-TUCKER, JOE, 2017; Master's, 2012, University of Washington; Social Work
STOTT, MILENA, 2018
TERRY-HAYS, DEBORAH, 2005
TIMBANG, NORMA T, 1987
TURNER, RANDY A., 1996; Master's, 1988, University of Washington
WASHINGTON-HARVEY, CARMELA, 2017
WILSON, STEPHEN, 1992
WINN, SCOTT, 2002